PRESERVATION ASSESSMENT AND TREATMENT PROPOSALS FOR THE CAPTAIN TED CONAWAY MEMORIAL NAVAL CEMETERY, NAVAL MEDICAL CENTER PORTSMOUTH, PORTSMOUTH, VIRGINIA

October 23, 2006 Final

Chicora Research Contribution 450

Prepared for Naval Facilities Engineering Command

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MANAGEMENT SUMMARY

Although the Portsmouth Naval Cemetery, also known as the Captain Ted Conaway Memorial Naval Cemetery, is relatively small, it includes over 800 burials representing not only American military dead, but also individuals from Brazil, Great Britain, France, the Netherlands, Russia, Spain, Sweden, and Germany. It is a contributing element of the Portsmouth Naval Hospital Historic District and likely is also individually eligible for inclusion on the National Register of Historic Places under Criteria C and D. In addition to being an exceptionally important historic resource, it also represents part of our national effort to memorialize and remember those who have honorably served their country.

Cemeteries, however, are very different from virtually all other types of properties that the DoD administers.

- They are sacred sites – consecrated within are the remains of loved ones deserving of the utmost of care and respect.

- They are artistic sites, such as sculpture gardens or outdoor museums, representing permanent collections of three-dimensional artifacts requiring the same level of care that museums provide.

- They are archives – storehouses of genealogical information, representing our individual and collective pasts.

- And they are scenic landscapes – like parks or open spaces, but requiring far more focused and specific care.

In sum, cemeteries are social, historic, architectural, and archaeological artifacts. When there is little else physically remaining of a community's earliest history, the local cemetery provides a unique tie to the past that would otherwise be lost.

Therefore cemeteries require very specific consideration and different care from the other types of open sites found in most communities.

Over the years the Portsmouth Naval Cemetery has received uneven care. Historic documents have been scattered and lost. Burial registers have been poorly maintained or perhaps even ignored. Burials have been moved from one location to another with few records. The landscape has been inexplicably altered. Markers have been damaged through inappropriate care and management. And the cemetery has gone through episodes of limited care and maintenance. As a result of these years of deferred or inappropriate maintenance, a number of issues – many of them critical and costly – require DoD's immediate attention.

This report evaluates – at a reconnaissance level – these needs, classifying them into three broad categories:

- Those issues that are so critical – typically reflecting broad administrative issues, health and safety issues, and issues that if delayed will result in significantly greater costs – that require immediate attention during the first fiscal or calendar year.

- Those issues that, while significant and reflecting on-going deterioration and concerns, can be spread over the next 2 to 3 years. This allows some budgeting flexibility, but this flexibility should not be misconstrued as a reason to ignore the seriousness of the issues.

- Finally, those issues that represent on-going maintenance and preservation issues. These costs can be spread over the following three to five years. Like the Second Priority issues, this budgetary flexibility should not be interpreted as allowing these issues to slide since further delay will only increase the cost of necessary actions.

The First Priority Issues have a budget of approximately $179,900.

- The most significant expense is $150,000 for the resetting of those markers that are in concrete and have sunk below grade. Appendix 2 of this study provides specifics of the work.

- This includes approximately $5,000 for the two trees in the cemetery to be inspected, pruned, and possibly fertilized by a certified arborist. This will help maximize the lifespan of these existing resources. An additional $5,000 is allocated for the development of a tree and vegetation plan for the cemetery that specify plantings which are historically and horticulturally appropriate. This will help ensure that wise choices are made in the future when vegetation must be replaced.

- Another major first year expense is about $5,000 for informational and regulatory signage at the entrance to the cemetery.

- Approximately $2,900 is allocated for critical stone conservation costs associated with stones that present an immediate threat to themselves or the public. Not included in this cost are mileage, per diem, and lodging expenses associated; the total cost may be approximately $7,000.

- There are a variety of additional tasks that require immediate attention, but which may be accomplished using in-house staff at no additional cost to the government. Included in this category are such issues as formalizing the policy that all decisions affecting the cemetery will be made in the context of the Secretary of the Interior's Standards for Preservation; arranging assistance for handicapped or elderly visitors to the cemetery; ensuring that security patrols routinely monitor the cemetery; establishing policies and procedures to report any damage or vandalism at the cemetery; and formalizing the policy that all treatments at the cemetery will be conducted under the direction of a conservator subscribing to the standards of practice and code of ethics of the American Institute for Conservation.

- We also recommend that all maintenance staff working in the cemetery seek certification in landscape maintenance through one of several organizations. This additional level of professionalism and education will help ensure the long-term care and preservation of the cemetery.

- Other relatively inexpensive maintenance modifications include the use of nylon trimmer line no thicker than .065-inch; ensuring that the maintenance yard gate remains closed at all times; and yearly soil testing to determine what, if any, fertilization is needed.

- We also recommend that a program to replace irreparable military markers with historically appropriate replicas offered by the National Cemetery Administration.

Second priority issues are estimated to cost about $87,100 (not including in-house costs). Spread over three years this reflects a per year budget of only $29,000.

Much of this must be devoted to maintenance issues that have been deferred for years. Included are:

- Approximately $5,000 for the removal of lead-based paint that has been applied to the various iron monuments in the cemetery. This work must be done in anticipation of critically needed conservation work.

- An estimated $17,500 in funds (not including travel, per diem, or lodging) for second priority stone conservation and fence/ironwork repair.

- Maintenance of the existing boundary fence is needed and the anticipated cost of this work is approximately $20,000.

- Three projects are associated with the history and interpretation of the cemetery. Approximately $20,000 will be needed to collect, process, and appropriately house documents associated with the cemetery. An additional $15,000 is needed to photographically document the cemetery and its monuments, establishing a base-line for future studies. Finally, an additional $5,000 is allocated to informational signage at the cemetery entrance.

- We recommend that dedicated handicapped parking for the cemetery be established and that a curb cut be established to provide access to the cemetery. $5,000 is allocated to these tasks.

- Finally, there are a number of stones that require resetting using in-house staff.

The items listed as third priority are those that can be spread over five years – perhaps extending into FY 2011-2012. These issues, however, are no less significant although they have a cost of only $1,700 (not reflecting inflation or continued deterioration).

Finally, it is critical that the Navy understand that the maintenance of this historic cemetery requires the attention of a trained and dedicated staff. This cannot be achieved using untrained, low-bid, frequently changing contract staff. The care of this cemetery will require the attention of at least one technician two days a week, coupled with at least one day a week of supervisory time. There are no reasonable or prudent means to minimize this time without a significant decline in appearance and condition of the cemetery.

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INTRODUCTION

The Project

In May 2006 Sadler & Whitehead Architects, PLC contacted Chicora Foundation concerning a Scope of Work for a cemetery assessment of the Portsmouth Naval Hospital Cemetery, recently renamed the Captain Ted Conaway Memorial Naval Cemetery, at the Naval Medical Center Portsmouth. A proposal was submitted and ultimately accepted by June 1. An initial kick-off meeting was held at the Naval Base on July 24.

Figure 1. View of entrance to the cemetery, looking south.

The Scope of Work for this project specified four inter-related tasks:

1. A condition assessment
2. Specifications
3. A maintenance plan
4. Future projects list.

The condition assessment involves a brief condition report and treatment proposal for those stones requiring conservation intervention. Chicora's standard one-page treatment proposal form was submitted and approved by Sadler & Whitehead prior to the investigations. The treatment proposal involves specifications for conservation work, fulfilling the second scope of work requirement.

The assessment examines a broad range of preservation topics, including not only maintenance of the landscape, but also security, pedestrian and vehicular access, vandalism, signage, and other issues involving the long-term preservation of the cemetery. This assessment also provides broad recommendations regarding future conservation efforts and repairs, including not only the monuments, but also the ironwork in the cemetery.

The final task, future projects, is fulfilled in several ways. The treatment proposals prioritize the treatments – providing an immediate indication of critical treatments, as well as those treatments that can be deferred, at least in the short-term. In addition, this assessment offers a variety of recommendations that can be combined into future action.

The work in the cemetery began on Monday, July 24 immediately after the kickoff meeting and was completed late that afternoon by the author and Ms. Debi Hacker.

During this on-site study we met with two representatives of the base's Facility Operation Division, Mr. Vernon Murphy and Mr. Floyd Carlsen; the point of contact for the project, Mr. Aubrey Ansell, with the Environmental and Natural Resources Division; Ms. Amy Probsdorfer, Cultural Resource Specialist with the Naval Facilities Engineering Command, Atlantic; Ms. Mary Harding Sadler with Sadler & Whitehead; and others. Materials that we have been provided include "Chapter 3: Cemetery of the ICRMP: Naval Medical Center Portsmouth," a memo from M.L. Saunders, Chief Pharmacist, U.S. Navy, dating August 6, 1926, a "Numerical Index of Graves in Naval Hospital Cemetery Portsmouth, Virginia" dated May 1, 1956, and several lists and a map of flag locations which appear to be modern.

We understand that the cemetery's official name is the Captain Ted Conaway Memorial Naval Cemetery; for brevity this report will refer to the property as the Naval Hospital Cemetery or simply as the Cemetery.

History of the Cemetery

There is no detailed history of the cemetery currently available; the best available synthesis is the *ICRMP: Naval Medical Center Portsmouth* that suggests the cemetery originated post-1838, probably "soon after the completion of the Hospital" in 1830. The Naval Medical Center Portsmouth website states that, "initially, the dead were buried on private land back towards Scotts Creek. After complaints from the owner were received, as many bodies as could be recovered were reinterred at the site of what was to become a National Cemetery on the hospital compound." The location of this original cemetery is shown on the 1832 Haviland *Plan of the U.S. Naval Hospital Grounds and Buildings* and it was situated in southern section of what is today the baseball field at facility 179.

In 1906 during his presidency, Theodore Roosevelt visited the cemetery, unveiling a monument for the members of the Army Navy Union who were veterans of the Spanish American War.

In 1907 a map of the cemetery was prepared showing an arrangement that is superficially similar to what is present today. The plan shows four quadrants with graves arranged in a series of rows oriented north-south and graves oriented east-west. This 1907 plan reveals more trees in the cemetery than are found today, but otherwise indicates no roadways or paths, and illustrates no boundary fence. While the plats divide the cemetery into four quadrants, they provide no evidence of a formal "Greek cross" arrangement.

The 1907 plan also reveals a broad range of notations, added in multiple episodes based on material used and handwriting. Graves are added, the numbering system is changed, and graves that are on the plat, numbered, and evidence "check" marks are struck through with the notation, "These graves do not appear in the cemetery" – making it impossible to determine if they were laid out, but never received burials or if, perhaps, burials are present but unmarked and the graves were not visible on the surface.

It is reported that the original enclosure, a brick wall 6-feet in height, was replaced in 1919 by a privet hedge. An August 1926 memo from the Chief Pharmacist, N.L. Saunders, suggests that there was some concern over the inadequacy of the records even that early in the cemetery's history. The first subject in the memo is, "In accordance with your verbal order I have carefully checked and rechecked all available records to determine the location of remains of persons buried in this cemetery." The memo goes on to announce that yet another numbering system was instituted – apparently the third. A

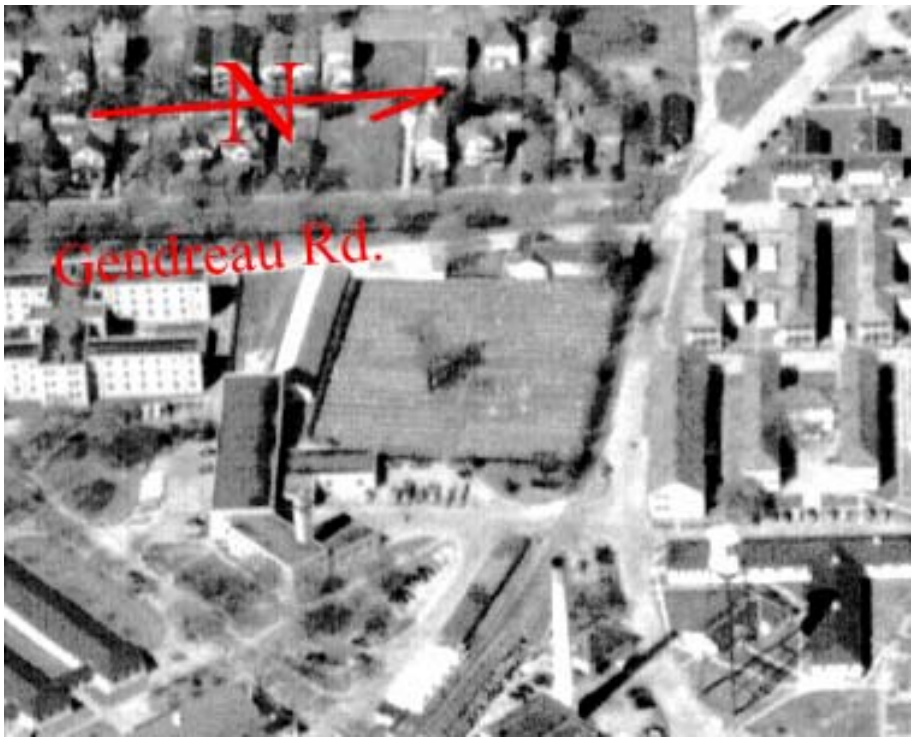


Figure 2. 1950 aerial image of the cemetery.

set of drawings was being submitted, although these cannot today be located.

The 1926 memo references "tracings made in 1907," suggesting that many of the problems associated with the grave registry "undoubtedly were the result of changing original numbers." This memo also mentions the presence of features no longer present, including both iron and wood markers (with the comment that "a few wooden markers should be replaced by permanent gravestones."

By 1944 vehicle circulation in cemetery had been eliminated. An aerial photograph from 1950 shows the cemetery. Although few details are clearly discernable, a hedge is visible on the north, east, and south sides, but absent along the west (Gendreau Road) side. A central tree is present and the four quadrants are visible. Surrounding buildings box the cemetery in on the east and south sides, and partially at the northwest. A 1959 aerial again shows the cemetery; the only appreciable difference is the elimination of the structure at the northwest corner.

We are told the privet enclosure was replaced in 1992 by a metal fence and a holly hedge.

Several undated documents have also been provided. These include a "Numerical Index of Graves in Naval Hospital Cemetery, Portsmouth, Virginia," dated May 1, 1956. It is uncertain what this numbering system is based on as there is no explanation. The list includes a number of "unknown" graves as well as grave numbers assigned with no listed name beside them. The numbering system includes not only supplemental "a" and "b" listings (for example, 331 and 331a), but also the use of ½ (for example, grave 266 and 266½). There are also a few handwritten notations, although no indication of when or by whom they were added.

