

Norman's Plan of New Orleans & Environs (1845), Special Collection, Tulane.

DEAD SPACE

Defining the New Orleans Creole Cemetery

St. Louis Cemetery No. 1 Guidelines for Preservation & Restoration

The Graduate Program in Historic Preservation
The Graduate School of Fine Arts, University of Pennsylvania

July 2002



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



Frank G. Matero, Project Director
Steven Curtis
John Hinchman
Judy Peters

The Graduate Program in Historic Preservation
Graduate School of Fine Arts
University of Pennsylvania

July 2002

St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Acknowledgements

These guidelines could not have been produced without the generous contributions and assistance of our colleagues: Michael Boudreaux, Robert Cheetham, Eugene Cizek, Mary Louise Christovich, Mary Lou Eichorn, Wayne M. Everard, Louise Fergusson, Sam Green, Lindsay Hannah, Anthony Henderson, Patricia Hulin, Jim Jenkins, Dorothy Krotzer, Alfred Lemmon, Ann Masson, Frank Masson, Joseph Patrick Mattera, Sophie Middlebrook, Royal Osborn, Al Parker, Kyubong Song, Laurence Salzmann, Dana Tomlin, and Gary A. Van Zante.



To Mary Louise Christovich
For her tireless dedication to preserving New Orleans historic cemeteries.

Unless otherwise noted, all images (photographs, drawings and maps) are by the authors.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Foreward

This document of guidelines is one of the public outreach products produced during a two-phase project on the preservation of Louisiana's historic aboveground cemeteries sponsored by the Louisiana Division of Historic Preservation, Office of Cultural Development. The project's objectives included:

- the development of a model conservation plan for New Orleans' historic cemeteries.
- the creation of educational and training program on the methodologies employed.
- the initiation of public outreach activities to publicize its results and promote the preservation of other historic cemeteries in the state and region.

The project utilized database and geographical information system (GIS) technology as descriptive, analytical and communication tools to better survey and analyze the site, and has demonstrated their applicability as future cemetery site management tools. Additionally, the three tomb pilot restoration program and additional research by students involved in the project contributed new information for conservation guidelines.



This project has been financed in part with federal funds from the National Park Service, Department of the Interior through the Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Historic Preservation. However, the contents and opinions do not necessarily reflect the views or policies of the Department of the Interior.

This program received Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1964 and Section 504 of the Rehabilitation Act of 1973, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin or handicap in its federally assisted programs. If you believe that you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please write to:

Office of Equal Opportunity
U.S. Department of the Interior
Washington, D.C. 20240



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Introduction.....	1
Historical Background.....	8
Before Work Begins	28
Technical Guidelines – Masonry.....	45
Technical Guidelines – Surface Finishes	49
Technical Guidelines – Stone Tablets and Sculpture.....	53
Technical Guidelines – Metalwork.....	63
Technical Guidelines – Tombscapes	76
Conclusions.....	79
Bibliography	82
Resources	86
Appendix – Tomb & Marker Survey Form and Manual	



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Introduction

After years of neglect and abandonment, the early aboveground cemeteries of New Orleans, Louisiana are currently experiencing renewed popularity through preservation interest and heritage tourism. Yet with this revived attention, has come problems of commercialization, inappropriate repair, and opportunistic vandalism. As a result, many of these sites are now at serious risk through physical degradation and loss of historical character.



St. Louis Cemetery No. 1.

Recently, under a grant from the Louisiana Division of Historic Preservation, Office of Cultural Development with additional support from the Samuel H. Kress

Foundation, Save Our Cemeteries, Inc. the Archdiocese of New Orleans and The Historic New Orleans Collection, St. Louis Cemetery No. 1 has been fully surveyed and mapped by the Graduate School of Fine Arts, University of Pennsylvania. Selected tombs have also been documented and recorded by the School of Architecture - Preservation Studies at Tulane University. In addition, three tombs were completed as model conservation projects by Save Our Cemeteries, Inc. to validate recommended preservation procedures for tomb and tombscape stabilization, restoration, and maintenance. These procedures are now in use for a large scale restoration of Alley 9-L in the cemetery's northwest quadrant, funded by a grant from the *Save America's Treasures* program.

Purpose & Scope of the Guidelines

The *St. Louis Cemetery No. 1 Guidelines for Preservation and Restoration* have been developed for tomb owners, cemetery caretakers, non-profit organization volunteers and professional craftspeople, conservators, and preservation consultants who are interested in the recommended repair, maintenance and restoration of above-ground tombs in this and



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

other local cemeteries. It is hoped that this document will promote new enthusiasm for the responsible care and maintenance of the many tombs in need at St. Louis Cemetery No. 1, and for other historic aboveground cemeteries in the region.

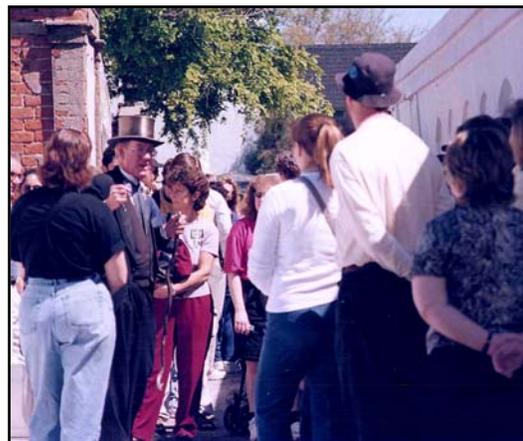
These guidelines are largely based on the *U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties* and the related guidelines for preserving, rehabilitating, restoring and reconstructing historic buildings.¹ The guidance provided on preservation planning and conservation principles are in accordance with those expressed in the *Burra Charter* (Australia ICOMOS)² and in the *Code of Ethics and Guidelines for Practice of the American Institute for Conservation of Historic and Artistic Works* (AIC).³

It is the function of any document of technical guidelines to provide useful information necessary to make better informed decisions. This guide is designed to provide basic planning and technical information about the conservation of aboveground tombs. It is important to

remember that even the most well intentioned preservation effort can be harmful if incorrect techniques and materials are employed. As much irreparable damage has occurred in the name of restoration, as through years of neglect. The very poor condition of many of these tombs will dictate the need for professional services. These guidelines and the simple lists of “Do’s and Do Not’s” will help orient the novice to the field of tomb preservation, including the type of work required and the selection of qualified conservators and craftworkers.

Importance of the Site

St. Louis Cemetery No. 1 is a living cultural landscape. It is a dynamic space where religious practices and cultural tourism coexist.



*Tour group at St. Louis Cemetery No. 1.
Joseph P. Mattera, 2001.*



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

It is one of very few cemeteries in the United States that has been accepted to the National Register (July 30, 1975) and has recently been identified as a *Save America's Treasures* site and project.

St. Louis Cemetery No. 1 possesses cultural and historical significance at the local, state, and national levels. Its physical location marks the early limits and expansion of the city, while its tombs and monuments showcase the region's wealth of artistic design and many ethnic influences.

In addition, the cemetery encapsulates the very essence of the city's Creole origins in its mixture of European, African and native influences upon the local environmental conditions. The site also possesses great historical integrity in its tombs, walls, sculpture and landscape. It is well documented in photographs and travel accounts, and is, itself, a valuable historical research tool documenting the cultural life of the city. It also presents a quiet respite in the midst of a bustling city and to family members, it is the hallowed ground that provides the last resting place of their loved ones.

Current Conditions

St. Louis Cemetery No. 1 was never intended to be experienced as a place of derelict tombs. However, over time, the cemetery, like many such sites, has become defined by, and admired for, its picturesque decay, as well as its mortuary architecture. Indeed, much of its past and current appeal is tied to this aspect of age. Weathering and age are essential components of the site, and there will always be differences in opinion as to the division between historical character and tombs in poor, unsatisfactory condition. These guidelines illustrate how original designs, materials and age value can be preserved through sensitive and timely repair and maintenance, so that full replacement of a tomb, resulting in complete loss of historic character, is neither desirable nor required.



St. Louis Cemetery No. 1.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



Derelict condition of Tomb #238

The recent condition survey documented many tombs and landscape features in critical need of stabilization and repair. Decades of neglect and deferred maintenance have created a situation where roofs have been breached and the stucco of the tombs has cracked, allowing easy access for damaging moisture and plants. Even in tombs without structural damage, there are many badly weathered details: cornices, crosses, statues and marble tablets where important sculpture and inscriptions are becoming lost.

The recent pilot preservation projects have shown that many of these tombs can be restored using low cost traditional masonry solutions. Even when a tomb's structure has become compromised, most repairs can be done retaining the original brickwork and stucco details without resorting to costly methods and extensive rebuilding. Photographs, family records and archival evidence are available at local institutions to guide these efforts for many of the tombs.

These guidelines address repair and maintenance techniques that are compatible with the original tomb materials and design. Landscape restoration guidelines seek to create a more historically accurate site that can combine the qualities of an outdoor museum with a park-like setting.



Brick mason rebuilding original roof of Esteve Tomb #13.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



The Perrault Tomb, #351 above before restoration. Below, after restoration. One of the SOC pilot restoration projects.



During the recent preservation projects, interaction between building conservators and local artists and craftspeople has been encouraged to redevelop and recover lost

masonry, metalwork and marble carving traditions. The continued use of traditional building materials and techniques, in combination with new methods of repair, aligns restoration with current building practices to preserve and maintain the existing historical character of the tombs and the cemetery while providing for better weatherability and maintenance.

Who Should Use These Guidelines?

St. Louis Cemetery No. 1 is listed on the Louisiana State and National Register of Historic Places. However, the site is not included in the Vieux Carré Historic District, or in any other locally designated district. As such, there are no local ordinances or review boards to provide guidance or oversight to tomb owners wishing to make improvements.