There is a hand sketch of the cemetery, divided into four quadrants, that is undated. Three appear to be the same style and handwriting, while the fourth is different, perhaps pre-dating the others. This fourth may represent at least a section of the missing 1927 plan. It is of special interest since it shows plantings around the edge of the cemetery (not shown on the other three plans) and also reveals at least one grave intrusive into another. The placement of the graves also appears precise, as opposed to stylistic (as is the case with the other three sheets). These sheets, combined, have

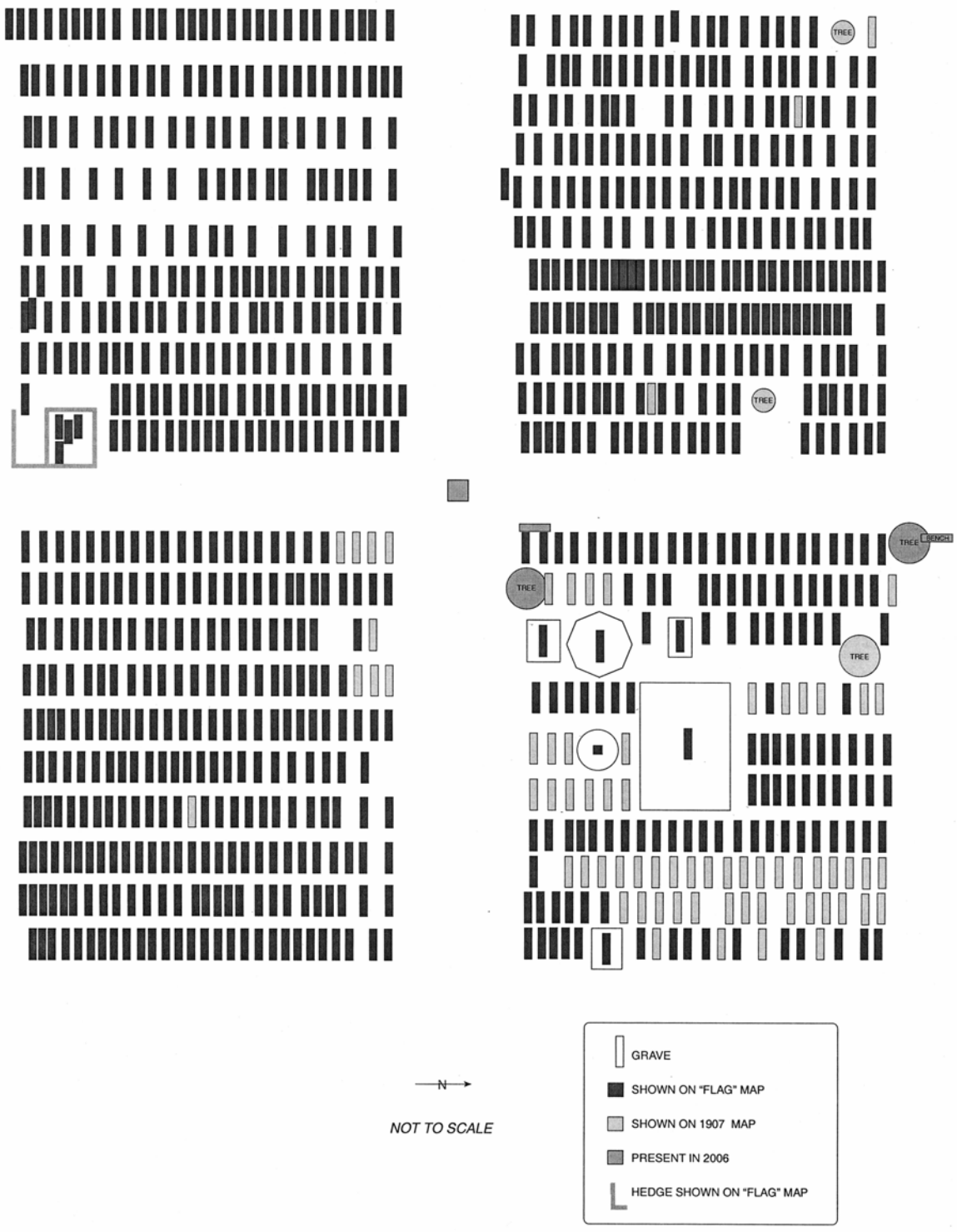


Figure 3. Comparison of maps showing burials in the cemetery.

apparently been used to identify the nationality of the deceased for placement of flags.

Finally, there are two "modern" lists – one is alphabetical, the other by quadrant (identified as section), row, and grave number. These lists, however, are incomplete since they have notations such as "NOTE #6" and no such listings are found. The lists also show graves as "?QUESTION?" distinct from "UNKNOWN."

Left unresolved is the nature of the original masonry enclosure and the gates that may have been present. The issue of traffic circulation is unresolved since none of the available plats provide any hint of roadways. The removal of plantings shown in the 1907 plan is undocumented, as are other vegetative changes. The original range of markers is uncertain and the wood and iron specimens are especially interesting.

There is much documentation that is either missing or unavailable at the time of our study (such as the 1926 plan and the various death registers referenced in the 1926 memo) – clearly these documents are of critical importance to the long-term preservation of the cemetery and every possible effort should be made to retrieve these items and ensure their preservation.

Also missing is the social history of the cemetery – documentation concerning how individuals achieved burial in the cemetery, the nature of these burial ceremonies, and the events surrounding visitation by families.

Nevertheless, what may be of greatest interest is the actual number of burials in the cemetery. The National Register nomination indicates that while there are "over 800 known graves" there are likely many others "the location and record of which have been lost." Figure 3 shows several of the available maps, revealing subtle, but significant variations. After several attempts to decipher the actual burials in the cemetery, it is clear that only an archaeological study, perhaps using ground penetrating radar, will be able to resolve the question of exactly how many individuals are present in the cemetery and where the graves are located.

Preservation Fundamentals

Preservation is not an especially difficult concept to grasp, although admittedly some work diligently to make it seem so. The fundamental concepts are well presented in the Secretary of the Interior's Standards for Preservation (see Table 1).

This document reminds us – at least at a general level – of what we need to be thinking about as we begin a cemetery preservation plan. Those responsible for the care of the Naval Hospital Cemetery should be intimately familiar with the eight critical issues it outlines.

For example, all other factors being equal, a cemetery should be used as a cemetery – not to walk dogs, not as a play ground, and not as a park. And until we are able to do what needs to be done, it is our responsibility to make certain that the site is preserved – it must not be allowed to suffer damage under our watch.

We must work diligently to understand – and retain – the historic character of the cemetery. In other words, we must look at the cemetery with a new vision and ask ourselves, "what gives this cemetery its unique, historical character?" Perhaps it is the landscape, the old and stately trees, the large box woods, the magnificent arborvitae. Perhaps it is the very large proportion of complex monuments, or the exceptional slate markers. Whatever it is, we become the guardians responsible for making certain those elements are protected and enhanced (whether they are particularly appealing to us or not).

Whatever conservation efforts are necessary must be done to the highest professional standards; these conservation

Table 1.
Secretary of the Interior's Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic 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. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

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. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

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.

efforts must be physically and visually compatible with the original materials; these conservation efforts must not seek to mislead the public into thinking that repairs are original work; and the conservation efforts must be documented for future generations. If an agency doesn't have a conservator or if the caregivers aren't conservators, it is our responsibility as the stewards of the property to retain a conservator appropriately trained and subscribing the Code of Ethics and Standards of Practice of the American Institute for Conservation (AIC).

The Secretary of the Interior reminds us that each and every cemetery has evolved and represents different styles and forms. It is our responsibility to care for all of these modifications and not seek to create a "Disney-land" version of the cemetery, tearing out features that don't fit into our concept of what the cemetery "ought" to look like.

Likewise, we are reminded that there will be designs, monuments, and other features that characterize our cemetery – and we are responsible for identifying these items and ensuring their preservation. We must be circumspect in any modifications, ensuring that we are not destroying what we seek to protect.

Before acting, we are required as good and careful stewards to explore and evaluate the property, determining exactly what level of intervention – what level of conservation – what level of tree pruning -- is actually necessary. And where it is necessary to introduce new materials – perhaps a pathway – into the cemetery, we must do our best to make certain these new elements are not only absolutely necessary, but also match the old elements in composition, design, color, and texture. In other words, if the cemetery has brick pathways, we would be failing as good stewards if we allowed concrete pathways – especially if our only justification was because they were less expensive.

Where conservation treatments are necessary, the Secretary of the Interior tells us that they must be the gentlest possible. However

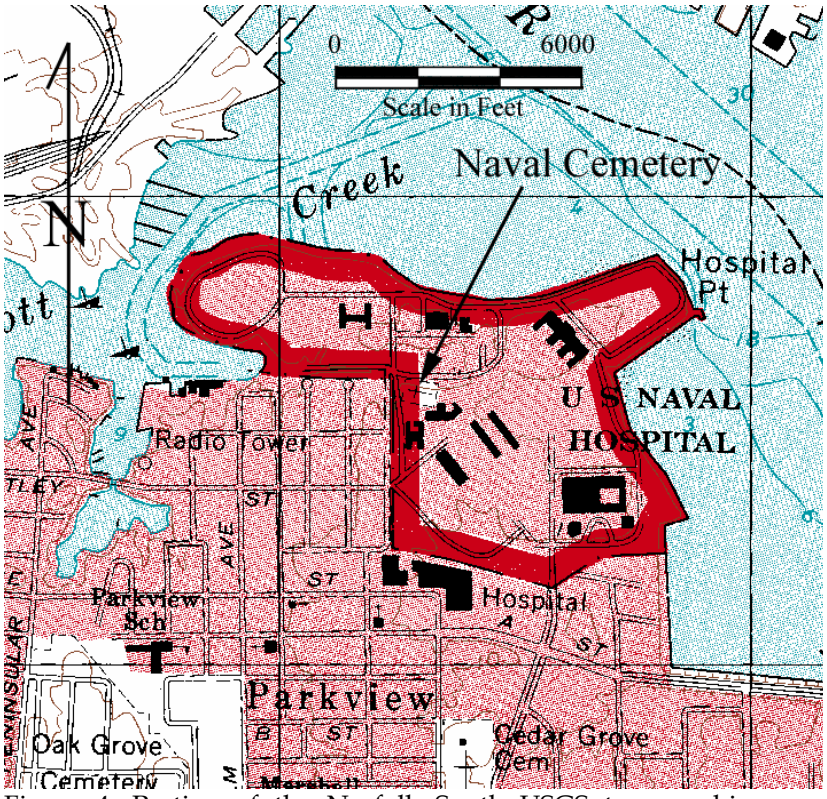


Figure 4. Portion of the Norfolk South USGS topographic map showing the area surrounding the Naval Hospital Cemetery.

you phrase it – less is more – think smart, not strong – we have an obligation to make certain that no harm comes to the resource while under our care. And again, one of the easiest ways to comply is to make certain that caregivers retain a conservator subscribing to the ethics and standards of the American Institute for Conservation.

Finally, we must also recognize that the cemetery is not just a collection of monuments and the associated landscape – the cemetery is also an archaeological resource. We must be constantly thinking about how our efforts – whether to repair a monument, put in a parking lot, or resurface a path – will affect the archaeological resources – archaeological resources that just happen to be the remains of people buried at the cemetery by their loved ones.

These are especially critical issues in the case of the Naval Hospital Cemetery since there is evidence that a number of these standards have been violated over the history of this cemetery. Modifications have taken place with little or no documentation, leaving caregivers guessing as to the nature of the work, the reason it was done, and even how it was conducted. Original fabric has been removed, replaced, and modified, with no clear understanding of how these actions would affect the integrity and context of the cemetery. The modifications have frequently been poorly conceived and inappropriately executed.

Our first recommendation, therefore, is that the caregivers become thoroughly familiar with the Secretary of the Interior's Standards for Preservation and reaffirm their responsibility as stewards of this historical resource to ensure that future preservation efforts are consistent with sound preservation principals and practices.

The Cemetery Location

The Naval Hospital Cemetery is identified as property 238 on the Naval Medical Center Base Map. The base itself is situated on a point of land at the north edge of Portsmouth, bounded by Scotts Creek to the north and the Elizabeth River to the east. The cemetery is situated at the central western edge of the base. Oriented essentially north-south the western boundary of the cemetery is Gendreau Road. To the north is a parking lot. The Facilities Management Department (Building 273) is situated at the northeast corner of the cemetery. Directly to the east of the cemetery is the

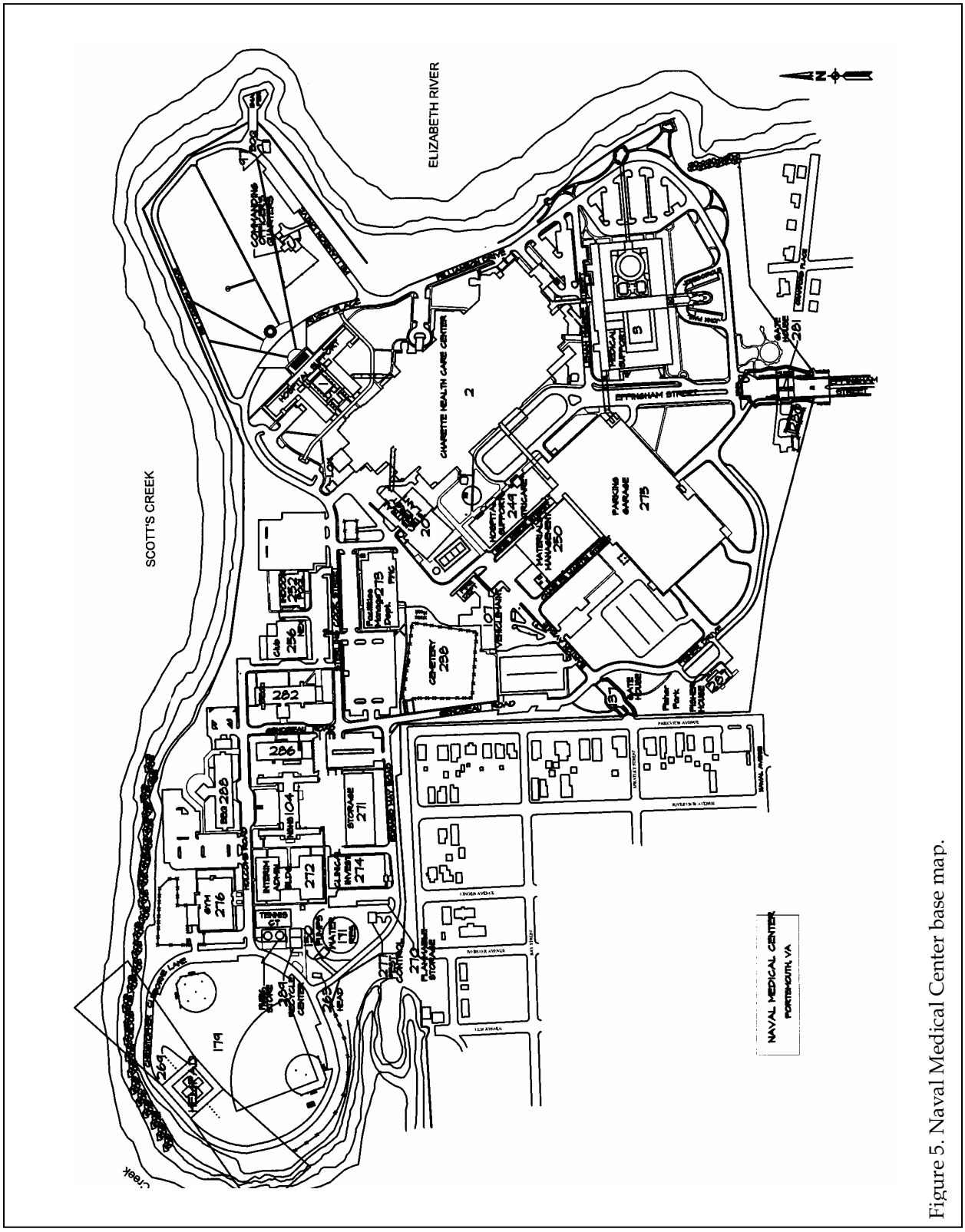


Figure 5. Naval Medical Center base map.

Figure 6. Panoramic view of the cemetery along Gendreau Road showing a variety of the intrusive elements.

maintenance facility asphalt paved yard. The Vehicle Maintenance Department (Building 107) is situated at the cemetery's southeast corner. At the northwest corner is a brick veneer shell around a sewer flume house (Figures 4 and 5).

The topography is level with no perceptible slope. The USGS topographic map suggests the cemetery may be in a trough area with slightly higher elevations to the north, perhaps representing a remnant dune or ridge.

The cemetery represents an island of undeveloped landscape in an otherwise densely developed military base. The cemetery is largely surrounded by Naval facilities.

The Setting and Context

The 1 acre property is dominated by the Naval base, consistent with its use as a military cemetery. It is, however, poorly shielded from intrusive – and often very modern – elements. This compromises the ambience, beauty, and peaceful dignity that are generally thought to be characteristic of military cemeteries. The parking lot to the north, the modern building abutting to the northwest, the harsh landscape, and the modern fence and holly hedge all detract from what should be a place of quiet dignity and tranquility (see Figure 6). It is as though no meaningful consideration was given to the visual intrusions that modern buildings and modifications would have on this historic cemetery. The Navy may wish to consider options to minimize such intrusion in the future, as well as explore ways to mitigate that which has already occurred.