The site is owned by The Roman Catholic Archdiocese of New Orleans and managed by The New Orleans Archdiocesan Cemeteries, who provide basic construction and safety guidelines for tomb owners. They manage the Perpetual Care program, where a tomb owner may elect to set up an endowment with the Archdiocese to care for a tomb indefinitely. Until the publication of these guidelines,



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

information on preservation has not been available for tomb owners who instead have had to rely on modern masonry approaches often resulting in the partial or complete rebuilding of Perpetual Care tombs. These guidelines seek to provide alternative options for the preservation, rehabilitation and restoration of the hundreds of historic above ground tombs of St. Louis Cemetery No. 1 and other like cemeteries in the region.

The Secretary of the Interior has issued standards “intended to promote responsible preservation practices that help protect our Nation’s irreplaceable cultural resources.”⁴ The standards are separated into four approaches, or levels of work. Any publicly funded project involving a site listed on the National Register of Historic Places must show that proposed work is consistent with *The Secretary of the Interior’s Standards for the Treatment of Historic Properties*. Most individual tomb owners and Archdiocesan Cemeteries projects will not require these formal reviews. However, all work in a site as historically and culturally important as St. Louis Cemetery No. 1 greatly benefits from responsible adherence to these Standards.

For most projects at St. Louis Cemetery No. 1, the stabilization and repair of brick and mortar, marble and metalwork should be considered *preservation* while the replacement of stucco and surface finishes qualifies as *restoration* and the new fabrication of statuary or metalwork as *reconstruction*. All three approaches may be required depending on the condition and importance of the tomb. The treatments as defined by the Secretary of the Interior are as follows:⁵

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing

maintenance and repair of historic materials and features rather than extensive replacement and new construction.

Bergamini Tomb, #12, after preservation, one of SOC pilot projects.



Introduction 6



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.



Earlier reconstruction of a step tomb.



*Esteve Tomb, #13 after restoration.
One of the SOC pilot projects.*

Reconstruction is defined as the act or process of depicting by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Organization & Use of Guidelines

This document is organized with a brief background history of the site and construction materials first; *follow the blue footer*, followed by basic preservation project research and planning principals; *follow the yellow footer*. The Guidelines continue with separate sections for each of the major elements of masonry & stucco, surface finishes, metalwork, stone tablets and sculpture and tombscape considerations; *follow the purple footer*. At the end of each section is a list of specific “Do’s and Do Not’s”.

The bibliography includes a wide variety of references for history, cemetery preservation, and materials conservation. The section on resources includes the names, addresses and web-sites (where available) of organizations and archives that can provide assistance in the many aspects of a tomb restoration project.



St. Louis Cemetery No. 1

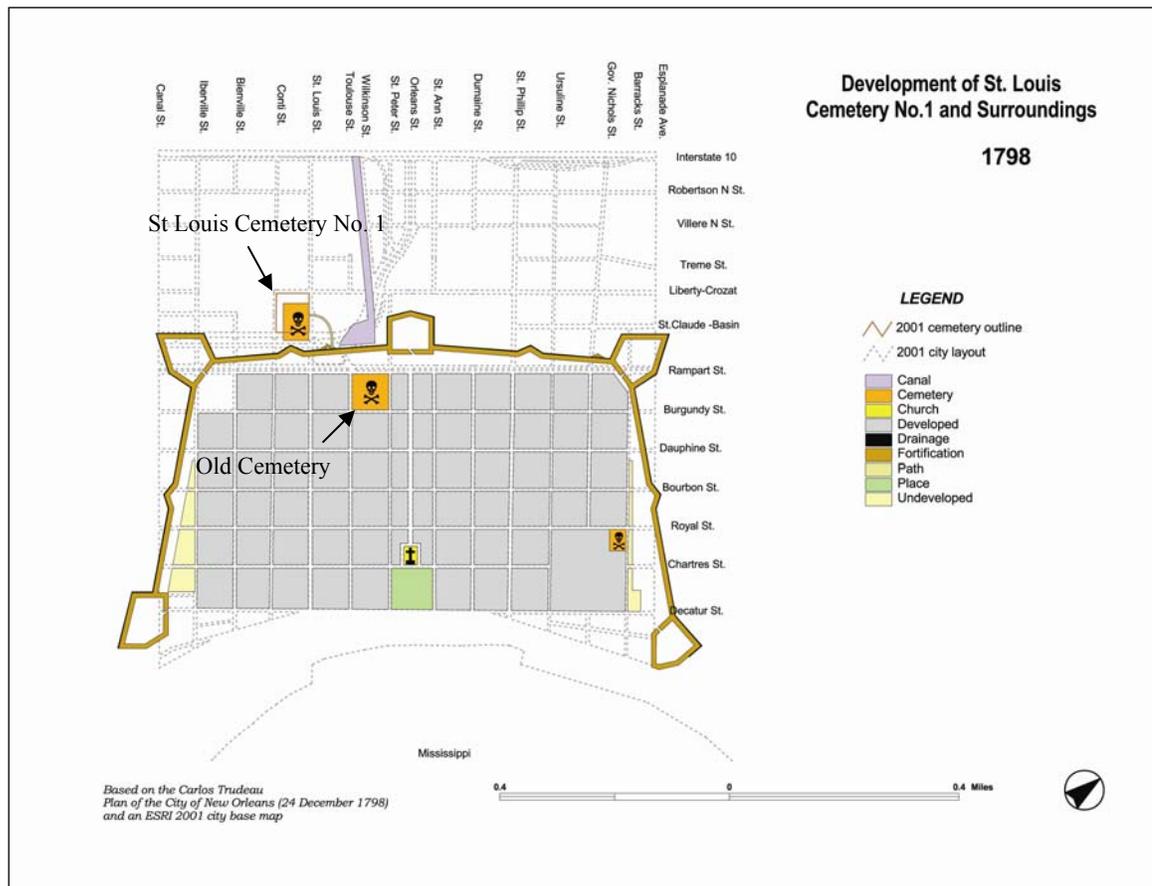
Guidelines for Preservation & Restoration

Historical Background

To make informed preservation decisions for any historical cemetery and burial ground, it is important to understand site context and consider issues of past and contemporary meanings and associations of the cemetery as a cultural landscape including aspects of use, abandonment, tourism and preservation over time.

Brief History of St. Louis Cemetery No. 1

New Orleans' long history under French, Spanish, and United States rule resulted in a rich mix of Native American, European, and African influences, making the city culturally unique in relation to the largely English-speaking, northern European-based populations of the greater United States. In 1788, New Orleans lost many citizens to epidemic and a great



J. Hinchman, 2002

Historical Background 8



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

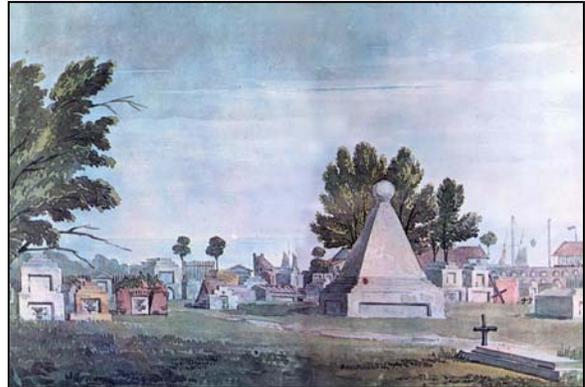
fire. The existing cemetery, established in 1721 at the edge of the city, was over-filled and there was growing concern that burying the dead among the living contributed to the many outbreaks of disease. The city government ordered a new cemetery to be established outside the city limits. St. Louis Cemetery, now called St. Louis Cemetery Number 1, was established in 1789 to the north, just outside the ramparts in the area now bound by Basin, Conti, Tremé and St. Louis Streets. With the influx of foreigners to the city after the Louisiana Purchase in 1803, visitors described first-hand the unique character of this unusual necropolis.

In 1818, noted architect Benjamin Latrobe visited the cemetery commenting on its curious above ground burials.

*The Catholic tombs are of a very different Character from those of our Eastern and Northern cities. They are of bricks, much larger than necessary to enclose a single coffin, and plastered [sic] over, so as to have a very solid and permanent appearance.*⁷

An early watercolor view of St. Louis Cemetery by Latrobe's youngest son, John

H. B. Latrobe, gives a clear image of the cemetery in 1834.⁸



St. Louis Cemetery No. 1 in 1834, Watercolor sketch by John H.B. Latrobe. Image reproduced from cover art on The St. Louis Cemeteries of New Orleans, October, 1988.

Prominent are step and platform tombs limewashed in earthen colors, as opposed to the harsh white tombs of today. Also visible are the cemetery's characteristic wall vaults, cultural reminders of New Orleans' Spanish past. By the mid 1840s, stone tombs of imported marble, many designed by French émigré architect Jacques Nicolas Bussiere dePouilly, were commissioned by the city's prominent families in all the historical styles popular at the time.

In the 1870s, George François Mugnier and Samuel T. Blessing photographed St. Louis



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Cemetery No. 1, providing evocative images of grand architectural monuments in a crowded landscape. The many family and society tombs that dominate the cemetery today indicate the tremendous wealth and power New Orleans attained by the mid nineteenth century. Like its urban counterpart, many of the early single vault tombs were expanded with additions to become multiple vault family tombs to allow for repeated burials in a place of decidedly limited space.



No. 396 Old St. Louis Cemetery by G. F. Mugnier
Source: New Orleans Public Library Collection
Date: ca. 1875.

By the end of the nineteenth century, St. Louis Cemetery No. 1 had fallen out of use

from overcrowding and the public's preference for more fashionable cemeteries on the outskirts of the city. As interment activity declined, so did visitation and yearly family maintenance activities that were so crucial to the upkeep of the tombs.



Colorized postcard, ca. 1900.
From private collection, F. Matero.

Grace King, the noted New Orleans historian, wrote in 1895 of a cemetery that was no longer open to visitors:

The crumbling bricks of the first resting-places built there are still to be seen, draped over with a wild growth of vine, ... It opens its gates only at the knock of an heir.⁹



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Tomb and Marker Types

New Orleans' early cemeteries are characterized by a number of unique tomb and marker types. A **tomb** is any mortuary structure that contains one or more above ground burial vault(s) while a **marker** is a non-tomb mortuary structure which marks a below-grade burial, but does not contain an interment and whose form is often sculptural. Several distinct types can be described for each category.