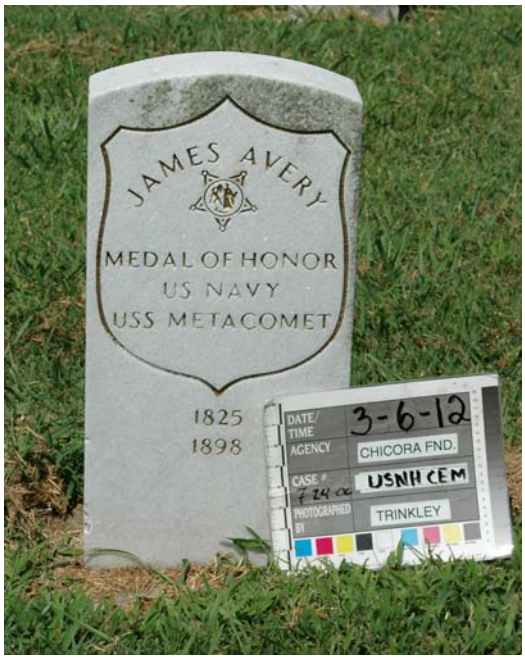
The cemetery has three entrances – a double wide entrance off Gendreau Road, a pedestrian entrance off the parking lot to the north, and a double width entrance into the eastern facilities yard. It appears that the Gendreau Road entrance is rarely used (I found it difficult to operate the gate). The facility yard gate use appears to be limited to maintenance activities. Thus, it appears that most visitors enter the enter from the Facilities Management Department parking lot off Gendreau Road to the west or Sterling Cook Street to the north. This entrance is notable only in that there is a tree and bench at this entrance (see Figure 1).

Each of these entrances is centered on the Greek Cross that bisects the cemetery, although none are especially formalized or make it clear that they are intended for general use. No vehicular routes are present and the cemetery is entirely grassed.

The cemetery's character is heavily defined by the abundance of headstones supplied by the National Cemetery Administration, Department of Veteran's Affairs (often called simply "government markers"). These are all marble and are the "upright" style. Present, however, are also a number of commercial stones, originally erected by family or friends, as well as several chain fences. In the approximate center are a single tree and a modern plaque listing those known to be buried in the cemetery.

A

B



C

D

Figure 7. Examples of extant government stones. A, original 1873-1902 10-inch wide "Civil War" stone; B, 1903-ca. 1920 12-inch wide "Civil War" stone; C, modern replacement of "Civil War" stone showing deviation from the historic fabric and character; D, "General Issue" stone that is set too low, detracting from its design and historic character.

Vegetation is dominated by the bermuda grass, holly hedge on three sides, and two trees, resulting in a rather spartan appearance. This is not inconsistent with military cemeteries, but it is not necessarily consistent with the cemetery's historic landscape since documents reveal the presence of additional trees in the cemetery, the presence of ivy (likely English ivy), privet hedge, and some additional hedge vegetation around the Minor plot.

Military Stones

It may be useful to briefly recount the history of government or military stones. The earliest markers were a wooden board with a rounded top and bearing a registration number and/or inscription. There was, however, no centralized system for recording burials. This system was formalized as a result of the Civil War with War Department General Orders 75 creating the first organized system of marking graves. It wasn't, however, until 1865 – when the number of burials in national cemeteries approached 100,000 – that the military began to realize that wooden headboards presented significant maintenance issues. The movement away from wood was not immediate and it engendered considerable controversy between those who favored marble and those who favored galvanized iron.

It wasn't until 1873 that Secretary of War William W. Belknap adopted the first design for government cemetery stones. For the known dead a slab 4-inches thick, 10-inches wide, and 12-inches in height above ground with a slightly curved top was standard. Known as the "Civil War" type, it featured a sunken shield in which the inscription appeared in bas relief. This inscription was limited to the rank, name, and name of the state. For unknown dead a 6-inch square block of marble was used intended to be set 4-inches above grade. On the top of the stone would be a number. In 1879 Congress authorized known graves to be marked using the government stone in private cemeteries. The "Civil War" type was used not only for Civil War (Union forces only) dead, but also the deceased of the American Revolution, the War of 1812, the Mexican War, the Indian Campaigns, and eventually the Spanish-American War.

A 1902 study of long-term durability resulted, in 1903, of the stones changing to 12-inches in width with a full 39-inches set above ground. The thickness remained at 4-inches. The use of the stone blocks for marking unknown dead was terminated in 1903, with the graves from that point on marked with the same type of stone used for known dead. By 1904 Congress also authorized the use of these stones on civilian graves in post cemeteries.

In 1906 Congress authorized the permanent marking of Confederate graves. These stones would be the same size as the other markers, but would be pointed rather than rounded, with the shield omitted. By 1929 these stones were also authorized by Congress for use in private cemeteries. In 1930 the War Department modified regulations, allowing for the inscription of the Confederate Cross of Honor in a small circle on the front face of the stone above the standard inscription.

A new design was implemented after WWI. Known as the "General" type, the top remained slightly rounded, but was 13-inches in width and 4-inches thick. These stones were 42-inches in length. The inscription would include the name, rank, regiment, division, date of death, and state from which he came. In addition, for the first time a religious emblem (limited to the Late Cross for Christians and the Star of David for Jews) was adopted for use on the government headstones.

Granite was approved in 1941, but discontinued in 1947 because of their cost. Flat markers were approved in marble in 1936, granite in 1939, and flat bronze in 1940. These flat markers are 24-inches in length, 12-inches in width, and 4-inches in depth (with the exception

of the bronze markers that are only 3/16-inch in thickness) with incised inscriptions (cast for bronze markers). The date of birth was authorized in 1944 and after the war ended, WWI or WWII was authorized as part of the inscription. Korea was added in 1951 (and revised in 1954), Vietnam was added in 1964, Lebanon and Grenada were added in 1983, Panama and Persian Gulf were added in 1989, and Somalia was added in 1992.

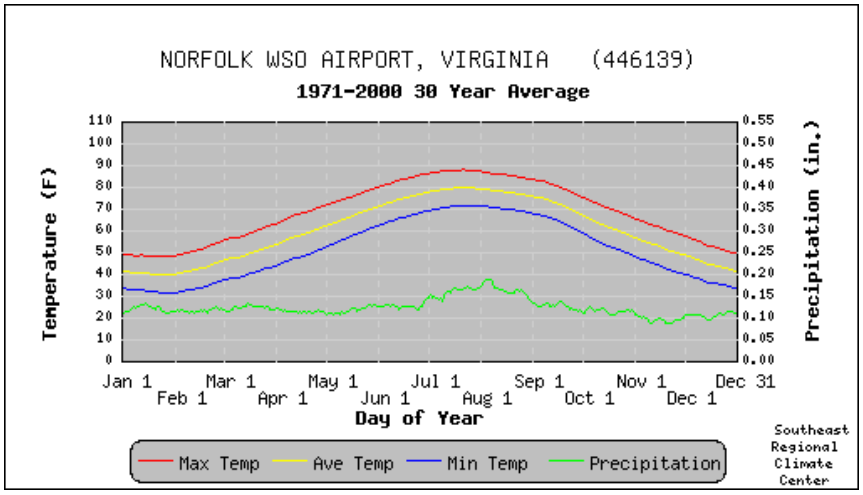


Figure 8. Temperature and precipitation range for the Norfolk area.

The historical sunken shield or "Civil War" style was only recently re-introduced (having been replaced by a far more modern inscribed shield style that was historically inappropriate and detracting from historic cemeteries). Style "XA" is 12-inches wide, while style "XB" is 13-inches wide. Both are 3-inches thick and 42-inches in height.

Factors Affecting the Landscape Character

The study area is within the independent city of Portsmouth overlooking Scott Creek and the Elizabeth River. Surrounding Portsmouth to the south and west are Chesapeake and Suffolk counties. The area is situated in what is sometimes called the Tidewater Region or the Coastal Plain Province, Lowland Subprovince. This is an area extending from the Fall Line to the ocean that gradually descends in elevation and is underlain by a thick wedge of sediments. Surface soils, however, are predominately Tertiary and Quaternary sands, silts, and clays. The landscape was formed over the last few million years as sea levels rose and fell. Large tidal rivers, such as the Potomac, Rappahannock, York, and James, flow southeastward across the Coastal Plain to the Chesapeake Bay, which in turn empties into the Atlantic.

Soils in the area belong primarily to the Coxville – Portsmouth - Bladen Association. These soils are light colored sands with small amounts of organic matter and are typically strongly acidic in reaction. The soils are underlain by and developed from beds of unconsolidated sands, sandy clays, and clays of recent geologic origin.

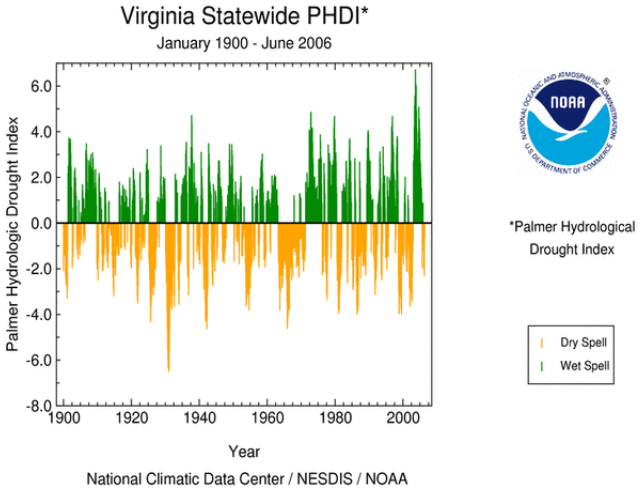


Figure 9. Statewide drought index.

At the Naval Cemetery the soils exhibit about 0.8 foot of sandy gray sand (A or Ap horizon) overlying a subsoil of light brown sandy clay.

The Portsmouth area is characterized by mild winters and long hot summers that are occasionally interrupted by cool periods as a result of the northeasterly winds off the Atlantic

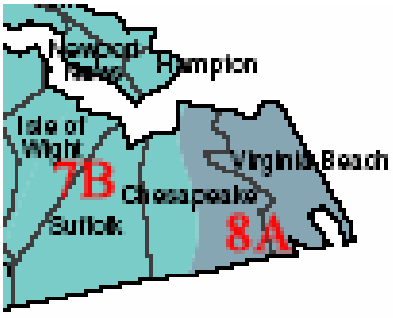


Figure 10. USDA plant hardiness zone for the Portsmouth area.

Ocean. Waves of extreme cold are rare, and often winters have no measurable snow. The average annual temperature is about 60°F, with a range from about 40°F in winter to just under 80°F in summer (Figure 8). The average annual precipitation is about 44 inches, with a peak during the growing season of mid to late summer. There is, however, considerable variation, with significant droughts rather common over the past 100 years (Figure 9).

Figure 10 reveals that the project area lies neatly between Plant Hardiness Zone 7b, where the minimum temperatures are expected to be between 5 and 10°F, and 8a, where the minimum temperatures are expected to be about 5°F warmer.

Recommendations

All decisions regarding modifications, alterations, additions, or other actions affecting the Naval Hospital Cemetery should be carefully evaluated against the Secretary of the Interior's Standards for Preservation.

The cemetery's records and documentation are scattered, making a synthesis of the property's history difficult. The stewards of this property should carefully gather up all remaining historical documents, obtaining legible copies of any that are not readily available, and these records should receive permanent, safe retention. If the base is unable to care for these records an alternative, public curatorial facility must be sought.

Much of the cemetery's character derives from the variety of both military and private memorials present. Care must be exercised to avoid damaging or altering these fragile resources.

ACCESS AND PEDESTRIAN ISSUES

Access

As previously mentioned, the cemetery has three double gates: one on the north off a parking lot for the Facilities Maintenance Department, one on the west at Gendreau Road, and one on the east, allowing entrance into the Facilities Maintenance yard area. None of the gates appear to be secured, although the eastern gate is solely used by the maintenance staff and most pedestrian access is through the north gate.

This north gate is the focal point of the cemetery (in the sense that it provides the first impression to visitors), yet it is rather nondescript and offers no particularly dramatic entrance (Figure 1) or signage. In fact, one must progress to the center of the cemetery to find the only signage present.

The east gate, which is left open (evidenced by the raised ground level that made closing it very difficult), should be closed except when needed for maintenance access. The gate would provide a physical barrier to discourage visitors from going into the facility yard. More importantly, it would help segregate the work area from the dignity and solemnity of the cemetery.

There is no vehicular access into the cemetery and there is no dedicated parking for visitors to the cemetery and during the week visitors must compete with workers for parking. During our visit parking was sparse and difficult to find. The parking lot is also very industrial – entirely lacking in softening elements or vegetation. We also observed no nearby handicapped parking (the closest in at the Facilities Maintenance Building), offering further deterrence to many elderly visitors.

A final access issue involves the ability of the public, including descendants of those buried in the cemetery, cemetery lovers, or military enthusiasts, to visit the graves.

Pedestrian Access and Sidewalks

It is reported that the cemetery was designed only with grass walkways, although there has apparently been no archaeological study to determine if oyster shell walks might have been used at some point. Nevertheless, this does not appear to be a significant issue since there is very little pedestrian activity in the cemetery.

While the ADA or the Rehabilitation Act of 1973 is generally not interpreted to apply to cemeteries by the Department of Justice, there should be an independent evaluation of the need for universal access. Because of the very slight grade, the cemetery topography presents no significant obstacle. The grass, however, does pose problems to wheelchair bound individuals. An even greater obstacle is the absence of handicapped parking and a curb cut to allow wheelchair access to the cemetery level. It would be appropriate for assistance arrangements to be made for handicapped visitors.

Recommendations

The eastern gate, into the facility maintenance yard, should be kept closed at all times.

Arrangements should be made to allow public access to the cemetery and some dedicated parking, including handicapped parking, should be provided. A curb cut should be added at the entrance to the cemetery.

There should be information signage at the entrance to the cemetery.

Arrangements should be made to provide assistance to handicapped visitors. This may include assistance in transporting wheelchairs, and guides for the visually impaired. The available of this assistance should be posted.

LIGHTING AND SECURITY ISSUES

Cemetery Lighting

The cemetery would not have been lighted historically and so the absence of lighting today is entirely appropriate.

Nearby lighting on Gendreau Road and adjacent building compounds may penetrate the cemetery, but its affect is likely limited.

Vandalism

We saw no evidence of vandalism and would imagine that intentional mischief and theft would be uncommon on a military base.

Nevertheless, the cemetery should be routinely patrolled by either private security or the base's military police. Since the hedge prevents visibility except from Gendreau Road, the ideal solution would be periodic foot patrols. In an era of tight budgets, this is unlikely, therefore an effort should be made to light the cemetery using spotlights during vehicular patrols at night. These patrols are especially important on weekends and during certain holidays (such as Halloween).

It is critical that the maintenance staff become familiar with the stones and make periodic visits through the cemetery, looking for any new damage. Without some means of identifying damage close to the time when it has occurred, it will never be possible to accurately determine the level of threat that the cemetery truly faces.

Maintenance should also develop a set mechanism for reporting, documenting, and responding to any damage or theft within the cemetery. Working these issues out ahead of time will make certain that problems are reported and that there is an appropriate response.

Hardening Targets

Thefts in cemeteries have dramatically increased. The reasons for this are two-fold. First, there is an increasing market for gates, urns, ironwork, and statuary – created by an increase in upscale garden design and individuals willing to pay large sums for original artwork. Second, there is less attention being paid to cemetery fixtures, largely the result of decreased maintenance budgets and fewer security patrols.

The Naval Cemetery has relatively few objects that would be attractive to thieves, access to the base is difficult, and thieves would probably be unlikely to expose themselves to federal prosecution. Nevertheless, there has yet to be a complete photographic inventory of the cemetery – and this should be a critical first step since it provides documentation of what is in the cemetery and its current condition.

Recommendations

No lighting should be introduced into the cemetery. Such lighting is out of character, damages the historic setting, and creates a visual intrusion.

Security patrols should routinely direct their attention to the cemetery. The simple act of using a spotlight may be sufficient to deter criminal activities. Special attention should be paid to weekends and holidays. The maintenance staff should walk through the cemetery on a daily basis, noting any damage or problems.

There should develop a policy for identifying, reporting, and responding to damage, vandalism, and theft within the cemetery.

All monuments, plot enclosures, and other features within the cemetery should be photographically recorded and documented. This would provide a baseline against which future damage or theft can be evaluated.

CEMETERY FIXTURES AND FURNISHINGS

Cemetery Fence

A modern (ca. 1992) fence today surrounds the cemetery. While occasionally called aluminum, the fence appears to be a combination of materials, including galvanized iron and mild steel.

The existing cemetery fence design (Figure 11), is not typical of historic cemetery fencing. The height, scale, and style are different from fencing in historic cemeteries. In addition, while the fence may have been chosen for claims of low or no maintenance, we observed areas of extensive paint scaling and break-through corrosion, perhaps the result of the high ambient salt levels. This requires maintenance attention.

There is a wide variety of fencing materials that would be more in keeping with the historic setting. At the point in time that replacement is necessary, we recommend the use of a more historically appropriate fence. Such fences are still being manufactured by a few companies with deep historical roots. Once such company is Stewart Iron Works in Covington, Kentucky (they have produced fences since 1886 and retain their original patterns and castings). An appropriate replacement might be the square picket fence with ¾-inch pickets on 5-inch centers (design number 73S). This fence would be available in heights from 37 to 72-inches. Line, corner, and gate posts are a sold, square style. Another appropriate fence would be the 3-rail square (design 91S).