Tomb types:

- **Wall/Block vault:** Multiple tiers and bays of individual burial vaults of brick vaulting or stone slab construction, arranged to form a single block or perimeter enclosure wall.
- **Pediment Tomb:** A multiple vault tomb whose height is greater than its width and whose top is surmounted by an integral front gable end pediment of flat, triangular or segmental design.
- **Mausoleum:** A mortuary structure with accessible interior space containing wall or subterranean burial vaults and a chapel.

- **Step tomb:** A low, single-vault semi-subterranean tomb possessing a stepped or moulded top and a top slab or end closure tablet.
- **Platform tomb:** A single or multiple vault tomb whose height is equal to or less than its width and whose roof or top is flat, stepped, gabled, or hipped .
- **Parapet tomb:** A single or multiple vault tomb possessing a raised parapet front concealing the roof behind.
- **Sarcophagus tomb:** A single or double platform tomb resembling a sarcophagus, usually on a raised base.

Marker types:

- **Simple Marker:** A single element marker with or without a base.
- **Headstone/footstone:** An associated pair of upright slabs, usually of different height embedded in the ground or in a separate stone base, which defines the grave and is inscribed.
- **Stele:** A carved or inscribed stone slab or pillar used for commemorative purposes, taller and thinner than a headstone. Base not required.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Wall Vault	Block Vault	Pediment Tomb	Society
			
Parapet	Platform	Sarcophagus	Step
			

SIMPLE MARKERS			
Headstone/footstone	Stele	Plaque	Die
			
COMPOUND MARKERS			
Table	Basal	Pyramid	Pedestal: Obelisk
			



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

- **Plaque:** A non-freestanding plain or ornamental tablet affixed to a wall or structure, but not a tomb/marker.
- **Other:** Any single architectural or sculptural form.

Compound Marker: A multiple element marker, usually with a base.

- **Table:** A horizontal tablet supported by individual uprights, often in the form of a table
- **Basal:** A horizontal tablet supported by a low solid wall base. (Resembles a platform tomb but does not house a burial within the structure.)
- **Pedestal:** Any combination of column, obelisk, urn, or sculpture surmounting a pedestal or pedestal-base.
- **Column:** A full or truncated single pillar standing alone as a monument.
- **Obelisk:** A monumental, four-sided stone shaft, usually monolithic and tapering to a pyramidal tip.

- **Pyramid:** A freestanding architectural form with four adjacent triangular walls that meet at a common apex and rest on a quadrilateral base.
- **Die:** A freestanding architectural form comprised of a cubic body resting on a base.
- **Other:** Any architectural or sculptural combination.

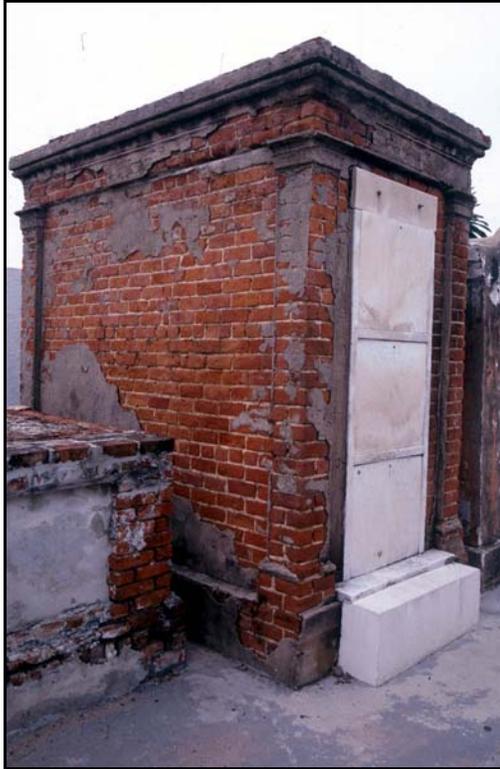
Tomb Construction

With the exception of the low step tombs, most of the tombs in St. Louis Cemetery No. 1 are designed to contain one or more above ground interments, each in an individual vault. Nearly all tombs, regardless of type or style, are constructed of brick with a stucco skin. Several ambitious designs are of stone, usually white marble or limestone. Individual vault openings are sealed by a movable inscribed closure tablet, typically of imported white marble. This allows easy access to the vault for repetitive burials, especially necessary in times of deadly epidemics. Contrary to common belief, the tradition of above-ground burial has more to do with French and Spanish burial customs than the city's high water table.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



A triple vault pediment tomb.

In the simplest step tombs, brick was constructed over the coffin allowing only single burials. However, for the majority of the tombs in St. Louis Cemetery No. 1, several individual vaults were constructed with flat or barrel vaulted chambers. In many of the tombs, a stone slab was placed over the vault to provide a supportive floor for the next vault, or for the roof.

Depending on the tomb style, brickwork was used to form a pediment or a high parapet over

the vault openings creating an impressive tomb front. Intricately moulded cornices and pilasters of stucco were often formed over this brickwork and all brickwork was protected by stucco and lime wash.



Moulded stucco cornice on cut brick.

New Orleans' Burial Traditions

The tomb owner will be well aware of local burial traditions; however those contracted to complete the necessary work in a tomb restoration project might not fully realize how the original tomb was designed for use.

Most of the tombs at St. Louis Cemetery No. 1 were designed for sequential interments. Traditionally interment was made in wooden coffins and the vault opening was loosely closed with mortared brick, and a closure tablet sealed the tomb. If the space was needed for another burial, the vault could be re-opened, the



St. Louis Cemetery No. 1

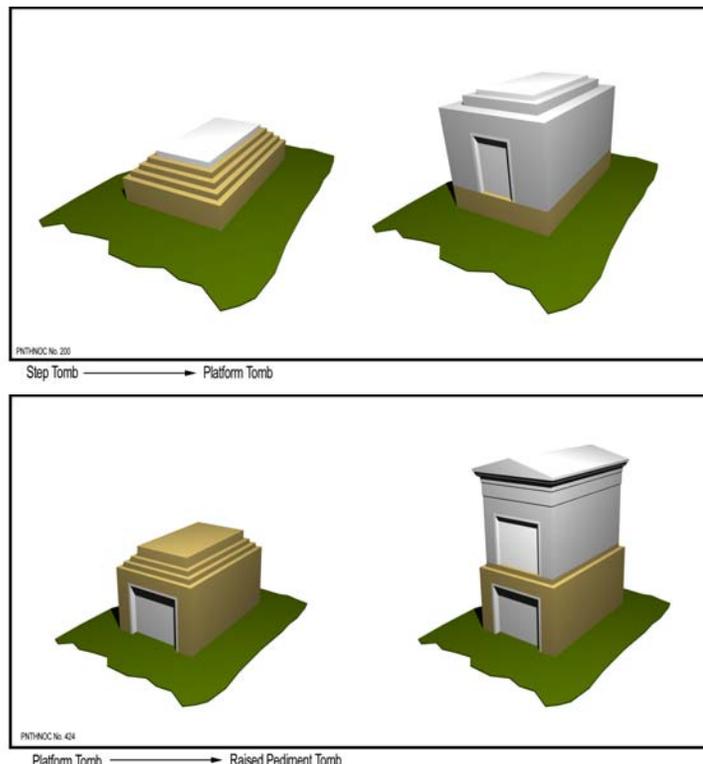
Guidelines for Preservation & Restoration

coffin removed and burned, and the decomposed remains pushed to the back of the tomb or placed beneath the vaults in the *caveau* below. The closure tablet often names many generations of the same family. If a closure tablet became full, it was usually mounted permanently to the side of the tomb and a new closure tablet of white marble was installed.

As families grew larger, and as the almost yearly outbreaks of yellow fever caused many deaths, the family tomb was often not large

enough, or available. Space could be rented in the surrounding wall vaults until a family vault was free. There is also abundant physical evidence that families expanded their tombs over time. As need for space grew, more vaults could be added and the tomb could expand upward on the same plot.

Historically, maintenance occurred yearly during All Saints' Day when families cleaned, repaired, and limewashed their tombs. This yearly attention kept the tombs well sealed and protected the interior structure from the aggressive New Orleans environment.



Tomb modifications by addition.
(J. Hinchman, 2002)



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Bricks and Mortar

The majority of the tombs in St. Louis Cemetery No. 1 are of brick construction covered with stucco. Tomb bricks range in quality, but most are hand-moulded, soft and porous. Rarely, tombs were constructed of imported red finish brick, such as in the Protestant section of the cemetery, and those few were not covered with a protective stucco skin.

Early brick production traditionally relied on local clays and sands, and New Orleans bricks are no exception. The dominant materials used in the manufacture of the bricks are clays from the Mississippi River and Lake Pontchartrain, producing the area's characteristic red "River" and spotted tan-orange "Lake" brick types. Lake bricks are typically more durable than the softer red River bricks.

Historically, mortar and stucco mixes contained three components: a binder, aggregate (sand) and water. Most mortar binders were lime or a mixture of lime and clay/silt, while the more weather resistant stucco mixes tended to be of hydraulic lime or natural cements.



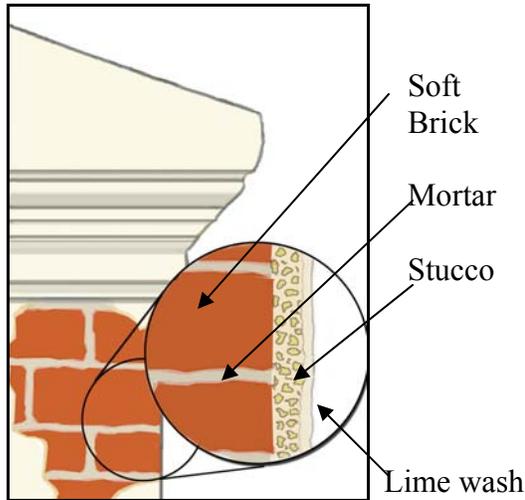
Exposed brick construction details on Tomb #238.

Formulations depended on usage: typically, bedding mortars were 1 part binder to 3 parts sand, while stucco mixes were richer in binder, generally 1 part binder to 2 parts sand (by volume). These soft mortars provided good flexural strength accommodating the dynamic thermal movement and wet-dry cycling of the brickwork, typical in this environment. The harder, denser stuccos protected the vulnerable brickwork beneath from water absorption but allowed free passage of ever-present water vapor.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



Tomb building materials. (J. Peters, 2002)

Stucco

Historically at St. Louis Cemetery No. 1, the mortars and bricks were covered with protective layers of stucco. Unlike the mortar, most stucco mixes were hydraulic lime- or natural cement-based with an aggregate of sharp fine quartz sand. These more durable stucco layers protected the soft interior structural brick and clayey mortar from moisture and invasive plant damage, and provided a smooth appearance to the surface.

Over time, as a result of tomb subsidence and rising damp, thermal and moisture changes in the materials caused mortar joints to loosen and bricks to move. Stresses built

up in the walls and small cracks developed in the stucco layer, generally in line with the brick courses.



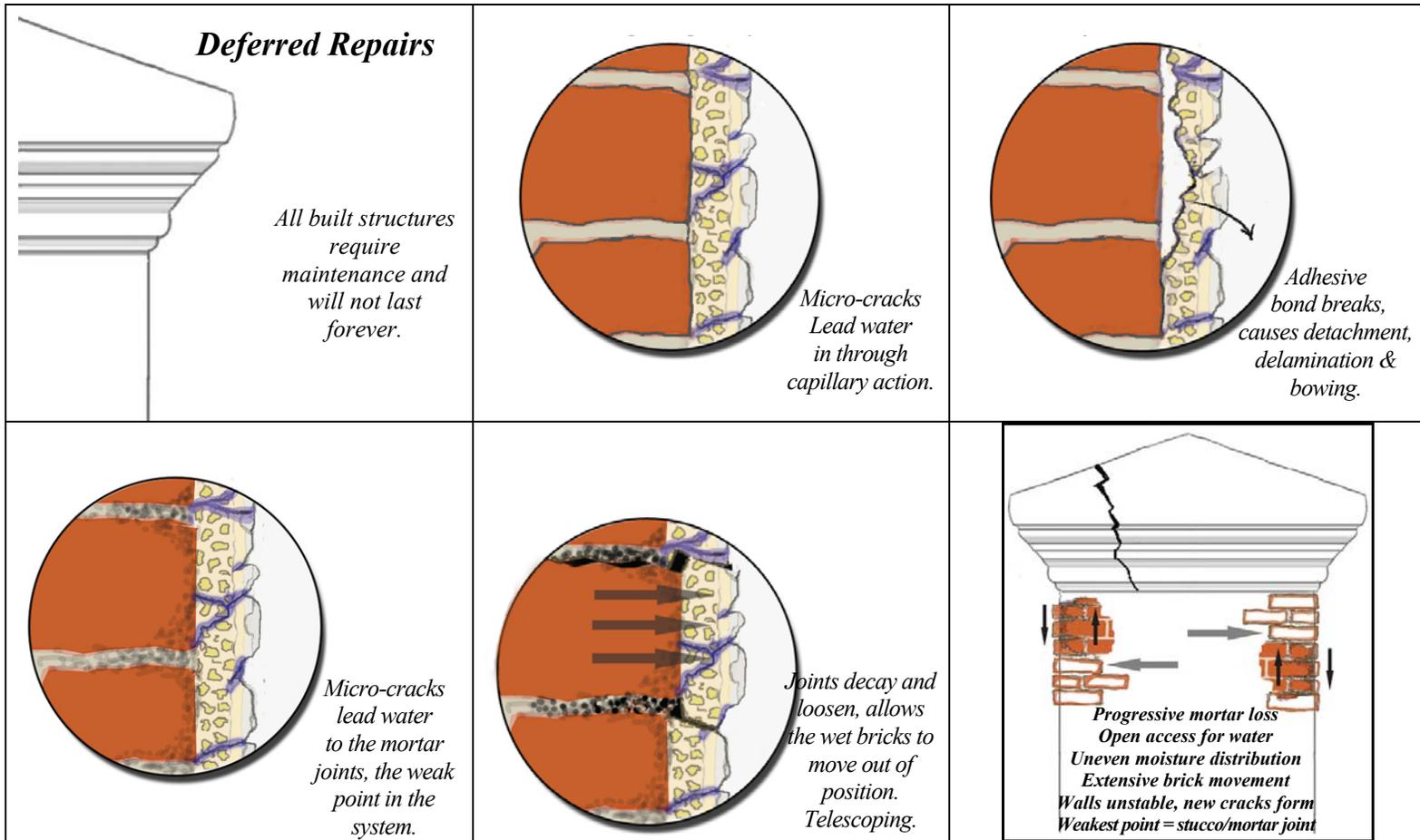
Tomb #39, typical cracking & brick movement from deferred stucco maintenance.

With periodic maintenance, these cracks were easily repaired and stucco and lime washes were reapplied as needed. This periodic maintenance could keep the tomb sound for generations and many tombs still display remarkably good conditions even after years of neglect.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



J. Peters, 2002



St. Louis Cemetery No. 1

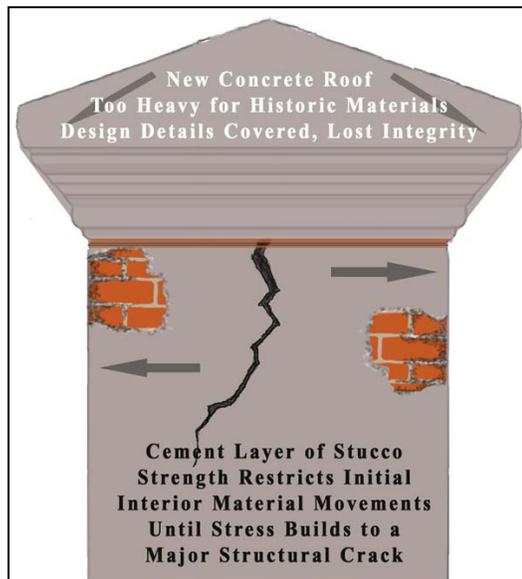
Guidelines for Preservation & Restoration

Portland cement was not used in tomb masonry until the mid twentieth century. Today, many of the early tombs have been encased in hard, dense cement stucco, probably in the mistaken belief that once applied, maintenance would no longer be required. The mismatch of properties and the entrapment of ever-present moisture between the interior brick structure, the historic stuccos, and the modern cements, have created problems of incompatibility and have led to structural damage far in excess of the damage seen in tombs that were not repaired with cement. In addition to trapping moisture, cement-based mortar

and stucco repairs typically cause through-wall structural cracking of the brickwork, and when removed, tear off the face of the damaged brick beneath the stucco.



Structural cracking of a cement encased tomb.



Effects of cement stucco and concrete roof. (J. Peters, 2002)

Another common problem recently seen in the cemetery is the replacement of the traditional brick and stucco roof with a heavy poured-in-place concrete roof. In addition to the unfortunate loss of architectural detail and expense, these heavy roofs accelerate subsidence and are prone to structural cracking from settlement. Such excessive replacement strategies leave little opportunity for small-scale repair or maintenance afforded by the traditional brick and stucco masonry.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Stone

There are predominantly four types of stone found at St. Louis Cemetery No. 1: white marble imported from Europe is the most common, followed by dark gray limestone, slate, and granite. There is no dimensional stone in the New Orleans region, so all building stone was imported from Europe or the northern United States. Marble is a calcareous metamorphic rock, originating from sedimentary limestone. Marble became the stone of choice for its white color, fine texture and ease in carving. It was used for

closure tablets, tablet surrounds, shelves, markers, statues and stone crosses and urns. Marble and limestone were also used as dimensional or veneer stone on more elaborate tombs.

Slate is a metamorphosed siltstone. Slate is a hard and dense stone and was used structurally to support the interior floors and ceilings of the vaults, as well as for precinct pavement. Many pediment roofs were flashed with slate as a waterproof barrier course.

Granite is an intrusive igneous rock that is extremely hard and dense. There is minimal evidence of its use historically at St. Louis Cemetery No. 1; however it has been introduced recently for new closure tablets on many re-built tombs.



Tomb #575 of imported white marble, probably from Italy.



Grey limestone tablet on Tomb #560.



St. Louis Cemetery No. 1

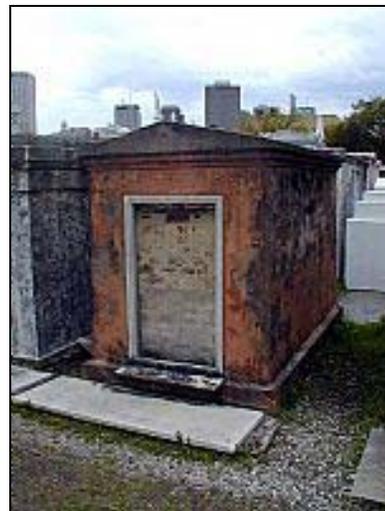
Guidelines for Preservation & Restoration

Lime and Limewash

Traditionally, stucco surfaces were finished with plain and pigmented limewashes. Lime washing was done frequently for protection and aesthetic enhancement and was traditionally applied annually during religious holidays. Limewash is essentially a mixture of slaked lime putty (calcium hydroxide) in water that sets slowly after drying by absorbing carbon dioxide from the air. The chemical reaction that occurs produces a highly durable crystalline inorganic coating. The use of lime-based paints on masonry produces a hard, well bonded finish that is unaffected by ultraviolet light (as are oil, alkyd and latex paints.) It is easy to apply and remove, weathers well, and costs significantly less than commercial synthetic “latex” paints. Limewashes were traditionally applied unpigmented as well as colored yellow and red with natural earth pigments (red and yellow ochres) and blue-grey with lampblack. Analysis of the many surviving finishes on the tombs indicates the cemetery was a more colorful place than its current monotonous dead white appearance.