The gate for the Facilities Maintenance Yard (Figure 12) is also of interest since it appears to reflect the extensive unfortunate modification of an earlier double gate. We are not certain if this earlier gate was part of the original fence – it, too, appears relatively modern (i.e., twentieth century) and may simply have been pressed into service.

Historic Ironwork

There are four monument enclosures consisting of iron chain, three with marble or granite posts (2-3-10, 2-3-12, and 4-1-20) and one with iron posts (2-10-11). There is also one monument with an iron vase (2-5-12). All appear to have heavily encrusted and flaking paint that is identified by the Navy as lead-based. Our swab tests of paint flakes removed during the visit confirm this (swab tests are qualitative and cannot determine the percent of lead by weight [the EPA Action Level is 0.50% lead by weight]). These examples of ironwork pose special problems since they are in need of immediate intervention.

In each case there is evidence of underlying corrosion, with – in the case of 2-5-12 – loss of the iron. In addition, each has had such poor preparation and care taken in painting that details are hidden and paint has inadvertently been applied to the granite posts. The vase has at least four coats of paint, varying in color from a white to dark green to a black. The overall care and variation in colors suggests that no special care or consideration has ever been given this metal work.

There is also evidence of missing elements (such as chain and chain weights), as well as damaged or missing retaining rings originally set in the granite posts with lead. Most troubling, however, is the evidence of very poorly performed repairs using inappropriate materials and techniques. It is critical that only trained conservators perform repairs and treatments of the historic fabric.

Figure 11. Modern boundary fence. The top photograph shows the heavy, out of scale appearance of the fence. The lower photographs illustrate paint dulling, chips with underlying corrosion, and flaking from galvanized trim. Note also the abundant use of rivets that detracts from the overall appearance.

Figure 12. Heavily modified gate at the east entrance to the cemetery.

Lead Paint Removal

One of the more common methods of paint removal – abrasive blasting – is inappropriate for lead based paint since it creates significant dusting that can contaminate nearby properties. Blasting materials can also be very damaging to historic fabric.

The best option for the chains is their removal to an off-site certified facility and the use of paint strippers. The goal should be to remove as much of the adhering paint as possible, in order to allow the original detail and texture of the metal to be visible.

Since the fence posts (2-10-11) are loose, it would be appropriate to remove these and also treat them off-site.

Removal of the vase is problematical given its condition and treatment on-site is a better option. In this case it may be possible to obtain adequate removal using hand scraping and wet or vacuum micro sanding.

Removal of the paint on the granite posts should be performed by a licensed contractor with a Lead Abatement Contractor License, but under the supervision of a conservator using chemicals known not to harm stone.

Painting

Absent historic documentation that suggests otherwise, flat or semi-gloss black or dark green are appropriate colors (gloss paint must not be used). However, in this case, it is possible – at least on the vase – to conduct a paint analysis to determine the original color.

We recommend the use of a rust converter as a primer. Of the three that were successfully tested by the Canadian Conservation Center, Rust-Oleum's Rust Reformer is the least expensive and most readily available. We recommend two coats of the Rust Reformer. These can be applied over stable corrosion and the product does an excellent job of converting the corrosion into a stable base for a top coat of alkyd paint. A single coat is adequate and it should not be applied thickly, as thick coats hide detail, cure poorly, and will often prematurely fail.

All painting should be by brush – no sprayers should be used since they allow drift onto nearby stones. Tarps should be used to protect vegetation and adjacent stones from splatter. Special care must be exercised to avoid getting paint on the stone posts.

This maintenance program will significantly improve the appearance of the ironwork in the cemetery and will help prevent additional corrosion and deterioration of the various fence components.

Figure 13. Extensive problems with historic fencing and monuments in the cemetery. Upper left, paint so heavily applied that details are obscured and the chain links are bonded; upper right, paint applied to the stone; middle left, inappropriate repair; middle right, heavy paint flaking and corrosion on the urn; lower left, missing and damaged connectors; lower right, heavily damaged fence post showing corrosion resulting from water penetration.

Reattachment of Loose Elements

Welding should be the last option selected for reattachment of loose elements. Most fences were intended to be constructed using "slip joints" that allow unrestricted expansion and contraction. Welding does not allow this critical movement and as a result can cause even greater damage. Moreover, much welding is inferior, using incorrect methods and leaving the piece more susceptible to corrosion than it was before. In addition, cast iron is particularly difficult to weld and those with limited experience can cause tremendous damage to the historic fabric.

Alternatives to welding include fabrication of connectors using 316 stainless steel that can be welded or brazed onto elements. Sometimes a metal filled epoxy is also an appropriate selection.

Prevention of Water Intrusion

Another very damaging factor in ironwork is the potential for water to find its way into the cracks and crevices, often through capillary action, causing extensive corrosion damage. Cracks and crevices should be caulked using a high grade, industrial moisture-cured, single-component, polyurethane-based, non-sag elastomeric sealant. Residential sealants, such as silicones, should be avoided.

Other Amenities

The only other amenity in the cemetery is the painted wood slat and metal bench at the entrance. It is of an indeterminate style and its period of placement is uncertain. Nevertheless, we recommend that it be retained, using the maintenance procedures recommended by Appendix J of the ICRMP: Naval Medical Center Portsmouth.

Recommendations

The cemetery boundary fence is in need of maintenance and this should be performed using the maintenance procedures recommended by Appendix J of the ICRMP: Naval Medical Center Portsmouth.

The four iron chain fences in the cemetery require immediate attention to prevent further deterioration and loss of historic fabric. This will require removal of suspected lead paint, appropriate repainting, and repair by a conservator. Similar treatment is recommended for the urn monument.

LANDSCAPE MAINTENANCE

Staffing

The Portsmouth Naval Cemetery is cared for by the base's Facilities Operation Department, using in-house employees. This decision to use in-house staff, rather than to periodically contract out the work is a sound decision since it promotes continuity and familiarity with the resource. It allows greater attention to the special details necessary for cemetery maintenance.

The only drawback is that Facilities Operation is responsible for the entire base and this may, at times, place a strain on the limited staff. It may also result in the cemetery receiving less attention, or less detailed attention, than it deserves.

Level of Staffing

Cemetery maintenance generally requires a minimum of two trained staff and a supervisor for every 10 acres. This level of attention is the minimum required under normal circumstances – and it could convincingly be argued that military cemeteries are not normal and require at least twice the level of upkeep in order to present the dignity and honor that the public expects to be paid to military veterans. The Portsmouth Cemetery is only 1 acre – and thus will *at the very least require a crew worker one-fifth time (or the equivalent of 1-day a week); supervisory staff should anticipate spending approximately one day every two-weeks dealing with cemetery issues. Doubling this estimate to more accurately reflect the demands and expectations placed on a military cemetery, it is reasonable to anticipate two-person days per week for a maintenance individual and one-day per week for staff supervision*. Any less than this and it is likely that cemetery care will suffer and the base may expect complaints and dissatisfaction.

The Navy should assess whether this level of care is being provided on a routine basis.

Staff Training

Sadly, professional training in the landscape industry, at least among the public, is undervalued. This contributes to rapid turn-over and inappropriate maintenance activities – especially damaging when work is periodically contracted out, with minimal specifications and little supervision to the firm with the lowest bid.

In 2005 the Associated Landscape Contractors of America (ALCA) and the Professional Lawn Care Association of America (PLCAA) merged to form the Professional Landcare Network (PLANET). This organization offers three certification programs that should be requirements for all technician-level staff.

The first is the Certified Landscape Technician – Exterior. The exam for this certification is a hands-on field test and candidates can be tested in Installation, Maintenance, or Irrigation. Technicians at the Portsmouth Naval Cemetery should be certified in Maintenance. This would establish credentials by meeting international standards for safe and effective operation of machinery and demonstrating a thorough understanding of all facets of the position.

The second is Certified Turfgrass Professional – a comprehensive study of both warm and cool-season turfgrasses developed by the University of Georgia Center for Continuing Education. Certification in this area demonstrates a mastery of weed, insect and disease identification/control, as well as diagnosis of common turfgrass problems. The material supports Integrated Pest Management

concepts and pesticide safety – significantly reducing liability for operations.

The third is Certified Ornamental Landscape Professional. This certification emphasizes tree and shrub maintenance procedures with candidates concentrating on landscape trees and ornamental woody plant physiology, health care management, and establishment.

A similar certification program is also offered by the Virginia Nursery and Landscape Association (Virginia Certified Horticulturist) at both a basic and advanced level.

There are training opportunities in the immediate area. For example, Tidewater Community College - Chesapeake offers a degree program in Horticulture which includes courses in turf grass management, weed science, landscape plant materials, and landscape maintenance. Review classes for the Virginia Certified Horticulturist exam are also offered by the Hampton Roads Nursery and Landscape Association. Additional information is available at the Virginia Nursery and Landscape Association website (http://www.vnla.org).

The Quality of Supervision

Regardless of the credentials or certification, the complexity and fragility of cemetery landscapes requires that the technicians are well supervised and are held accountable for their performance. It is especially important, therefore, that the supervisory positions be carefully defined. The selected individuals must not only be well trained and knowledgeable, but also possess demonstrated supervisory experience. The supervisors must be expected to manage activities in the cemetery.

Continuity of the Staff

Maintaining the continuity of a maintenance staff with a commitment to the preservation of a historic cemetery is critical. It not only serves to help ensure the highest possible quality of care, but also allows the specialized knowledge that accrues to be transferred to new staff members over time.

Cemetery Vegetation

Historic and Current Conditions

The few available maps reveal that historically the cemetery contained more trees than are present today. Since perhaps the mid-1950s, however, the cemetery has been limited to the one tree in the approximate center – a persimmon (*Diospyros* sp.). The tree when mature has a spread of about 20 to 35 feet and a height of about 60 feet. While resistant to breakage, it tends to droop and there is evidence of past aggressive pruning for pedestrian clearance. Persimmon has moderate salt and drought tolerance and does well in full sun (to which it is exposed in the current setting). Surface roots are not a problem and litter is generally not an issue. Most American cultivars require both male and female trees for fruiting, perhaps explaining the report that this tree has never produced fruit.

The only other tree in the cemetery, near the south edge, is commonly known as an East Palatka Holly (*Ilex* x *attenuata* 'East Palatka'). First discovered in 1927, this is a hybrid between *Ilex cassine* x *Ilex opaca*. The specimen in the cemetery is a female, easily identified by the abundance of red berries present in the fall and winter (with residuals still present during this assessment). These trees are frequently chosen by landscape architects since rows present a very uniform appearance, they are drought resistant, and suitable for stressed urban environments – all features that are not necessarily appropriate in the cemetery setting. This tree also tends to droop, requiring aggressive pruning, which is clearly visible in this tree. Again, the most unfortunate feature of this tree – at least in this cemetery setting -- is its attractiveness to birds and the resulting soiling of stones.

The cemetery is today surrounded by a holly hedge, identified as Foster's Holly (*Ilex* x *attenuata* 'Fosteri'). This represents a chance hybrid between a narrow-leafed form of the Dahoon Holly (*I. cassine* var. *angustifolia*) as the female parent and American Holly (*I. opaca*) as the male. The cemetery plantings are the typical "Foster No. 2," a female clone that produces an abundance of red, pea-sized fruit even on young plants. The male pollinator of the Foster set is 'Foster No. 4,' but male American hollies will also pollinate the female "No. 2." With a possible height of 30 feet and spread of 10 feet, this is another plant often used by landscape architects. With abundant berry production this hedge is providing additional soiling for the stones in the cemetery. The typical pyramidal crowns are clearly seen in Figure 11, where pruning has not been consistent, allowing individual plants to escape the hedge formation.

It is extremely unfortunate that the hollies replaced a far more historically appropriate – and attractive – privet (*Ligustrum* sp.) hedge. Privet shrubs reach a height of 4 to 15 feet with a spread of 4 to 8 feet. They bear white flowers in late spring-early summer; berries succeed the flowers. They tolerate – in fact thrive – with heavy pruning and form excellent hedges. Even this plant, however, produces fruit that is attractive to birds and will soil stones.

Maintenance Issues

Maintenance involves at least four basic issues: watering, fertilization, pruning, and pest control.

Facilities Operation does not, on a routine basis, water plantings in the cemetery, relying instead on rainfall. While this is typically acceptable, the landscape plan should include provisions for deep-root water during periods of drought. Using a root feeder without fertilizer, it is possible to apply water 12-inches below the surface. This approach can not only be used during drought, but also during extended periods of dry weather during the winter (as long as the temperatures are above freezing).

There are also no provisions to provide deep root fertilization – an approach where the liquid fertilizer is injected into the soil with a probe, typically 6 to 12-inches below the surface at a spacing of about 2 to 3 feet. This process not only provides fertilization, but also some aeration of the soil. An alternative approach used a drill to excavate holes in a similar pattern which are then filled with a granular fertilizer. Either is acceptable.

While shoot growth (growth occurring in the present year) and foliage color are often used as indicators of nutrient deficiency, the best indicator of whether fertilization is necessary is a soil test. Samples should be taken every 3 to 5 years to determine whether any macro or micronutrients are lacking.

It is best to fertilize trees when they are actively growing and have available water to help absorb nutrients. In Portsmouth this is typically from the spring, after new leaves emerge, through mid-season. Fertilizer should not be applied late in the season or during periods of drought.

As with trees, the best indication of the need for shrubbery fertilization is a soil test, which should be performed at least every two to three years. While some shrubs provide an indication of deficiency through the yellowing of lower leaves, such evidence can be missed and does not indicate the extent of the problem.

Where fertilization is necessary most shrubs, because of their shallow root systems, respond adequately to broadcasting the appropriate organic fertilizer around the base of the plant, typically at the drip line.

Most shrubs should be fertilized when they are actively growing and have available water to help absorb nutrients. Broad-leaved evergreens, such as holly, are best fertilized in

the winter or spring. Summer or fall fertilization of these plants may induce late season growth that is highly susceptible to winter injury. Some plants which exhibit episodic growth may benefit from a more continual fertilization program based on soil analysis and plant growth response.

In a cemetery setting organic fertilizers should be the primary choice. These materials, such as cottonseed meal and bone meal, have much lower salt indices than inorganic fertilizers – resulting in reduced salt uptake by monuments. This is important since salts cause staining, spalling, and deterioration of marbles, sandstones, brick, and even granites. In addition, organic fertilizers have a slower release rate and are easy on the root systems.

The trees should be evaluated for pruning for either thinning or cleaning. Thinning is a technique of pruning that removes selected branches to increase light and air movement through the crown. This also decreases weight on heavy branches. The natural shape of the tree is retained and its overall health is improved. In cleaning, the pruning removes branches that are dead, dying, diseased, crowded, broken, or otherwise defective. This includes narrow crotches.

Trees should be pruned in such a manner as to preserve the natural character of the plant and in accordance with ANSI A300 (Part 1) - 2001 standards.

In pruning, branches should always be cut just beyond the branch collar (an extension of the main stem) and not flush with the trunk. Large branches should be removed with three cuts to prevent tearing of the bark which can weaken the trunk and lead to disease.

Trees should be inspected for potential threats to monuments, as well as general health. Ideally these inspections should be made yearly and after any storm where the winds exceed 55 mph. They should be pruned to remove potentially hazardous dead wood on a yearly basis, but safe pruning every 5 years by a certified arborist is acceptable. Plywood shelters or timber cribbing should be used as necessary to protect stones and monuments during the pruning process.

Shrubbery pruning at the Portsmouth Naval Cemetery is limited to the holly hedge. At the time of our visit, the hedge was uneven and in need of pruning.

When shrubs are headed back or sheared routinely (a very bad policy), a lot of dense, thick new growth is produced near the outer portions of the canopy. As a result, less light reaches the interior portions of the plant, leaves within the canopy become sparse, and the plant appears stemmy and top-heavy.

To avoid this problem, head back the shrub's shoots to several different heights. When heading back, make the cut on a slight slant one-quarter inch above a healthy bud. The bud should be facing the direction preferred for new growth.

Thinning (cutting selected branches back to a side branch or main trunk) is usually preferred over heading back. Thinning encourages new growth within the interior portions of a shrub, reduces the size and provides a fuller, more attractive plant.