Photomicrographs of finish layers Esteve Tomb, #13 (left) and Musson Tomb, #93 (right).

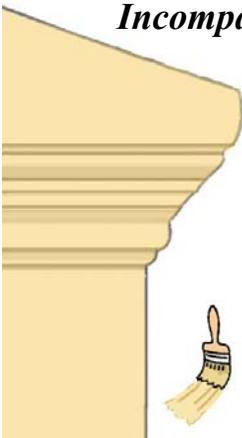
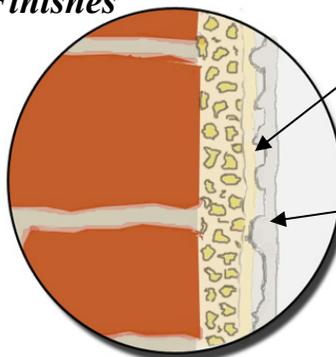
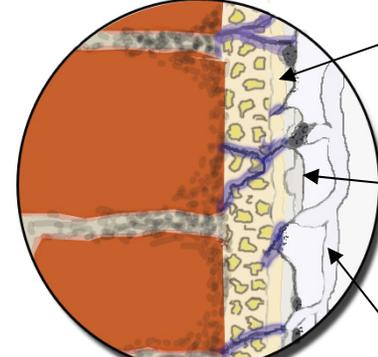
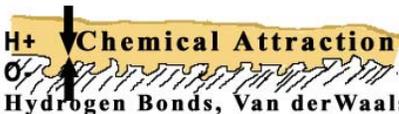
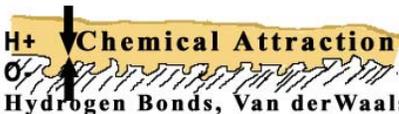
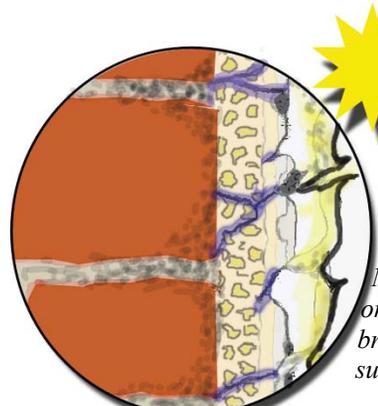
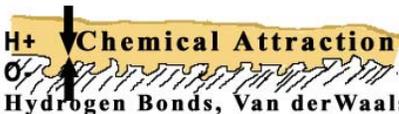


Tomb 228 still exhibits traces of past red and grey limewashes.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

<p>Incompatible Surface Finishes</p>  <p><i>Tombs were lime washed.</i></p>	 <p>Limewash Oil based</p> <p><i>Multiple layers build up.</i></p>	 <p>Limewash Oil based Waterbased</p> <p><i>Modern materials thickly painted over old.</i></p>		
<table border="0"> <tr> <td data-bbox="367 893 787 1234"> <p>Good Adhesion</p> <p>Mechanical Lock & Key</p>  <p>Chemical Attraction H+ Hydrogen Bonds, Van der Waals</p>  </td> <td data-bbox="808 893 1228 1234"> <p>Failed Adhesion</p> <p>Grease, Bio-Growth</p>  <p>Grease, Incompatible Surface Finishes</p>  </td> </tr> </table> <p><i>Failures due to poor surface preparation and basic incompatibilities.</i></p>		<p>Good Adhesion</p> <p>Mechanical Lock & Key</p>  <p>Chemical Attraction H+ Hydrogen Bonds, Van der Waals</p> 	<p>Failed Adhesion</p> <p>Grease, Bio-Growth</p>  <p>Grease, Incompatible Surface Finishes</p> 	 <p><i>Many modern organic finishes break down with sun light and UV exposure.</i></p>
<p>Good Adhesion</p> <p>Mechanical Lock & Key</p>  <p>Chemical Attraction H+ Hydrogen Bonds, Van der Waals</p> 	<p>Failed Adhesion</p> <p>Grease, Bio-Growth</p>  <p>Grease, Incompatible Surface Finishes</p> 			

J. Peters, 2002



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

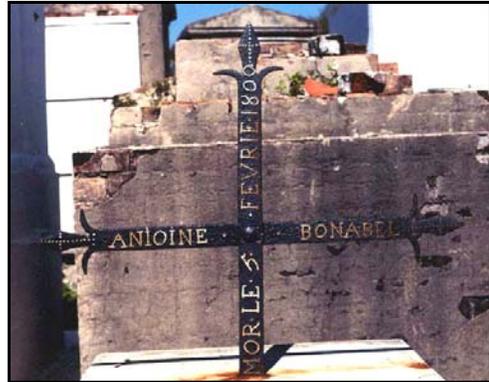
Metalwork

Metalwork in St. Louis Cemetery No. 1 was used for both decorative elements such as applied relief sculpture and urns as well as architectural components such as partial and full enclosures with gates. Enclosures defined the tomb plot and provided some protection to the enclosure tablet. The most common metals used were forged and rolled stock wrought iron, cast iron, and cast zinc. Cast lead was used for protective “boots” to cover the anchored base.

Forged Wrought Iron

The earliest metalworking technology in New Orleans was the hand forging of wrought iron originally brought by the French. Forging, or the forming of heated wrought iron with hammer and anvil, was used to produce the simple crosses which once embellished many of the late eighteenth and early nineteenth century step tombs. Forging involves the manipulation of the wrought iron bar stock while hot, as well as the use of

other basic blacksmithing techniques such as hot splitting, swaging, and forge welding.



Wrought iron cross from Bonabel Tomb, #395.

Wrought iron is very malleable, has high ductile strength and good resistance to corrosion. Only three examples of entirely forged wrought iron now survive in St. Louis Cemetery No. 1, much of it having been lost to theft in recent years. In addition, wrought iron bar stock with small cast iron details was probably imported from England and France before the 1830s. It is found in a few cemetery enclosures and may predate the later more popular transitional composite metalwork (see below).



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Transitional Composite Metalwork

This is the most prevalent type of metalwork found in the cemetery, produced roughly between 1830 and 1860. It was used exclusively to fabricate enclosure railings and relies on the combination of wrought iron and cast zinc with some cast lead and cast iron details. In all cases, the wrought iron bar stock frames were fabricated with mortise and tenon joints. Limited forging is evident in many cases for reinforcement of enclosure and gate corners. No welding was used.

All transitional composite metalwork possesses some form of ornament in zinc, either cast directly on wrought iron bars such as the spear pickets or cast separately and riveted on. The cross and crest



Cast and wrought railing ornaments – Bergamini Tomb #12.

ornamentation which typically graced many of the enclosure gates, was a combination of forged scrolls, fabricated crosses and cast zinc or cast iron decoration.

Tomb enclosures were anchored into raised thresholds or precinct curbing with molten lead and protected by cast lead flanges or “boots”, some of highly ornamental design.



Bermudez Tomb, #35, with iron cross and cast zinc sun medallion.

Cast Iron - Cast iron is an alloy of iron with a high (2-4%) carbon content which can be poured in a molten state into sand molds. It is hard but also brittle and is the product of an industrial process involving many professions and trades. Because of economies of scale achieved with mass production, it became the material of choice for architectural metals starting in the late eighteenth century in England and by the 1840s in the United States.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Cast iron appears to have made its appearance in New Orleans around 1850, much of it shipped from the North with some produced locally in the foundries that primarily made machinery for the sugar refining industry. By the 1850s, cast iron panels were taking the place of fabricated work, first mounted in wrought iron frames.



Enclosure of Tomb #382, Cast iron panels in wrought iron frames..

As the technology became more sophisticated in the 1870s and 1880s, completely cast systems including posts and gates became very popular. Their intricate patterns would come to dominate the metalwork in the city, especially as facade galleries, out-pricing the more labor-intensive transitional composite metalwork.

All cast iron was painted from its initial installation for protection from corrosion. Wrought iron and zinc metalwork could be waxed or oiled, however, most examples today have been painted.

Landscape Elements & Tombscapes

Over the course of two centuries, a combination of environmental and cultural processes has left St. Louis Cemetery No. 1 with its current spatial configuration of disjointed alleys, intimate pockets of open space, dramatic vistas, and sudden dead-ends.



Tombscape of Alley 1R.

The cemetery shares many of the characteristics of the historic city, implying a long-established sense of order, but one that has succumbed, incrementally, to centuries of small and large-scale changes. Its architecture is a rich palate of forms and details, jumbled together in a



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

miniaturized city of tombs, tombscapes and open spaces. Tombs loosely arranged in parallel rows were further defined by masonry thresholds or entire surrounding precincts of stone curbing and pavement. These supported full or partial enclosures of wrought and cast metalwork and occasionally plantings.

Traditionally, crushed shell was used to pave and elevate pathways in an otherwise soggy grassy terrain. Numerous nineteenth century accounts and limited excavation confirm the use of shell paths well into the 1950s. The crushed shell, dredged from Lake Pontchartrain, was periodically placed to provide raised access to the tombs during periods of flooding.

Concrete pavements began encroaching the cemetery by the 1920s and asphalt was introduced in the 1960s to coincide with established tour routes through the cemetery. Arrows were drawn on this surface to lead the visitor through the site past significant personalities and tombs identified by numbered plaques.

Most recently, concrete pathways have been reintroduced for the major tourist routes and



Concrete pathway and drain.



Shell paths and plantings at St. Louis Cemetery No. 1, ca. 1900, Library of Congress.

surrounding Perpetual Care tombs. This concrete acts as a water collector, preventing



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

rainwater from draining directly into the ground and, in theory, helps to regulate the drainage of the entire site into subsurface drains. These drains are often ineffective in heavy rains, and the impervious concrete surfaces cause deep ponding and flooding of surrounding tombs.



Flooded concrete path after a rain.

Pathways, open areas of grass, and, to a lesser extent, bare soil, also exist. These are largely relegated to the center of the site and in the entire Protestant section. Their survival can be attributed to low visitor

impact in these areas, although as tombs are restored through Perpetual Care, concrete pads are added, invading the traditional grass and shell ground surfaces and creating trip hazards for visitors.