Pest Control

During this visit we observed no obvious evidence of pests or disease and we understand that relatively little pesticide is applied by the Navy. This is good since many pesticides, because of their salt content, can harm monuments. Where possible Integrated Pest Management practices should be implemented. Where chemical pesticides are necessary, they should be applied as a coarse spray to prevent drift and should be selected and applied by a licensed applicator (Virginia

Table 2.
ISA Certified Arborists in the Portsmouth Area

Name	Firm	Phone
Albert, Eric	Asplundh Tree Expert Co., Virginia Beach	804-357-6346
Brooks, Charles	Alley's Tree Removal, Virginia Beach	757-467-6407
Butler, Glenn	Streamline Tree Care, Inc, Virginia Beach	757-427-4461
Charlton, Dennis		757-718-6000
Clifton, Brian		757-857-2367
Crouch, Brian	Arbor Care, Virginia Beach	757-499-1143
Eaton, Thomas		757-483-0438
Edwards, Kimberly		757-479-2033
Erwin, Jack		757-473-2000
Espy, Justin	Nuckols Tree Care, Virginia Beach	757-441-5999
Hodges, Audrey	Daisyhead Inc, Virginia Beach	757-498-3910
Hoover, John		757-588-6302
Jones, Marcus		757-310-9685
Kern, Cherlyn		757-427-3909
Lopes, David		757-397-8088
McCarthy, William	Covenant Tree Care, Virginia Beach	757-822-5090
McGill, James		757-471-3224
Monroe, Edward	Nuckols Tree Care, Virginia Beach	757-467-5029
Nuckols, Timothy	Nuckols Tree Care, Virginia Beach	757-288-1875
Peevy, Chad		757-966-5662
Reed, G.W.	Beach Tree Service, Virginia Beach	757-499-1143
Richardson, Beth	Richscapes, Virginia Beach	757-495-8501
Senato, Garry	Arbor Tree Care, Virginia Beach	757-422-5448
Shirk, Houston	Avanced Arboreal Care, Virginia Beach	757-425-1995

Categories 3A – Ornamental Pest Control and 3B – Turf Pest Control).

Summary

The plantings at this cemetery are very limited and – in spite of these detailed discussions – this dramatically reduces the level of maintenance necessary. Nevertheless, maintenance is critical and there is no escaping the time involved. For example, routine pruning of the approximately 600 linear feet of holly hedge (likely comprised of about 60 to 80 individual plants) will require approximately one full day (the RS Means *Site Work and Landscape Cost Data*, for example, estimates that pruning each shrub ca. 6-feet in height will require 0.16 hour). The hedge should always be pruned in the early spring, just before new growth begins, but may also require light pruning two or three times during the growing year to keep it neat.

The cemetery, using an ISA certified arborist, should assess the health and condition of the existing trees and develop a long-term tree plan.

In particular as these two trees age and perhaps must be removed, the plan should specify replacements. These replacements should be of at least 2-inch caliper and meet the minimum requirements of the American Nursery and Landscape Association's American Standard for Nursery Stock (ANSI Z60.1-2004).

As the trees are being assessed, they should also be pruned and fertilized as necessary. All pruning within the Cemetery should be performed by an International Society of Arboriculture (ISA) Certified Arborist, preferably one who is also an ISA Certified Tree Worker/Climber Specialist. Table 2 provides a list of Certified Arborists for the immediate area.

Turfgrass Issues

The cemetery is covered in common bermudagrass (*Cynodon dactylon*). The choice of this grass at the Portsmouth facility is based entirely on the difficulty in eradicating the grass (which is also considered a weed in many circumstances) and cost in maintaining

Figure 14. Typical unsightly seed head production of bermudagrass.

alternative turfgrasses (we are told, for example, that the only other turfgrass on the base is a small area of isolated fescue).

Bermudagrass is a common warm season turfgrass in the South, possessing excellent wear and drought tolerance, and fair salt tolerance. In spite of its frequent use its disadvantages are numerous and include its difficulty to control, rapid growth rate, tendency to produce thatch, and abundant and unsightly seed heads (see Figure 14).

These characteristics are largely controlled through various hybrids (for example, Tifgreen and Tifdwarf are much lower growing and Midway has relatively few seedheads). Use of such varieties would require a base-wide approach and, while dramatically reducing maintenance in the long-run, would be costly in the short-run.

Mowing

Mowing is perhaps the most noticeable issue in maintaining bermudagrass in a formal (i.e., military) cemetery setting. Bermudagrass performs best when it is mowed between ¾ and 1½-inches in height – with the lower heights common on golf courses and higher heights found generally in lawns. Allowed to grow higher than 1½-inches, however, and Bermuda develops a turf with very poor wear tolerance that many find objectionable in appearance.

Unfortunately, the shorter the height, the more often the grass must be cut. At ½-inch, the grass must be cut about every 3 days; at 1½-inches cutting may be delayed to a 5 to 7 day interval. Under no circumstance should more than about 40% (some suggest 33%) of the leaf tissue be removed at any one mowing (thus, to maintain a height of ¾-inch the grass must be cut when it reaches about 1 inch and to maintain a height of 1-inch the grass must be cut when it reaches about 1½ -inches).

While we are told that generally the grass is cut weekly, we observed that cutting

Figure 15. Excessive growing height, with removal of nearly two-thirds of the tissue.

was being delayed until the grass was over 2-inches in height and was being cut back to ¾-inch (Figure 15). Allowing the grass to grow this high produces a shaggy, unkempt appearance, while reducing its height by nearly two-thirds dramatically stresses the grass.

While leaving the clippings on the lawn, called "grass-cycling" is generally a good approach since the clipping decompose and return nutrients to the soil, we found that in many cases the grass was so tall when cut that the clippings were building up on the stones (Figure 16). This is not good for the appearance of the cemetery, the stones, or the well-being of the turf.

Reel mowers produce the best cut on bermudagrass with the number of blades determining the smoothness of the cut. Common bermudagrass mowed at 1-inch or higher may use a reel with 5 or 6 blades. The use of rotary mowers is acceptable – as long as the blades are kept sharp.

At the Portsmouth Cemetery rotary mowers with 60 or 72-inch mower decks are being used and at least at the time of our visit much of the grass was being torn, rather than cleanly sheared, indicating that blades needed sharpening.

In general such large riding mowers are not recommended for cemetery settings – they are more difficult to control and tend to cause considerable damage in tight quarters. With the arrangement of the Portsmouth Cemetery, however, their use may be acceptable, but only with very careful attention.

We identified much damage on the stones that indicates care has not always been shown. Figure 17 shows several stones where the damage is clearly associated with inattentive mower deck operation. In one case there is even paint from the mower adhering to the stone.

We recommend that all mower decks be padded using closed cell foam attached by drilling the deck or using a non-tacky adhesive. This will help protect stones from occasional and inadvertent damage.

In addition to mowing, nylon trimmers are used around monuments, coping, fencing, and plantings. This is an acceptable practice, but it is critical that a very light weight line be used – along with worker attention – to minimize damage to soft stone such as marble. Although the staff thought that .095 or .105-inch line was being used, we discovered during our assessment that lines up to .155-inch were present as discards in the cemetery. We recommend that no line heavier than .065, or at most .095-inch, be allowed in the cemetery. This will require careful attention of the supervisory

Figure 16. Grass clippings built up on stones in the cemetery.

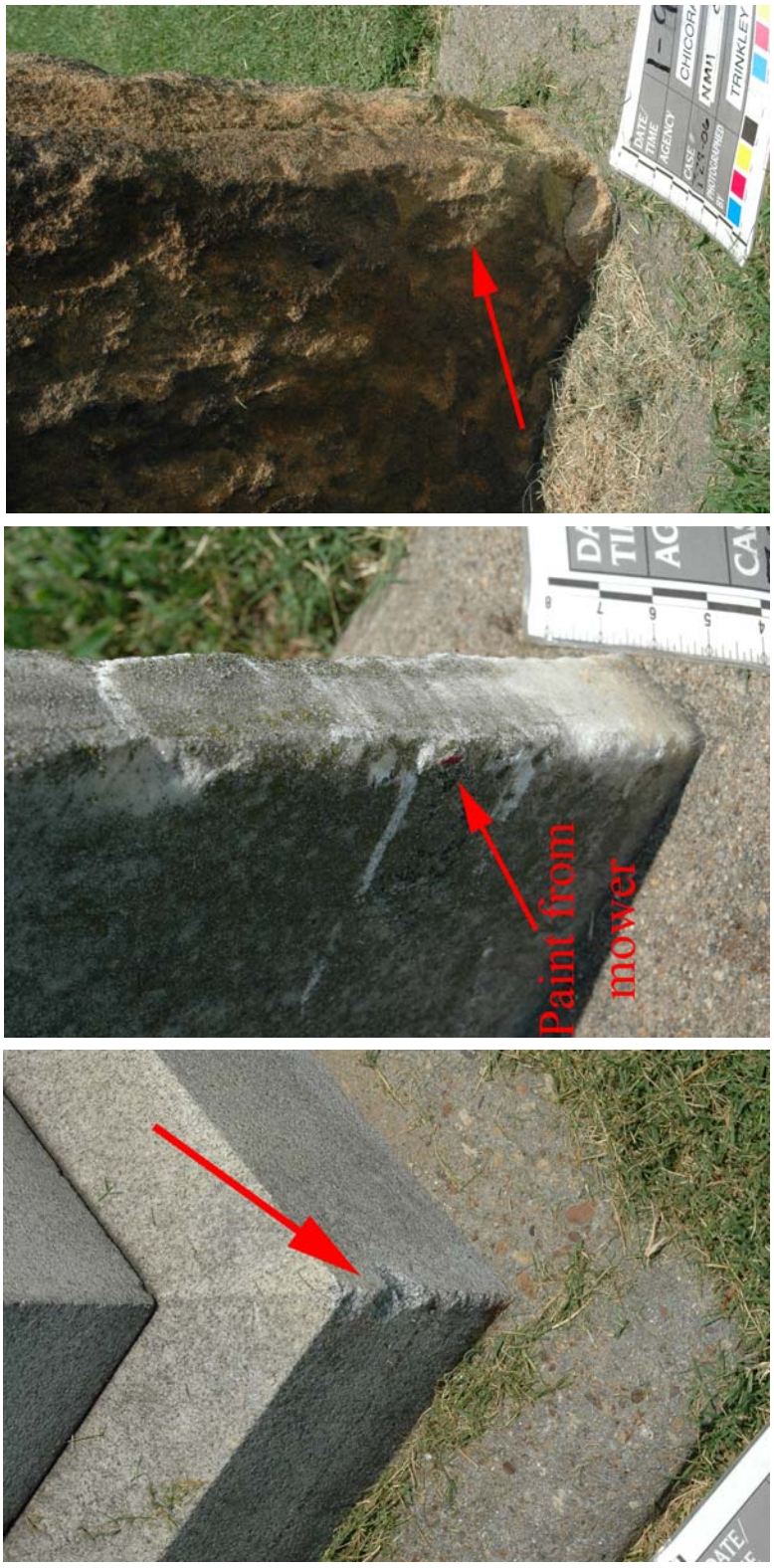


Figure 17. Examples of damage caused by mowers in the cemetery.

Figure 18. Nylon trimmer damage.

staff since technicians will want to use a heavier line to reduce their work and speed the process. Figure 18 illustrates one stone with abundant striations typical of aggressive nylon trimmer damage.

Fertilization and Weed Control

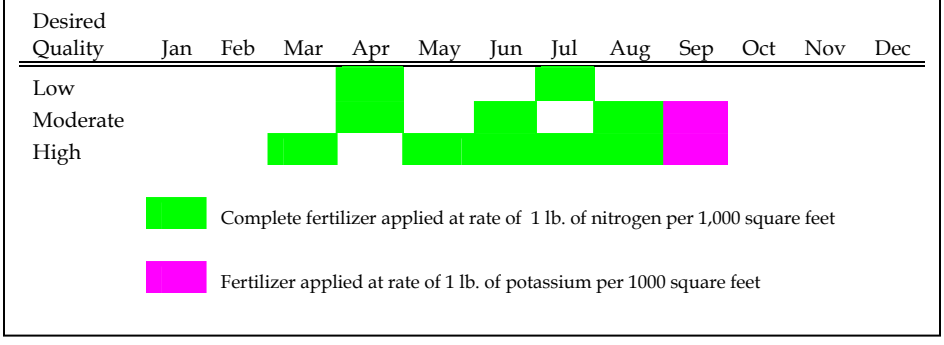
While Facilities Operation does not conduct routine soil tests, we understand that fertilizer is applied once a year, with the specific formulation used depending on whatever is available at the time. This is clearly not the best technique and we strongly recommend that fertilization be based on the needs as specified by routine soil tests. Such tests are performed by the Virginia Tech Soil Testing Laboratory in Blacksburg, Virginia (see http:// www.ext.vt.edu / pubs / compost / 452-129/452-129.pdf for additional information).

In general bermudagrass desires a soil pH between 6.5 and 8.0. Otherwise, the use of the turf and its desired appearance (in addition to the soil test) will dictate the amount of fertilization. For top appearance, heavier fertilization will be required, with multiple, light applications of nitrogen and a yearly application of potassium. Table 3 shows a typical fertilizer regimen based on desired maintenance and appearance. In the absence of a soil test a complete fertilizer is generally considered to have a 4-1-2 ratio, such as 16-4-8. To achieve the recommended level of about 1 pound of nitrogen in the cemetery it would be necessary to apply about 272 pounds of 16-4-8.

We understand that currently an inorganic fertilizer is used. As previously discussed, *in order to minimize salt uptake by the stones, slow release organic fertilizers should be used and inorganic fertilizers should be avoided.*

Facilities Operations treats the lawn only once yearly for broadleaf weeds. In general it is recommended that bermudagrass receive pre and postemergence treatments to control summer annual and perennial broadleaf weeds between March and May, using a product labeled for this grass. Often additional treatments are needed

Table 3.
Suggested Fertilization Schedule Based on Desired Quality



again in September through November. Winter applications are generally needed only if chickweed, henbit, hop clover or similar weeds become a problem.

Many herbicides contain salts and these can migrate into stones (especially sandstones and marbles), causing discoloration, spalling, and other damage. Thus the use of herbicides should be held to a minimum and the reduced rates being used by Facilities Operations is actually good practice. Should additional applications be necessary it may be possible to avoid broadcast applications and, instead, use a coarse spray to treat limited areas.

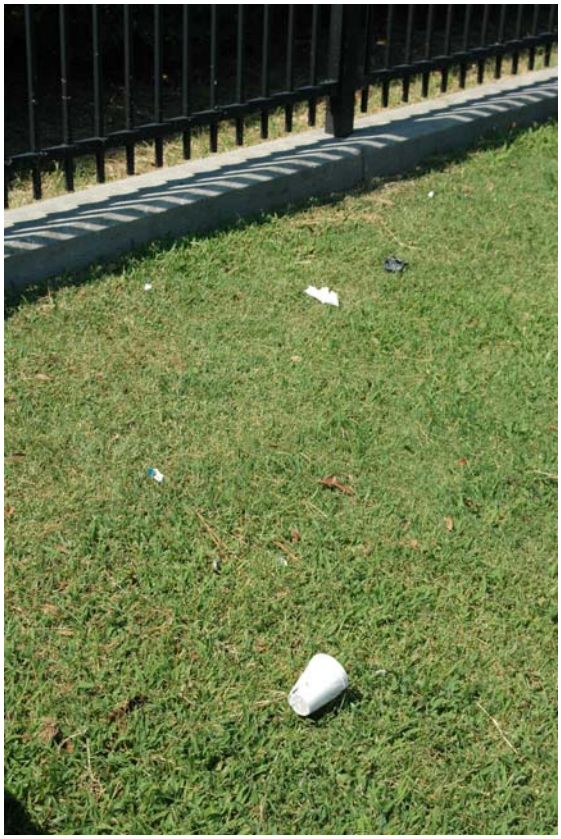


Figure 19. Trash observed in the cemetery during this assessment.

Pest Control Practices

Similarly, the cemetery does not undertake any pest control practices. Mole crickets and white grubs are generally the most common pests of bermudagrass, although fire ants arrived in Virginia in 1989, today confirmed in eight counties and ten independent cities (including Hampton, Newport News, and Virginia Beach).

If fire ants are identified in the cemetery we recommend minimally that individual mounds be treated with a product such as Amdro (hydramethylnon). An even better approach is the use of Amdro as a broadcast fire ant bait while fire ants are foraging. After 10-14 days it should then be used as an individual mound treatment on any mounds that continue to be a problem. This approach should be used twice a year, typically in April or May and again in September or October.

Irrigation

The general irrigation recommendation for bermudagrass is between 1 and 1¼-inches per week, with sandy soils at times requiring upwards of ¾-inch of water every third or fourth day. This turf, however, has the ability to become semidormant during drought and to recover from stolons and rhizomes when moisture returns.

We understand that no watering is conducted at the cemetery and no irrigation is in place. Although this is acceptable, Facilities Operations should have a procedure in place to provide spot irrigation under situations of severe stress.

Summary

Bermudagrass (especially common bermuda) is not the most ideal cemetery grass – especially for a military cemetery where public perception and expectations may demand a particular appearance. It is very fast growing and requires frequent mowing to maintain a minimal appearance. Facilities Operations, while mowing weekly, fertilizing only once yearly, applying only one postemergent

herbicide application, and avoiding irrigation is at the lowest possible level of maintenance.

It is not possible to reduce maintenance any further and have the cemetery meet even the most minimal level expected for a military cemetery.

In fact, we strongly recommend changes in mowing and trimmer use that may increase maintenance needs in order to better care for the historic fabric of the cemetery.

At this most minimal level of care, RS Means *Site Work and Landscape Cost Data* suggests that this 1-acre cemetery will require about 1 hour to mow and 8.4 hours to trim. The mowing estimate – especially given the care needed – is low and we recommend that it be revised upward to approximately 3 hours. The trimmer work, in contrast, is probably slightly high and we anticipate that the trimmer work will require only 8 hours. Consequently, for scheduling purposes, Facilities Operations should anticipate weekly mowing to take one individual about 1.5 days per week. Other routine maintenance, such as trash pick-up, fertilization, shrub pruning, etc. will require the remainder of the time.

We again emphasize that this represents the absolute minimum and it seems likely that the public will anticipate that a cemetery honoring the Country's military dead will be given an even higher standard of care.

Efforts to reduce the time involved in the care of the cemetery will necessarily result in a decline in the appearance of the cemetery – and a decline in the condition of the stones.

Recommendations

The absolute minimum level of staff required by the cemetery is two-person days per week for a maintenance individual and one-day per week for staff supervision.

Continuity of staffing, appropriate training, and careful supervision are additional critical elements in the long-term care and appearance of the cemetery. All staff should achieve certification through one or more of several landscape programs, with an emphasis on turfgrass, ornamental plants, and maintenance.

Tree and plant selection within the Cemetery (for example as eventual replacement for the two currently present trees) should be focused on historically appropriate species, based on period lists and known cemetery use. Species should, however, be evaluated to eliminate those with problems such as suckers, surface roots, inherent weakness, etc. The Cemetery should develop a tree plan to ensure that when any tree must be removed, an appropriate replacement is planted in its place.

Trees within the cemetery should be fertilized on a routine basis and should be professionally evaluated and pruned at least once every 5 years by an ISA Certified Arborist. All trees should be inspected yearly and after any storm with winds in excess of 55 mph.

ISA Certified Arborists should be responsible for tree pruning and maintenance.

The cemetery shrubbery requires attention at least yearly and probably 2-3 times a year.

The cemetery must be mowed no less than weekly.

Greater care is necessary to prevent damage of stones during mowing. We recommend that all mowers used in the cemetery be equipped with closed cell foam padding.

The nylon trimmer line being used by Facilities Operations is too heavy and is damaging the stones. It should be replaced with a line no thicker than .065-inch (or at the very most .095-inch).

Soil analysis should be conducted to determine if adjustments are necessary for the turfgrass. Use of inorganic fertilizer must be

halted, with only organic, slow release fertilizers used on the cemetery grounds.

OTHER MAINTENANCE ISSUES

Signage

Signage is to some degree discussed by "Appendix J: Design Guidelines for Construction Activities Affecting Historic Resources" in the *ICRMP: Naval Medical Center Portsmouth*. It is to be "exclusively informational and directional," "used only where absolutely essential," "regulatory signs . . . should be kept to a minimum," and "should not block or obscure character defining features of historic resources." From a cemetery preservation perspective signage is of four basic types: identification, regulatory, informational, and interpretative. They are generally recommended in this same priority.

Identification signage might include the name of the cemetery and might also include the cemetery's date of founding and historic significance (i.e., eligible for listing on the National Register).

The Portsmouth Naval Cemetery is not identified until one is in the middle of it. Even then the sign offers nothing concerning the history or importance. Appropriate signage would help visitors learn about the history of the cemetery and the hospital.

There is much to tell. Why and how did four Russians happen to be buried in this cemetery? What is story associated with the cemetery's movement from its original location? When was it founded? When was it last used? The history of this cemetery – and those buried there – has been ignored and this should be immediately corrected through appropriate signage.

Regulatory signage specifies laws, regulations, or expected standards of behavior. We observed no regulatory signage during the assessment. It may be that the Navy feels that posting of such signage is unnecessary. This is a mistake. We recommend that the base develop signage dealing with, minimally, these issues (perhaps with some modifications of language as might be needed):

- Many of the stones in this cemetery are very old and may be easily damaged. Consequently, absolutely no gravestone rubbings will be allowed.

- The stones and monuments in this cemetery are fragile. Please refrain for leaning, sitting, or climbing on any monument or mausoleum. All children must be escorted by an adult.

- Absolutely no alcoholic beverages or fireworks are allowed in the cemetery. Proper conduct is expected at all times.

- No pets are allowed in the cemetery.

- Flowers will be removed by the staff 10 days after holidays or when the arrangements become wilted and unsightly.

- No plantings are allowed within the cemetery and the Navy will enforce its right to remove any plantings deemed inappropriate, diseased, or damaging the cemetery.

- For additional information concerning maintenance issues, please contact Facilities Operations at 757-953-7522. In case of emergency contact _____.

Both identification and regulatory signage should be located at the entrance to the cemetery, immediately outside its boundaries.

The last two types of signage are informational (for example, directional signs) and interpretative (information on historic people buried in the cemetery). The only informational signage is the one plaque in the middle of the cemetery that lists all burials. We believe that any additional signage within the cemetery would detract from its solemn dignity and give the small grounds a cluttered appearance – consequently no additional informational or interpretative signage is recommended.

Flowers and Other Grave Decorations

In keeping with the solemn dignity of a military cemetery it is our belief that artificial flowers should be prohibited and that only potted or cut flowers or arrangements should be allowed. These should be removed within seven days or once they are wilted or otherwise unsightly.

Grave decorations – including flags – should be treated in a similar fashion. It is never acceptable to have worn, tattered, discolored, or frayed flags, of any nationality, within the cemetery. They should be placed and promptly removed after the holiday or ceremony.

Alteration and Inappropriate Setting of Military Stones

Perhaps the single most regrettable maintenance decision in the cemetery has been the setting of stones in concrete. There is absolutely no acceptable rationale or excuse for this mutilation, most especially at a military cemetery. There are several reasons why the use of concrete should be avoided:

- Concrete is an unforgiving material that adheres tenaciously to stone, making removal impossible (and thus violating the Secretary of the Interior's requirement that, "Treatments that cause damage to historic materials will not be used" as well as the conservation ethic that treatments, whenever possible, be reversible).

- Concrete may contain a variety of impurities and salts that can leach into and affect the long-term stability of the stone.

- Concrete fails to serve any significant function. For example, Figure 17 clearly reveals that it has not protected the stones from physical damage.

In sum, concrete damages the stone and limits other, appropriate treatment options. The setting of stones in concrete at the Portsmouth Naval Cemetery was a tragic error. This demonstrates the importance of consulting with a stone or architectural conservator prior to taking actions in the cemetery.

In addition, virtually all of the stones set into concrete have continued to sink, increasing – not decreasing – the amount of maintenance required. For example, the Facilities Maintenance receives complaints that the flag holders are no longer visible and they must spend several days removing built-up soil (largely resulting we suspect from the mulching of the bermudagrass clippings) from around the stones.

We notice that most of the military stones in the cemetery are set exceedingly low – much lower than intended. While one or two inches may be the result of setting (mentioned above), this is not adequate to explain the departure from the appropriate setting height.

In our examination of these concrete bases we also discovered that some stones have

Figure 20. Comparison of three very similar stones showing extreme differences in setting heights, ranging from 48-inches (far left) to 39-inches (middle) to 19-inches (far right).

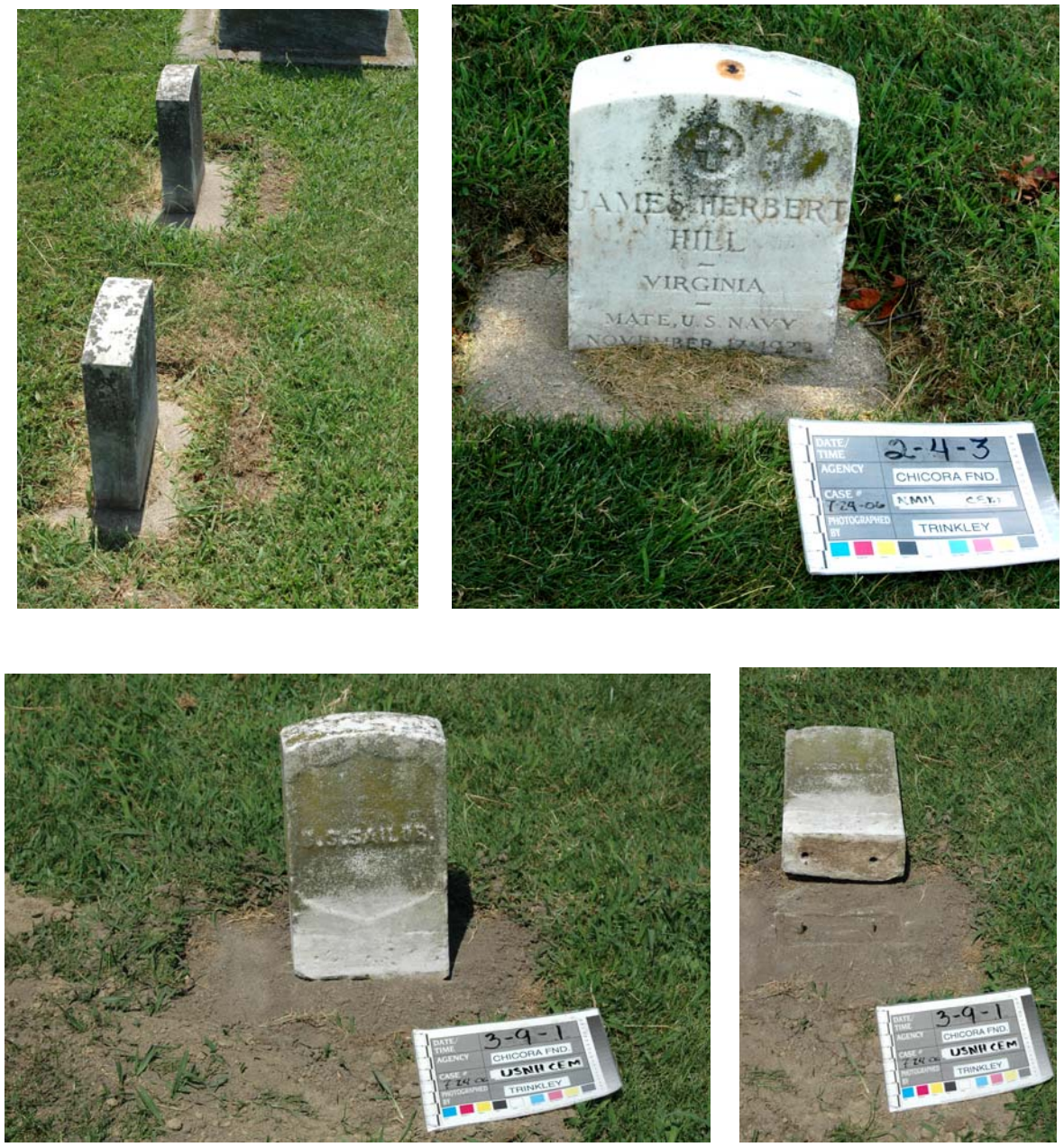


Figure 21. Stones inappropriately set in concrete. Top left shows several military stones set in individual concrete pads Note also the grass is being scalped to the rear of the stones and the collection of clippings in the sunken pads. Top right shows the dramatically reduced height of the stones, with the inscription almost obscured by concrete (in some cases the shield is partially obscured). Bottom left shows a stone set in concrete. Bottom right shows the same stone removed, revealing that it was broken, drilled, and set about ⅛-inch into wet concrete on two brass pins.

been drilled and set into the concrete on brass pins. It is uncertain if stones were intentionally reduced in height or if these may represent broken stones that were reset.

In either case, this is inappropriate. Broken stones might either be repaired or will be replaced without charge by the Department of Veterans Affairs. Reducing their height and setting them in concrete is never an acceptable treatment strategy.

Monument Maintenance

During this assessment a small number of previously repaired monuments were identified. Nearly without exception these old repairs are substandard in both materials and workmanship. To complicate matters there appears to be no record of when or by whom these repairs were made.

We have identified two problem areas and each will be briefly addressed below:

- Repair of marble, and
- Cleaning of monuments.

Repair of Marble

We observed several marble repairs in the Cemetery with most exhibiting a variety of significant flaws. In several an epoxy or elastomeric-type material has been used with substandard workmanship. The material itself is poorly matched in color or texture to the stone.

In each case the repairs were "simple" – meaning that epoxy or adhesive material was applied to the broken edges and the stone butted together. Unfortunately, this repair technique rarely survives for any length of time and when it fails there may be additional damage to the stone.

In several other cases we observed stones where repairs had been made using a white Portland cement. Unfortunately this material is entirely too hard for marble. In addition, the repair material has been applied so thickly and poorly that it has defaced the marker, making future repair far more difficult and costly.

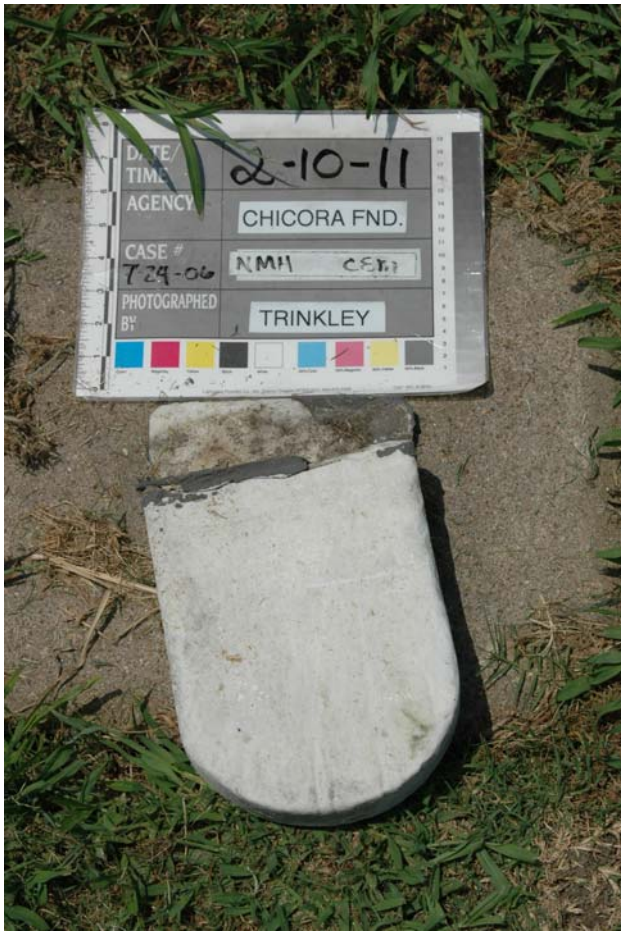


Figure 22. Inappropriate epoxy-like repair that has failed.

There is no single specification for the repair of marble or sandstone, but in general we can caution the Navy that modern monument dealers (and the general public) are unfamiliar with historic stone and have little or no appropriate experience in its care and repair. When repairs of old stones are needed, only a stone conservator who subscribes to the

Figure 23. Use of white Portland cement to reinforce a monument, dramatically increasing it thickness and changing its overall character.

Standards of Practice and Code of Ethics of the American Institute for Conservation of Historic and Artistic Works (AIC) should be retained.

Cleaning of Monuments

Cleaning is largely an aesthetic issue at the Portsmouth Naval Cemetery – we saw few examples where soil or biologicals were actually causing damage to the monuments. We also observed little evidence of cleaning efforts and, fortunately, no evidence of inappropriate cleaning damage.