Though in its current state St. Louis Cemetery No. 1 is mostly devoid of trees and vegetation, historically this was not so. Photographs indicate the site was ornamented with palms, shade trees and flowering plants throughout the latter half of the nineteenth and well into the twentieth centuries. In fact many later nineteenth century tombs contain planting areas in their precincts.



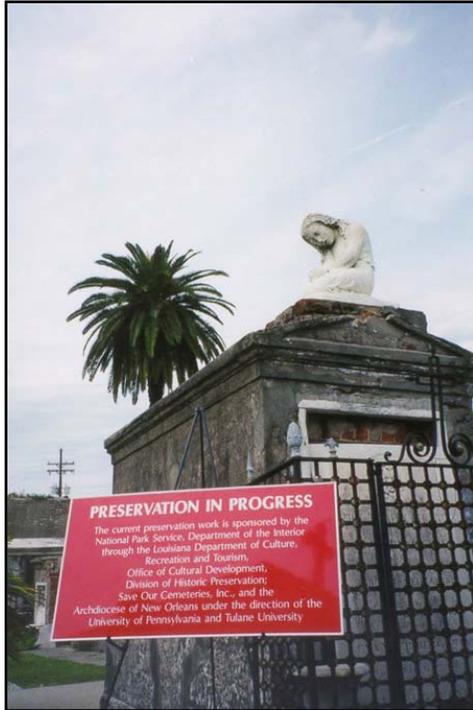
The Protestant section



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Before Work Begins



Bergamini Tomb, #12. One of the SOC pilot projects.

All preservation standards and guidelines whether national or international, exist to encourage the responsible treatment of cultural heritage. All are based on conservation principles which begin with logical planning and work sequences that will ensure that the best decisions are made for any necessary interventions.

Many projects require the help of professionals, and a familiarity with basic

conservation principles and concepts helps the owner or steward understand the extent of work required and when to bring in professional assistance.

Many such documents start with the principles established in the *Venice Charter*, an ICOMOS charter developed by an international group of conservation professionals and architects in 1966. ICOMOS, the International Council on Monuments and Sites, is an international group linked with UNESCO, with national committees in over 105 countries, including the United States. Individual countries often craft their own version of guidelines from these principles. The *Burra Charter* from Australia, the *Appleton Charter* from Canada and the *U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties* are good examples.

Seven statements derived from the *Illustrated Burra Charter* simplify the concepts that underlie many of the charters, standards and guidelines and provide an important starting point before considering any work:



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Seven Key Concepts:

- The historic character of the place itself is important
- Understand the cultural significance of the place
- Understand the physical fabric
- Significance and condition should guide decisions
- Do as much as necessary, as little as possible
- Keep records of all the work
- Do everything in logical order

For projects at St. Louis Cemetery No. 1, the following order of work is suggested:

1. Do the preliminary archival research
2. Document everything “as was” and “as is”
3. Conduct a condition assessment
4. Follow fact-based decision making
5. Develop a preservation plan
6. Perform conservation treatments
7. Plan for periodic maintenance
8. Celebrate success

Helpful Websites:

ICOMOS

<http://www.icomos.org/>,
<http://www.icomos.org/usicomos/>

Australia Burra Charter

<http://www.icomos.org/australia/burra.html>
<http://www.marquis-kyle.com.au/burra99.htm>

Additional ICOMOS Charters

http://www.international.icomos.org/e_charte.htm

Illustrated Secretary of the Interior's Standards for Rehabilitation, (All not yet on-line)

<http://www2.cr.nps.gov/tps/tax/rhb/stand.htm>

American Institute for Conservation of Historic & Artistic Works (AIC)

<http://aic.stanford.edu/>

St. Louis Cemetery No. 1 Survey

<http://www.noladeadspace.org>

Preliminary Research

For many of the tombs in St. Louis Cemetery No. 1, the severity of tomb conditions will be such that only qualified conservators and restoration professionals, metalworkers and masons will do the actual tomb preservation and repair work. However, the most important

Before Work Begins 29



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

investigation for the project can be done by anyone interested in archival research and detective work. All this phase takes is careful attention to detail, creative thinking, good notes, and considerable perseverance and patience.

Key questions to be answered in this stage of the project include:

- When was the tomb built?
- Who had it built?
- If a family tomb, what is the original family name?
- Who designed or built it?
- What were the original materials of construction?
- Were additions and/or new vaults added? When?
- Who has been interred in the tomb?
- What historical and military significance are attached to those interred?
- What did the tomb look like at various times?
- What did the alley neighborhood look like?
- Were there tablets, statues, crosses metalwork or other decorative elements that are now missing?
- What plantings and pathway elements were near?
- What family traditions of maintenance and visitation can be documented?
- Are there family photographs that can be collected and archived?
- Who possesses the deed to the tomb now?
- Who, if anyone, is maintaining the tomb now?
- Has the tomb been closed permanently?
- Has the tomb been placed in the Perpetual Care program with the Archdiocese?

It may not be possible to answer all of the above questions, but many answers and clues can be obtained through a combination of oral history interviews, archival and documentary sources, inferred data and physical evidence.

Oral history evidence comes from family members and friends who might remember anything about the history of the tomb and those interred. Start with the oldest relatives and family friends who might have direct knowledge, then talk to younger relatives who can relate events of more recent times and also might have recollections of information gathered from older generations now deceased. Oral history information can be fascinating and rich with many family history facts beyond the topic of the tomb. However, one must be



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Careful in accepting everything related as the complete truth, as memories and perceptions of events long ago are not always completely correct, or in the proper chronological order. Yet, even if some of the information is inaccurate, these interviews can provide many clues to facts that may later be confirmed through archival research.



*Ladies Decorating Wall Vaults, ca. 1900,
THNOC, 1985.126.43.*

It is also during these interviews that family members often remember where old photographs and letters are stored that relate to the tomb's history. The photographs are very important as they can show tomb changes in construction details and color, tomb conditions and the surrounding neighborhood of tombs, plantings and paths over time. Letters were often exchanged after a death in the family and often included comments on

the interment history, the ceremony, flowers, and tomb related burial specifics.

New Orleans has a wealth of excellent resources for archival research. The **Resources Section** at the end of this document provides a good starting list. Many of the resources have on-line search functions. With a little bit of homework on-line, an effective research plan can be developed to ensure that no information or image is missed.

Carefully pursue every lead using family names, key events, and the specific tomb number and location, if available. The survey recently completed for St. Louis Cemetery No.1 is available on-line at www.noladeadspace.org where a map can be found with each tomb referenced by the most obvious family name, a 2001 survey number (PNTHNOC), the number given the tomb for a 1981 survey by Save Our Cemeteries and The Historic New Orleans Collection (THNOC) and the Archdiocese lot number. The Historic New Orleans Collection has photographs from the 1981 survey keyed to the THNOC number. The Archdiocesan Cemeteries keeps ownership and interment records by their lot number.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



J. Hinchman, 2002

Before Work Begins 32



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

There are also numerous photographic images at The Historic New Orleans Collection, the New Orleans Public Library and the Louisiana State Museum that show historic site-wide or neighborhood views. Specific tombs can be identified by researchers with a good knowledge of the tomb's location. The archival resources may have files on family documents that might detail when tombs were built, who designed them, who has taken care of them and how they were planted and decorated for funerals and All Saints' Day. Old receipts may specify the type of marble, stucco or brick used, and how it was to be worked.



All Saints' Day decorations, 2001.

If photographic images show that tablets, crosses, statuary, metalwork or other decorative details were once part of the tomb, contact Save Our Cemeteries, Inc. or the local authorities for information on

stored or recovered stolen elements. In recent years, many items were pilfered from the cemeteries. Some have been recovered and placed in safe storage until owners can identify them. With good photographic documentation there exists a small chance that missing elements from the tomb can be located.



Two examples of comparison photographs from 1973 and 2001. Between the family photographs and the images archived in the local historical collections, many lost details can be recovered.



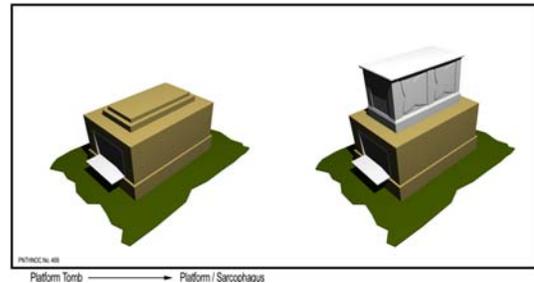
St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Inferred data, or educated guesses, are cautiously used when no written or photographic image data is available. If there are no images of the specific tomb, gather information and images of tombs in the neighboring vicinity, tombs of close family friends and tombs known to have been built in a similar timeframe. Once all the available data have been gathered, the limited use of inferred data can bridge gaps and lead to better preservation plans. However, care should be taken that extensive conjecture is not allowed during the research phase. For example, the most deceptive clue can be the apparent style of the existing tomb. There is a good chance that the tomb has experienced at least one addition or make-over. Today's physical evidence sometimes can suggest the tomb's original appearance.



Tomb #208 (left) with dismantled marble sarcophagus panels on roof of #207.



*Reconstructed evolution of Tomb #208.
(J. Hinchman, 2002)*

Depending on the condition of the tomb, there may be many layers of physical evidence open to view. Note the type(s) and size(s) of brick and how the brickwork is laid. Changes in brick type, size and coursing may indicate how or when a change was made to the tomb. How many stucco layers exist and what color are they? Can multiple colors of limewash still be seen? Look for sheltered areas where small samples of the finish might still be available for study. Component and finish analysis is best left to architectural conservators, but careful notes at this stage can help determine the extent of conservation and funding that will be required.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Document Everything!

As information is collected, it is often useful to catalog the notes and images in chronological order. Document everything, as an unrelated note may later be the key to solving an important part of the puzzle. As the information grows, put all the pieces available together to develop the “As Was” image of the tomb, at several points in time, if possible.