Nevertheless, it is appropriate to ensure that Facilities Operation understands that many cleaning techniques – especially those used by commercial contractors involving high pressure, abrasives, and bleach products – are entirely inappropriate for historic markers. Table 4 discusses problems with a variety of "common" stone cleaning processes used by commercial firms.

Cleaning – even when done correctly – will gradually erode monuments, making them susceptible to more soiling and damage. Consequently, cleaning should be conducted no more frequently than perhaps once every 5 years. The safest commercial product for cleaning is D/2 Architectural Antimicrobial distributed by Cathedral Stone.

Ironwork Maintenance

Every effort should be made to retain all existing ironwork, regardless of condition. Replacement with new materials is not only aesthetically inappropriate, but often causes galvanic reactions between dissimilar metals. When some of the existing ironwork is incomplete, a reasonable preservation solution is to repair and maintain the remaining work rather than add historically inappropriate and incorrect substitutes. If replacement is desired, salvage of matching elements is preferred over recasting. Replication is typically not an appropriate choice since it is by far the most expensive course of action, and is often done so poorly.

The single best protection of ironwork is maintenance — and this revolves around painting. We have previously outlined specific steps and materials to use, focusing on minimal cleaning, followed by two coats of a rust

Table 4.
Comparison of Different Cleaning Techniques

Cleaning Technique	Potential Harm to Stone	Health/Safety Issues
Sand Blasting	Erodes stone; highly abrasive; will destroy detail and lettering over time	Exposure to marble dust is a source of the fatal lung disease silicosis
Pressure Washers	High pressure abrades stone. This can be exacerbated by inexperienced users. Pressures should not exceed 90 psi.	None, unless chemicals are added or high temperature water is used.
Acid Cleaning	Creates an unnatural surface on the stone; deposits iron compounds that will stain the stone; deposits soluble salts that damage the stone	Acids are highly corrosive, requiring personal protective equipment under mandatory OSHA laws; may kill grass and surrounding vegetation
Sodium Hypochlorite & Calcium Hypochlorite (household and swimming pool bleach)	Will form soluble salts, which will reappear as whitish efflorescence; can cause yellowing; some salts are acidic	Respiratory irritant; can cause eye injury; strong oxidizer; can decompose to hazardous gasses
Hydrogen Peroxide	Often causes distinctive reddish discolorations; will etch polished marble and limestone	Severe skin and eye irritant
Ammonium Hydroxide	Repeated use may lead to discoloration through precipitation of hydroxides	Respiratory, skin, and eye irritant
D/2 Architectural Antimicrobial	No known adverse effects, has been in use for nearly 10 years	No special precautions required for use, handling, or storage

converter and a final top coat of a flat or semi-gloss alkyd paint.

Responsibility for Repair and Maintenance

We understand that it has been suggested that the families should be identified and made responsible for markers at the Cemetery. This interpretation of federal responsibilities is misguided.

The base cemetery may be viewed in two complementary contexts: (1) DoD responsibility for a base cemetery under existing Instructions and (2) DoD responsibility for a base cemetery as a historic property eligible for or listed on the National Register of Historic Properties.

The DoD Instructions clearly define cemeteries as "improved grounds" and that lands in classification must be maintained at a degree necessary to present a desirable appearance and "protect [the] government investment." There is no provision for demanding that families – many of which may no longer be existent – pay for repairs or maintenance of monuments in government cemeteries. Such a demand can only be viewed as insulting to those who served their country and are buried with military honor. Moreover, such a practice would result in memorials to the military dead declining in both appearance and safety, causing not only liability to the DoD, but dishonoring the memory of those who served our country.

In the case of properties such as the Portsmouth Naval Cemetery, listing on the National Register places additional and separate legal responsibilities on the base commander. The cemetery must now receive a level of care and maintenance that prevents "demolition through neglect" and ensures that no federal action (or inaction) affects the property without first complying fully with the National Historic Preservation Act.

Recommendations

There is only minimal signage at the Portsmouth Naval Cemetery. We recommend appropriate informational and regulatory signage within the context of "Appendix J: Design Guidelines for Construction Activities Affecting Historic Resources" in the *ICRMP: Naval Medical Center Portsmouth.*

A variety of inappropriate and damaging monument repairs and maintenance activities are documented at the cemetery. The most damaging has been the resetting of monuments in concrete. This practice should cease immediately. Appendix 2 offers specifications for resetting and mitigation of damage done to date.

In-house repair of stone monuments should cease immediately. All required work should be performed by a stone conservator subscribing to the Code of Ethics and Standards of Practice of the American Institute for Conservation (AIC).

Cleaning should be performed under the direction of a stone conservator. Cleaning should be limited to low pressure water and the use of D/2 Architectural Antimicrobial or equivalent.

PRIORITIES AND FUNDING LEVELS

Recommended Priorities

Table 4 lists the recommendations offered throughout this assessment, classifying them not only by priority, but also by responsibility.

Priorities are identified here as First, Second, or Third:

> First priorities are those we recommend undertaking during the current fiscal or calendar year. These are largely issues that have the potential to affect the public health and safety and consequently require immediate attention.
>
> Second priorities are those which should be budgeted for over the next 2 to 3 years. They represent urgent issues that, if ignored, will result in both significant and noticeable deterioration of the Portsmouth Naval Cemetery as a historic resource.
>
> Third priorities are those that may be postponed for 3 to 5 years. They are issues that can wait for appropriations to build up to allow action. Because they are given this lower priority, however, they should not be dismissed as trivial or unimportant.

The proposed budget for immediate actions this fiscal or calendar year, therefore, is approximately $179,900 (excluding in-house staff costs). While a significant sum, all of the tasks are critical issues, representing safety and health issues or maintenance activities that have been so long deferred that additional postponements are imprudent (or, if deferred, the cost will continue to exponentially escalate). The single largest part of this cost ($150,000) is the resetting of approximately 500 stones – an issue that the Navy has established as a very high priority and identifies as a task that cannot be conducted in-house.

The Second Priority issues are equally modest – reflecting only $87,100 (excluding in-house staff costs) that can be spread over three years – reflecting a per year budget of only $29,000. Again, this represents such a modest amount given the extraordinary significance of the Naval Cemetery and the DoD commitment to its deceased military family – it should raise no concerns on the part of the base. It should be obvious that this amount is as high as it is because of years of deferred maintenance and neglect.

The Third Priority issues represent only $1,700. Of course, there are on-going costs – just as there are for any resource of value to the nation and community. Just as parks or water service or police protection have yearly costs, so too do historic resources. The problem is that the Portsmouth Naval Base has, for years, deferred these costs, creating cumulative problems that now must be addressed or else the resource will be so degraded that its continued significance to the community will be doubtful.

Table 5.
Prioritization of Recommendations

Priority	Recommendation	Tasked	Budget
First – this fiscal or calendar year	Formalize policy that all decisions at the Portsmouth Naval Cemetery will be made in the context of the Secretary of the Interior's Standards for Preservation.	In-house	n/c
	Ensure that the eastern gate, into the maintenance facility, is kept closed at all times	In-house	n/c
	Establish informational signage at the entrance to the cemetery	Contract	$5,000
	Arrange assistance for handicapped visitors to the cemetery and ensure that base personnel are familiar with these provisions.	In-house	n/c
	Ensure that security patrols routinely visit the cemetery, especially on weekends and over holidays.	In-house	n/c
	Establish policy and procedures to identify, report, and respond to damage, vandalism, and theft within the cemetery.	In-house	n/c
	Formalize staffing at the cemetery to ensure adequate maintenance (weekly mowing, appropriate turfgrass fertilization and broadleaf control, trimming of the surrounding hedge 2-3 times a year, and other tasks as needed). It is particularly important to improve overall mowing care to prevent damage to stones.	In-house	n/c
	Establish a planting/tree plan to ensure that in the future only historically appropriate plantings are used.	Contract	$5,000
	Require staff certification, phased in over several years.	In-house	n/c
	Change all trimmer line used in the cemetery to a thickness of no greater than .065-inch.	In-house	n/c
	Have trees inspected by a certified arborist and treated as necessary.	Contract	$5,000
	Conduct yearly soil tests to evaluate fertilization needs.	In-house	$200

Table 5, cont.
Prioritization of Recommendations

Priority	Recommendation	Tasked	Budget
First – this fiscal or calendar year, cont.	Formalize policy that all treatments, including cleaning, will be conducted by or under the supervision of a trained stone conservator.	In-house	n/c
	Conduct first priority stone conservation.	Contract	$2,900*
	Reset approximately 500 military stones.	Contract	$150,000*
	Replace approximately 20 damaged military markers that cannot be repaired.	Contract	$10,000*
Second – over next 2 to 3 years	Collect historic documents pertaining to the cemetery and make appropriate arrangements for long-term curatorial care (on-base, through National Archives, or through other historical organization.	Contract	$20,000
	Establish dedicated parking for the cemetery, including appropriate handicapped parking and appropriate curb cut into the cemetery.	In-house	$5,000
	Photographically document all stones, plots, and other memorials in the cemetery.	Contract	$15,000
	Conduct appropriate maintenance of boundary fence including spot sanding and repainting.	Contract	$20,000
	Remove all lead based paint on cemetery monuments, fences, and chains in preparation of conservation treatment.	Contract	$5,000
	Establish informational signage at the entrance to the cemetery.	Contract	$5,000
	Conduct second priority stone/fence conservation.	Contract	$17,100*
	Reset stones using in-house staff.	In-house	n/c
Third – over next 3 to 5 years	Conduct third priority stone conservation.	Contract	$1,700*

* Costs do not include travel, per diem, or lodging

APPENDIX 1. RESUME FOR MICHAEL TRINKLEY

MICHAEL TRINKLEY

Chicora Foundation, Inc.
P.O. Box 8664 • 861 Arbutus Drive
Columbia, South Carolina 29202
803/787-6910

Education/Training

1974	B.A., Anthropology, University of South Carolina, Columbia
1976	M.A., Anthropology, University of North Carolina, Chapel Hill
1980	Ph.D., Anthropology, University of North Carolina, Chapel Hill
1997	Non-Destructive Investigative Techniques for Cultural Resource Management, NPS Workshop, Fort Scott National Historic Site, Fort Scott, Kansas (geophysical techniques)
1999	Jahn Installer Workshop, Cathedral Stone Products, Inc., Jessup, Maryland (3 days) (certified installer 9906811-SC)
2001	Preservation & Care of Brownstone Buildings, Technology & Conservation Conference, Boston, Massachusetts
2003	Lime Mortar Workshop, U.S. Heritage, Chicago, Illinois
2004	Preservation Masonry Workshop, School for the Building Arts, Charleston, SC (2 days)
2005	International Lime Conference, Orlando, Florida
2005	Edison Coatings Workshop, Richmond, Virginia (1 day)
2005	Historic Masonry Preservation Workshop, John Lambert, Campbell Center for Historic Preservation Studies, Mt. Carroll, Illinois (1 week)
2005	Preservation Masonry Workshop, College for the Building Arts, Charleston, SC (2 days)

2005	Masonry Analysis & Testing Workshop, Berkowitz and Jablonski, Campbell Center for Historic Preservation Studies, Mt. Carroll, Illinois (1 week)
2005	Jahn 4-Hour Workshop, Cathedral Stone Products, Columbia, SC
2006	Stone Carving and Restoration Workshop, Traditional Building Skills Institute, Snow College, Ephraim, Utah (3 days)

Memberships

American Institute for Conservation of Historic and Artistic Works
US/ICOMOS – Brick, Masonry & Ceramics Committee
Association of Preservation Technology
Preservation Trades Network
National Trust for Historic Preservation
Association of Gravestone Studies

Abstract of Cemetery Conservation/Preservation Experience (not inclusive of legal/archaeological experience):

1992	Reviewer of National Trust for Historic Preservation publication on historic cemeteries publication by Lynette Strangstad.
1998-99	Principal Investigator, Survey and Documentation of African-American cemeteries in Petersburg, Virginia. Including mapping, grave location, and development of historic context. (with Preservation Consultants, Charleston, SC).
1998-99	Conservation activities, Maple Grove Cemetery, Maple Grove United Methodist Church, Waynesville, North Carolina.
1999	Instructor, Cemetery Preservation: Making Good Choices Workshop, Virginia Association of Museums, Petersburg, Virginia.
1999	Instructor, Cemetery Preservation: Making Good Choices Workshop, Georgia Local History Conference, Augusta, Georgia.
2000	Consultation regarding maintenance and clearing of Ricefield's Woodville Cemetery, Georgetown County, South Carolina.
2000	Invited Speaker, Cemetery Conservation Techniques, Historic Cemetery Preservation Workshop, Maryland Historical Trust, Annapolis, Maryland.
2000	Preservation assessment, Summerville Cemetery, Augusta, Georgia.
2001	Assessment and preservation plan for Glenwood Cemetery, Thomaston, Georgia.
2001	Reconnaissance survey of cemeteries in Richland County, South Carolina.

2001	Preservation guidelines for St. Paul's Cemetery, Augusta, Georgia.
2001	Instructor, Cemetery Preservation: Making Good Choices Workshop, Restoration International Trade Event, New Orleans, La.
2001	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2002-2003	Conservation program, Old Waxhaws Presbyterian Cemetery, Lancaster County, South Carolina.
2003	Treatment of markers at the Vardeman Cemetery, Lincoln County, Kentucky.
2003	Consultation concerning cemetery walls and pathways, Maple Grove Cemetery, Waynesville, North Carolina.
2003	Invited Speaker, Preservation of African American Cemeteries Conference, 2003, Helena, Arkansas.
2003	Instructor, Cemetery Preservation: Making Good Choices Workshop, Washington County, Georgia Historical Society, Sandersville, Georgia.
2003	Preservation assessment, Old City Cemetery, Sandersville, Georgia
2003	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2003	Treatment of markers at Oakview and Riverside cemeteries; examination of burial vaults in white and African American sections, City of Albany, Georgia (FEMA funded).
2003	Preservation assessment, Historic Cemeteries at Five Cemeteries, Bannack State Park, Bannack, Montana
2003	Consultation concerning cemetery brick wall, Midway Church, Midway, Georgia.
2004	Treatment of markers at Richardson Cemetery, Clarendon County, South Carolina.
2004	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2004	Treatment of markers at Maple Grove Cemetery, Waynesville, North Carolina.
2004	Consultation regarding State Historical Marker, Roseville Cemetery, Florence County, South Carolina.
2004	Consultation regarding the Mary Musgrove Monument, Musgrove Mill State Park, Laurens County, South Carolina.

2004	Invited Speaker, Cemetery Preservation Workshop, SC Genealogical Society Annual Meeting, Walterboro, South Carolina.
2004	Treatment of markers at Wrightsboro Cemetery, Thomson, Georgia.
2005	Treatment of markers at Pon Pon Cemetery, Colleton County, South Carolina.
2005	Treatment of markers at Walnut Grove Plantation, Spartanburg County, South Carolina.
2005	Consultant on cemetery fence theft, Save Austin's Cemeteries, Austin, Texas.
2005	Treatment of markers at Richardson Cemetery (Second Phase), Clarendon County, South Carolina.
2005	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2005	Treatment of marker in Oakview Cemetery, Albany, Georgia.
2005	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Las Vegas, New Mexico.
2005	Treatment of markers at Trinity Cathedral, Columbia, SC.
2005	Preliminary preservation recommendations, Randolph Cemetery, Columbia, SC.
2005	Treatment of markers in Presbyterian Cemetery, Union, SC.
2005	Instructor, Cemetery Preservation: Making Good Choices Workshop, Save Oklahoma's Cemeteries, Muskogee, Oklahoma.
2005	Treatment of marker, Reynolds Homestead, Critz, Virginia.
2005	Assessment and preservation plan for Lewis Cemetery, King and Queen County, Virginia. King and Queen County Historical Society.
2006	Treatment of markers in Presbyterian Cemetery, Union, SC (second phase).
2006	Assessment and Preservation Plan for Pine Lawn Memorial Gardens, Aiken, South Carolina. SC Department of Archives and History, Columbia.
2006	Assessment of Clark-Brown Cemetery, Unadilla, Georgia.
2006	Invited Speaker, Planning a Cemetery Preservation Project, People and Places: South Carolina's Seventh Annual Statewide Historic Preservation Conference, SC Department of Archives and History, Columbia, South Carolina.
2006	Assessment and Preservation Plan, Memory Hill Cemetery, Milledgeville, Georgia.