It is also critical to carefully document the “existing” state of the tomb. The use of high resolution digital or standard photography is the easiest method for this documentation. Use large enough images to see all decorative details and conditions. Take photographs of each elevation and the roof. Close-up photographs of the tablet system, tablet condition and inscriptions, all carved details, the cornice profile, precinct elements, metalwork, and all plaques, planters and any unattached elements are recommended. Carefully date each photograph and note the time of day, weather conditions and location of the photograph on a photograph log that will remain with the photographs. It is often



Fragments stored beside a tomb.

useful to take photographs at several times; once on a clear day and once just after a heavy rain to document any flooding problems.

Keep a detailed inventory to document all tablets, sculpture, planters, plaques, ironwork and furniture whether fully attached or in fragmented form by the tomb. Fragments should be photographed where found, and a precise record kept which will identify all of the elements. This is useful should elements be stolen and later retrieved. All of the fragments should be marked (on their reverse side) with the location where they were found, using chalk or a graphite pencil.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Decision Making

After gathering all available historical information and documenting the current condition of the tomb, decisions must be made on how to approach preservation of the tomb. At this point, many factors such as budget, urgency of conditions, time, significance, impact on the family, and impact on the surrounding tombscape must all be balanced. Another family decision is whether the tomb will be permanently closed or restored to the state that it will be able to support future interments or offered for re-sale.

Research may have shown several time periods to have been equally significant, yet the material analysis might only provide clear evidence on only one period. That would weight the restoration to the time best documented. Both the roof and the marble tablet may be in very poor condition. If funds are limited, the roof repairs should be considered a higher priority as a compromised roof can quickly lead to structural failure of the whole tomb.

To help analyze the factors for decision-making, a decision matrix with value ratings and a decision tree that points out the available options can be very helpful.



Mr. Bill Hylan, a descendant of Bernard de Marigny and caretaker for the family tomb, #606, discusses burial practices and tomb restoration with the team.



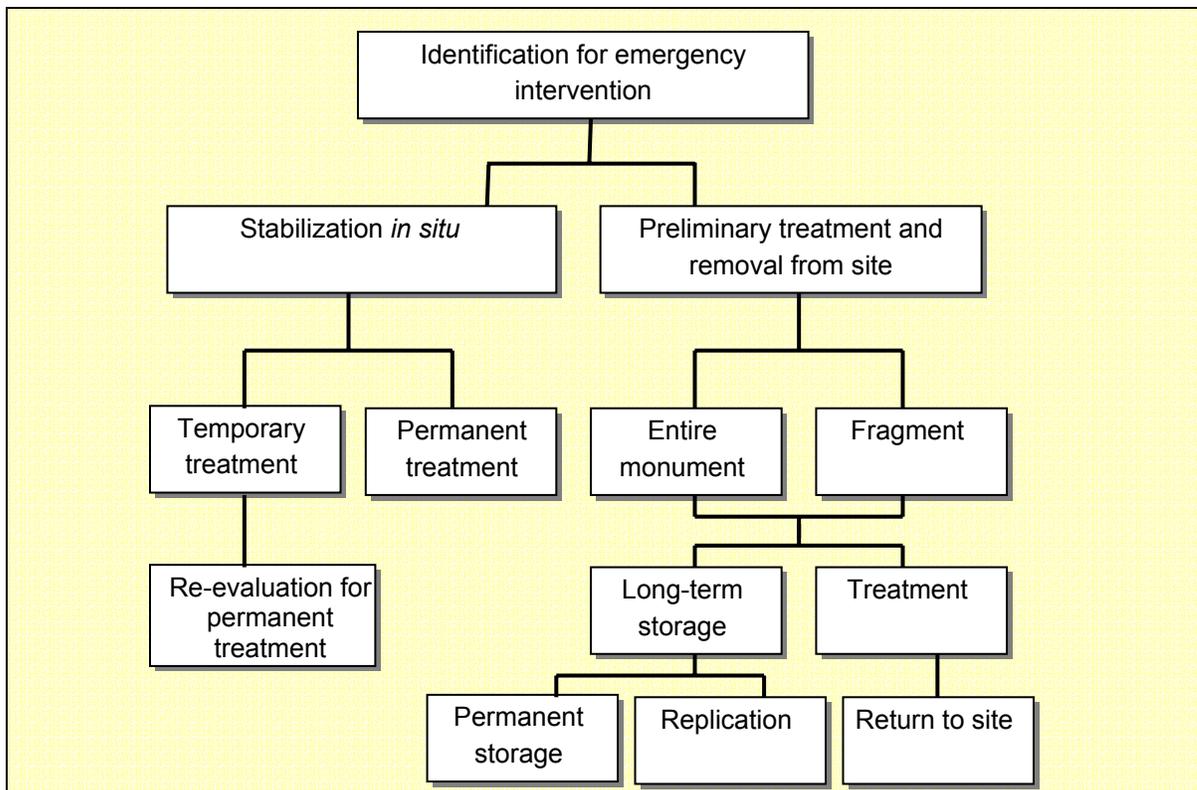
St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Decision Matrix – Valuing the Interventions

1-5, 5 Most urgent, Lowest cost or time, highest positive impact	Urgency	Cost	Timing	Family Impact	Total
Repair compromised roof	5	1	4	5	15
Patch stucco cracks	4	3	4	2	13
Completely re-stucco tomb	2	2	2	4	10
Limewash tomb	3	5	5	5	18
Conservation of tablet(s)	4	3	2	4	13
Re-fabricate metalwork	1	1	1	3	6
New marble cross, angel, etc.	1	1	1	5	8

Decision Tree – Illustrates the path various treatment options can take

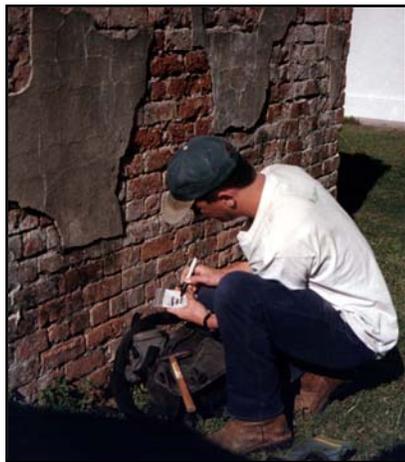


St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Develop a Preservation Plan

Elements of the Preservation Plan have already been considered in the decision-making phase and these steps usually happen concurrently. The first draft of the costs and timing plan might be sketched with very broad numbers, or valued by just the rating system used in the decision matrix. Having the major repairs and preservation options framed out before talking to contractor or preservation professionals facilitates the discussion. Based on their assessments and cost estimates, a more complete draft can be compiled. As resources are secured for the work and final quotations are received, the final plan of costs, timing and work can be confirmed.



Surveying condition.

During this phase, future maintenance should also be discussed and planned. What will be required and who will do it? For example, if lime washing will become an annual event in the future, the contractor or conservator should understand that clearly stated formulations are to be provided and that some demonstrations and training of family members will be part of the job.

Seek Professional Help

As stated throughout, many of the preservation and restoration needs of the tombs at St. Louis Cemetery No. 1 will need to be addressed by professional conservators, craftspeople and restoration masons. Save Our Cemeteries, Inc. is developing a resource list of qualified people for work on the aboveground tombs of New Orleans, as well information on conservation materials and suppliers. The American Institute



Conservators stabilizing a roof in Alley 9L.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

for Conservation of Historic & Artistic Works (AIC) has a very informative website describing the role and responsibilities of conservators and includes a downloadable brochure, *Selecting a Conservator*, available at <http://aic.stanford.edu/faic/refer.html>.

The professionals will want to see all of the information collected in the Preliminary Research and Condition Assessment phases and they may conduct additional assessments specific to their specialty to develop a firm plan for action with cost and timing estimates for the project. Conservators and contractors should present to the tomb owners information on tomb condition; recommendations on cleaning, conservation and repair; and cost proposals for performing all work. They should also be willing to supply data on all products to be used. In addition, if they conduct preliminary tests on the tomb, they should furnish a report that includes information on environmental conditions (including temperature, relative humidity, wind conditions, and sun exposure); cleaning and conservation materials and methods (including concentration, number of applications, method and order of applications);

equipment, water and/or application pressures, and accessory materials. The procedure and the completed test areas will then serve as the standard by which all subsequent work is to be judged.

When entering into a contract with a conservator or restoration contractor, owners should stipulate that the work be done under proper environmental conditions. Specifically, none of the work should be conducted at surface and air temperatures below 50 degrees Fahrenheit, or above 90 degrees Fahrenheit. Treatments are not to be done during rain or when there is a chance of rain within 24 hours after application.

Finally, cleaning materials and conservation treatments should not be applied when winds are sufficient to carry any airborne chemicals or powders and fumes to unprotected surfaces.

Make sure that the contractor protects the public as well as all surrounding landscape and lawn areas, non-masonry surfaces, and surfaces not designated for treatment or replacement, from contact with the cleaning materials and conservation treatments. Any work undertaken in the cemetery must first be filed with the Archdiocesan Cemeteries before beginning.

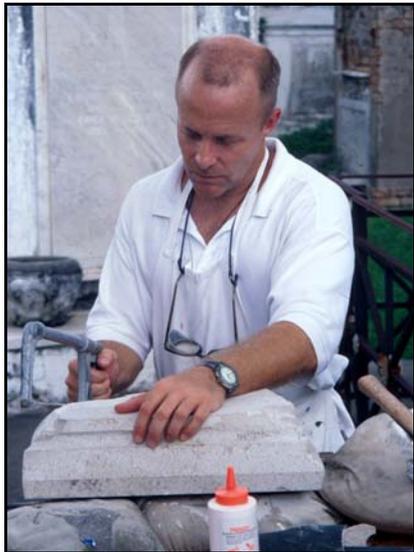


St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Sources & Assistance

See the **Resources Section** for many useful documentation and conservation resources and websites. Contact Save Our Cemeteries, Inc. for further information on professional assistance and conservation materials.



Local sculptor fabricating a replacement stone.