2006 Invited Speaker, Cemetery Rehab, South Carolina Landmark Conference, SC Department of Archives and History, Aiken, South Carolina.

2006 Assessment, Town of Dedham, MA cemetery, Vollmer Associates, Boston.

2006 Assessment and Preservation Plan, Springwood Cemetery, City of Greenville & Friends of Springwood Cemetery, Greenville, South Carolina.

2006 Preparation of landscape plan, Randolph Cemetery, Columbia, South Carolina.

2006 Assessment and Preservation Plan, Memory Hill Cemetery, City of Milledgeville, Milledgeville, Georgia.

2006 Treatment of markers in the Cason Plot, Long Creek Baptist Church, Warrenton, Georgia.

2006 Treatment of markers in the Watson Plot, Thomson City Cemetery, Thomson, Georgia.

National Register Nominations of Cemeteries

1999 Preliminary Multi-Property Nomination, African American Cemeteries of Petersburg, Virginia. Submitted to Virginia Department of Historic Resources, Richmond, Virginia (with Sarah Fick, Preservation Consultants).

2000 National Register Nomination, King Cemetery, Charleston County, South Carolina. Submitted to South Carolina State Historic Preservation Office, SC Department of Archives and History, Columbia.

2002 National Register Nomination, Scanlonville or Remley Point Cemetery, Charleston County, South Carolina. Submitted to South Carolina State Historic Preservation Office, SC Department of Archives and History, Columbia.

2005 Preliminary Information Form – Hopkins Family Cemetery, Richland County, South Carolina. Submitted to South Carolina State Historic Preservation Office, SC Department of Archives and History, Columbia.

APPENDIX 2. MITIGATION MEASURES FOR DAMAGE TO MILITARY MARKERS SET IN CONCRETE

The resetting of stones in the cemetery can be undertaken by either the grounds or maintenance crew or by outside contractors – as long as these specifications are carefully followed.

Class 1: Military Markers in Good Overall Condition, But Sunken Into the Ground

This class includes military stones that appear in all respects to be in good condition: they are sound and do not evidence any spalling or sugaring of the marble; they are firmly bedded in the concrete and are not loose or evidence any movement; and they are legible.

Efforts to remove these markers from concrete and reset them would result in substantial damage to the stone and require considerable cost. Replacement of the markers would be costly to the government, discard historic fabric for new, and would result in additional problems of maintenance and flag placement.

For these markers we recommend that they be excavated, elevated, leveled, and reset. They should continue to serve as appropriate and fitting markers for some time into the future and this process retains the historic fabric, causes no change in current maintenance activities, and minimizes costs to the government.

(1) Turfgrass should be carefully removed from all sides of the marker and laid aside on a tarp.
(2) Excavation should reveal the base of the concrete pad on at least two adjoining sides; in some cases in may be necessary to expose the pad on all four sides. Soil should be stockpiled on an adjacent tarp.
(3) The stone and its pad should be raised using an iron pry bar as a level on the concrete. Metal tools should never be used directly on the marble. The pry bar will allow the stone to be raised and pea gravel to be placed under the stone.
(4) The concrete pad should be elevated to ca. ½-inch above the existing grade.
(5) The stone – not the concrete pad – should be leveled using a post level to check plumb on all sides of the stone without moving the level.
(6) Alignment must be maintained with other stones in the row. It may be useful to establish a string along the back of the row prior to the work to ensure that the stone remains in correct alignment.
(7) No pressure should be applied to the stone itself since this may cause the stone to snap off in the concrete – all tamping or shifting must be directed to the concrete pad. A rubber mallet may at times be of assistance.
(8) Once leveled, soil and sod should be replaced; excess should be removed from the cemetery.
(9) The sod should receive watering for several days after the work to minimize die-off.

Class 2: Military Markers in Damaged or Unstable Condition

This class of military markers includes military stones that are in some manner damaged, including those that are broken or that are loose on or in their pads.

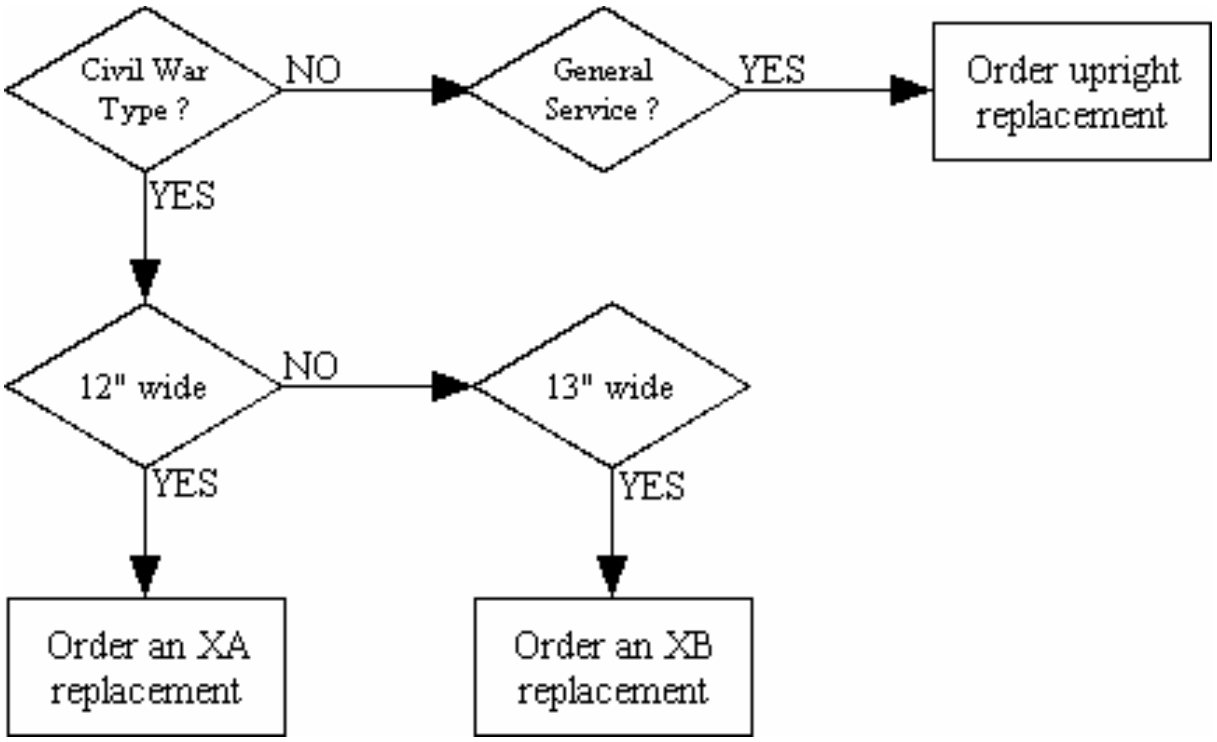


Figure A. Decision tree for ordering replacement government stones.

Efforts to reset these stones will likely fail or pose long-term maintenance problems.

Where possible, these markers may be replaced with new markers that match as closely as possible the original historic material. This recommendation is limited to only military markers – no commercial or private stones should be replaced; no cast concrete stones should be replaced; and all replacements should use like material (marble must be replaced with marble).

(1) Figure A illustrates the process of deciding on the appropriate replacement. Ensure that all inscription information is entered precisely as it is on the original stone – absolutely no changes should be made.
(2) Once the stone has been delivered, the two stones should be compared to verify that the new inscription is correct and reproduced exactly as it is shown on the original stone. The original stone should be removed and, as required by National Cemetery Association policy, destroyed.
(3) The new stone should be set into the soil at an appropriate depth, absent any concrete pad.
(4) If a concrete surround is demanded, then ¼-inch plywood should be placed around the stone, preventing the concrete from touching the stone, and the pad poured into a form of a size matching those other in the cemetery and using a 4-inch pour. A brass flag holder should be inserted before the concrete sets (corrosion resistant bronze tubing can be ordered from supply companies such as McMaster-Carr and cut to 4-inch lengths).
(5) The protective plywood should be removed along with the form once the concrete is set.

APPENDIX 3. TREATMENT PROPOSALS

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 1 **Plot:** 1-18

Name: Hart **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: ped tomb

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☒ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☒ other: setting compound

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☒ resquare ☐ possible new base required ☐ stabilize foundation ☒ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☒ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: level and reset

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $550

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 1 **Plot:** 4-21

Name: Charlie Bush **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: ped tomb

Existing Condition

Position: ☐ fallen ☐ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☒ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☒ other: severe erosion, sugaring

Extent: ☐ extensive >50% ☒ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: consolidate with HCT, followed by OH100

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $800

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 1 **Plot:** 5-23

Name: John Garrett **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☐ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☐ broken ☒ cracked ☐ losses ☒ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☒ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: consolidate with HCT, followed by OH100

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $800

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 2 **Plot:** 1-20

Name: Willie D. Baker **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: obelisk

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☒ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☒ other: pin of unknown material

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☒ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: core drill if pin is ferrous and replace with 316 stainless steel

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $600

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 2 **Plot: 3-10**

Name: Francis S. Dodsworth **Material:** ☒ marble ☐ granite ☐ brick ☒ other: iron chain

Type: ☐ headstone ☒ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: obelisk, chained plot

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☒ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☒ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☒ hand tools ☐ solvents ☒ other: remove lead paint

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: remove existing paint, recoat with 2 coats Rust Reformer, top with flat alkyd black paint

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 1

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $2,100

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 2 **Plot: 3-12**

Name: John H. Marshall **Material:** ☒ marble ☒ granite ☐ brick ☒ other: iron chain

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: obelisk, chained plot

Existing Condition

Position: ☐ fallen ☐ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☒ other: paint on granite posts, heavy paint on chain, missing 1 length chain, 1 chain weight (4" ball), 4 eyebolts damaged

Extent: ☐ extensive >50% ☒ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☒ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☒ other: paint on posts

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☒ other: remove lead paint

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☐ other: remove existing paint, recoat with 2 coats Rust Reformer, top with flat alkyd black paint; remove paint on posts; replace chain and missing weight; reset appropriate eyebolts in posts using epoxy, remove inappropriate repairs

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $1,300

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 2 **Plot:** 3-13

Name: Pauline Jackson **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☒ footstone ☐ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☒ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☒ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☒ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☒ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☒ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☒ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☐ other:

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $700

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 2 **Plot: 5-10**

Name: Crew of USS Cumberland **Material:** ☐ marble ☐ granite ☐ brick ☒ other: iron urn; cast stone, sandstone

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: cast stone column & urn

Existing Condition

Position: ☐ fallen ☐ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☒ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☒ spalling ☐ missing fragments ☒ other: urn exhibits extensive corrosion and some metal loss; multiple coats of pain on both urn and column

Extent: ☐ extensive >50% ☒ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☒ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☒ other: remove lead paint on urn

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: remove failing coating from cast stone, test for salts, remove through poulticing; recoat with whitewash, avoid paints; infill lost metal on urn with metal filled epoxy and smooth; use elastomeric caulk to seal out water intrusion; paint urn with 2 coats Rust Reformer, top with flat alkyd black paint

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $2,200

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 2 **Plot:** 10-11

Name: George Sands **Material:** ☒ marble ☐ granite ☐ brick ☒ other: iron post & chain fence

Type: ☐ headstone ☒ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: iron posts and chain fence

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☒ missing

Deterioration: ☒ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☒ missing fragments ☒ other: corrosion, moderate damage

Extent: ☒ extensive >50% ☐ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☒ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☐ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☒ hand tools ☐ solvents ☒ other: remove lead paint

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: remove and reset 4 posts using 316 stainless steel rods and replacement granite blocks as needed, replace/repair chain; once paint removed, prime with 2 coats of Rust Reformer, topcoat with flat alkyd black

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $3,500




Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 3 **Plot: 3-5**

Name: Thomas Lake **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☒ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☒ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: replace ferrous pins with 316 stainless

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 1

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $800

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 3 **Plot: 6-6**

Name: Marshall **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: ped tomb

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☐ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☒ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: consolidate with HCT followed by OH100

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $800

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 3 **Plot: 6-8**

Name: Daisy **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☒ flaking/sugaring ☒ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☒ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☒ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: replace 3 ferrous pins with 316 stainless; consolidate with HCT followed by OH100

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $1,100

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 3 **Plot: 7-17**

Name: Arthur Brown **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☐ tilted ☐ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☒ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☐ other:

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 3

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $1,200

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 3 **Plot: 8-17**

Name: Tollerson **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☒ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☐ other:

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $700

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 3 **Plot: 9-23**

Name: Mrs. Harrison **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☒ footstone ☐ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☒ fallen ☐ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☒ broken ☐ cracked ☒ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☒ missing fragments ☐ other:

Extent: ☐ extensive >50% ☒ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☐ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: infill with Jahn M120 Marble Mortar

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $500

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 4 **Plot:** 1-20

Name: Henry B. Tenney **Material:** ☒ marble ☐ granite ☐ brick ☒ other: iron chain

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: obelisk, chained plot

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☒ other: eyebolts damaged, one post tilted

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☒ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☒ other: remove lead paint

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: reset one post; replace three eyebolts; repaint chain with 2 coats Rust Reformer followed by flat black alkyd paint

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $950

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 4 **Plot:** 3-2

Name: Pinckney **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☒ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☒ other: unknown pins

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☒ reset/level in ground ☐ reset/level to existing base ☒ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☐ other:

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $700

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 4 **Plot:** 5-8

Name: John Dorr **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☒ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☐ other:

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☒ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☐ other:

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 3

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $500

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 4 **Plot: 6-4**

Name: Wartenburg **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☒ other: ped tomb

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☒ missing fragments ☒ other: no pins

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☐ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☒ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☐ other:

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $500

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 4 **Plot: 8-22**

Name: Patrick McCardy **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☒ fallen ☐ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☒ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☒ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☒ missing fragments ☒ other: base set in concrete

Extent: ☐ extensive >50% ☒ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☒ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: replace ferrous pins with 316 stainless; infill loss with Jahn M120 Marble Mortar

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $800

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 4 **Plot: 9-4**

Name: Estes Coburn **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☒ headstone ☐ footstone ☐ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☒ fallen ☐ tilted ☐ unstable ☐ unattached/loose ☐ missing

Deterioration: ☒ broken ☐ cracked ☐ losses ☒ flaking/sugaring ☒ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☒ missing fragments ☒ other: base set in concrete

Extent: ☒ extensive >50% ☐ partial 25-50% ☐ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☐ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☐ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: consider replacing with new military marker, style XA: "COBURN, ESTIS / USS / CANONICUS"

Cleaning: ☐ low pressure water ☐ D/2 and flush ☐ poultice ☐ other:

Priority: 5

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: n/c

Portsmouth Naval Cemetery
Monument Treatment Proposal

Section: 4 **Plot: 9-22**

Name: Joseph Morris **Material:** ☒ marble ☐ granite ☐ brick ☐ other:

Type: ☐ headstone ☐ footstone ☒ die on base ☐ tab in socket ☐ box ☐ other:

Existing Condition

Position: ☐ fallen ☐ tilted ☒ unstable ☒ unattached/loose ☐ missing

Deterioration: ☐ broken ☐ cracked ☐ losses ☐ flaking/sugaring ☐ ferrous pins ☐ brass pins ☐ delamination/detachment ☐ spalling ☐ missing fragments ☒ other: unknown pins

Extent: ☐ extensive >50% ☐ partial 25-50% ☒ minimal <25% ☐ not applicable

Failed/Old Treatments: ☐ metal ☐ adhesives/coatings ☐ mortar ☐ other:

Soiling: ☒ biological ☒ staining ☐ efflorescence ☐ other:

Treatment Strategy

Position: ☐ reset/level in ground ☒ reset/level to existing base ☐ construct new base ☐ resquare ☐ possible new base required ☐ stabilize foundation ☐ reset with 0:1:3 mix ☐ reset with compound

Failed Treatments: ☐ drill/grind ☐ hand tools ☐ solvents ☐ other:

Treatment: ☒ core drill ☐ drill and pin ☐ simple adhesive repair ☐ injection grout ☐ replace bricks ☐ mortar ☐ repoint ☒ other: replace pins with 316 stainless

Cleaning: ☐ low pressure water ☒ D/2 and flush ☐ poultice ☐ other:

Priority: 2

1) hazardous, immediate action; 2) unstable, requires treatment ASAP; 3) ongoing deterioration, treatment required 2-3 years; 4) re-inspect in 5-10 years; 5) irreparable

Cost: $600

Cemetery Preservation Plans

Historical Research

Identification of Grave Locations and Mapping

Condition Assessments

Treatment of Stone and Ironwork

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