Secretary of Interior Standards

The *St. Louis Cemetery No. 1 Preservation Guidelines* address the full range of treatments, as presented in the Secretary of Interior's Standards, ranging from simple stabilization to criteria for new design. (*The Secretary of the Interior's Standards for Preservation, Rehabilitation, Restoration and Reconstruction* are listed on the following pages.) The St. Louis Cemeteries display a tradition of continuity reflecting the values and sensibilities of the past and present. In addition to preserving the valuable physical heritage they embody, such traditions should also allow expressions and forms of construction to continue.

For this reason, and since there are areas of total loss and infill to be considered, criteria for reconstruction are being proposed. For the primary tomb structure, traditional types should only be considered for a newly built tomb. However, for missing metalwork or decorative elements, the guidelines are intended to allow and encourage freedom for new expression, while respecting and building on the existing historical precedents.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Secretary of Interior Standards

Codified as 36 CFR Part 68 in the July 12, 1995 Federal Register (Vol. 60, No. 133.)

Text duplicated from: Kay D. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*, Washington, D.C.: National Park Service, 1995.

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.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Rehabilitation:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and other visual qualities and where possible, materials. Replacement of

missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Restoration:

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. 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.
9. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
10. Designs that were never executed historically will not be constructed.

Reconstruction:

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.
2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

be disturbed, mitigation measures will be undertaken.

3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.
4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.
5. A reconstruction will be clearly identified as a contemporary re-creation.
6. Designs that were never executed historically will not be constructed.



*Top image – rebuilt Perpetual Care tomb.
Middle image – traditionally maintained family tomb.
Bottom image – recent SOC restoration.*



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Technical Guidelines - Masonry

All masonry work including brickwork, stucco and stone should be executed under optimum weather conditions to ensure the success of the repairs. No work should be executed or cured during weather below 40 degrees Fahrenheit. To prevent too rapid drying in temperatures over 85 degrees Fahrenheit, particularly of thin finishes such as stuccoes and washes, masonry work may require repeated misting and protection from the sun with damp burlap, canvas or plastic sheeting and canopies.

Brickwork

Brickwork repairs account for the majority of the work required at most tombs. All brick joints should be inspected for missing and deteriorated mortar and loose bricks should be removed and cleaned for resetting. Defective joints should be raked by hand to 1" in depth or down to sound mortar. All dirt and loose debris should be removed before repointing or resetting. Masonry should be well dampened and the joints repointed or bricks set with a compatible mix that matches the original mortar or its properties.



Resetting loose and missing brickwork.

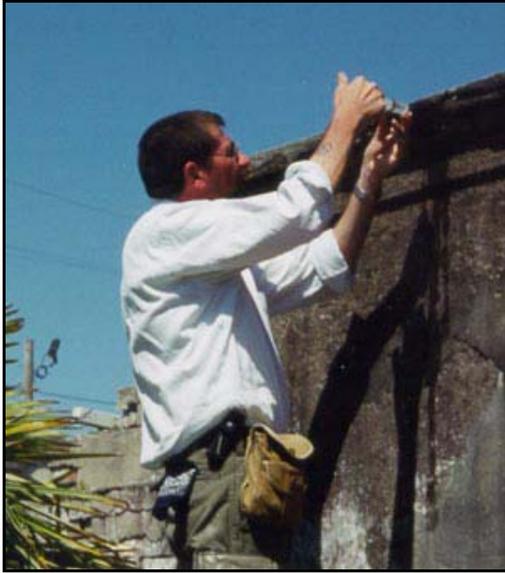
A suitable mortar mix should employ a lime putty or hydraulic lime. A lime and Portland cement blend can be used for roofs where harsh conditions prevail. Two such recommended mixes which have been used with good results in Lafayette 1 and St. Louis Cemeteries No. 1 and 2 are as follows: 1 part white Portland cement to 2 parts lime putty (slaked for a minimum of 3 months) or hydrated masons lime (Type S) to 9 parts clean masons sand. Where available, a hydraulic lime mortar is preferable made from 1 part Riverton HHL (hydrated hydraulic lime) to 3 parts masons sand (all parts by volume).

Masonry cracks in the stucco and brickwork often occur at the roof, corners and occasionally in the walls if uneven settlement has occurred.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



Conservator grouting large cornice cracks.

Superficial cracks can be mortar repaired; however large or deep structural cracks will need to be grouted or stitched using specialized materials and techniques by a qualified professional.

Missing and broken bricks should be replaced with those of similar size and water absorption to ensure compatibility. Recycled bricks are available from local suppliers. Wherever possible, original construction methods should be duplicated, such as bonding and coursing patterns, unless these have failed due to inadequate support or subsequent modifications to the tomb. Any

changes to construction details should be carefully considered before execution as these can cause serious problems later on. Before relaying, all bricks should be thoroughly soaked in water for at least several hours to reduce suction. Finally, joints should be raked back to provide a key for new stucco.



The uppermost step of Esteve Tomb, #13, being rebuilt using original brick and same brick configuration.

Stuccowork

All stucco should be gently sounded with an acrylic mallet to determine where it is detached. When tapped with the mallet, detached stucco produces a characteristic hollow sound. Remove non-ornamented detached stucco by hand with a hammer and masonry chisel. Cut



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

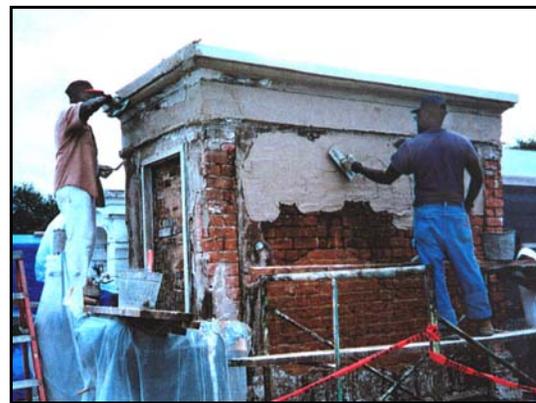
the edge of sound stucco at an inward angle to provide a dovetail key for new stucco. Remove all loose dirt and debris from the masonry substrate with soft bristle brushes and dampen well all surrounding stucco and masonry brickwork prior to and after the application of new stucco.

Always apply stucco repair patches to the level of the existing stucco. Do not feather edges of new stucco repairs over adjacent existing stucco. Match existing texture using the appropriate wood or rubber float. If stucco was scored to replicate ashlar block, allow stucco to set until thumbprint hard and strike a shallow joint line in the same dimension and manner as the original. Flush fill all surface cracks and holes in order to provide a water tight skin. Finally, make sure all horizontal surfaces allow for proper water disposal.



Tomb #591 - Cracks and losses of original stuccowork are filled with hydraulic lime.

A highly durable and compatible mix for new stucco and stucco repairs is 1 part Riverton hydrated hydraulic lime (HHL) to 2 parts fine masons sand (by volume). A blend of 1 part white Portland cement to 2 parts lime putty to 6 parts fine masons' sand may be used if the hydraulic lime is not locally available. Sound ornamental stucco, such as cornice moldings and pilasters, should always be preserved. However, missing areas requiring replacement can be duplicated carefully by recording the profile with a molding gauge and cutting a matching sheet metal template, which can then be used by a skilled mason to re-create the molded work in place. Hand rebuilding of moulded work should be avoided.



Tomb #351 - Missing stucco replaced with a compatible hydraulic lime mix.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Guidelines - Masonry

Do's

Do Not's

DO inspect individual tombs on a regular basis for structural defects. It is important to remember that most deterioration is related to moisture penetration. Make sure water drains away from the tomb.

DO regularly check the tomb for vegetation. Vegetation left unchecked can invade the masonry, causing eventual displacement and collapse. Mature growth is far more difficult and expensive to remove than seedlings. Avoid the use of herbicides as these can introduce harmful salts into masonry.

DO repair rather than replace damaged or missing stucco. Avoid Portland cement mixes, as they are far too hard and dense and will trap moisture within the tomb masonry. Stucco and mortar repairs using hydraulic lime or lime and cement blends are always preferable.

DO NOT remove or replace original brickwork with dissimilar materials such as concrete masonry block or poured or pre-cast concrete.

DO NOT seal the ground surface around the tomb with poured concrete. This will preferentially drive ground water up through the brick walls no matter how well protected the surfaces are and will eventually damage the brick and stucco.

DO NOT remove original stucco, leaving exposed brick. Stucco work is both protective and decorative and was often painted with breathable limewashes.

DO NOT re-face stucco tombs with stone or re-stucco with Portland cement. This completely obliterates the original appearance of the tombs and obscures the details.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Technical Guidelines - Surface Finishes

All stucco tombs were painted for decoration and protection with limewashes of various colors. Traditional and acrylic-amended limewashes are still recommended as the most serviceable protective coatings for stucco covered tombs. Evidence of ochre, red, and gray colored and white limewashes has been found on tombs as well as in numerous historical images. Individual tombs can be analyzed to determine their original colors and refinished to match the most significant historical color.



The vestiges of past colors used on the tombs.

Stable lightfast alkali-proof cement pigments should be used to recreate these colored washes. For most tombs, a plain unpigmented whitewash is recommended. Contact *Save Our Cemeteries* for a color chart of traditional limewashes currently in use for the Alley 9L restoration project and

for information on limewash recipes and material sources.

If slaked lime putty is not available, thoroughly mix hydrated lime (Type S) with water to a putty consistency, top with water, and allow it to stand covered for at least 24 hours; two weeks is preferable. Before applying, sieve the lime through a fine screen and thin with water to the consistency of light cream. To increase adhesion of paint to the old surface, a diluted acrylic emulsion can be added to the mixing water in a ratio (by volume) of approximately 1 part acrylic to 10 parts water just before use. If a pigmented limewash is used, the correct ratio of pigment to limewash should first be determined (matched to the above samples) by preparing small test batches and allowed to dry.

Pigmented limewashes should be mixed in large enough quantities for each single application coat and no less than 1-2 gallons. White limewash is best pigmented by first mixing the total amount of pigment required in a small amount of water or limewash and then adding that into the larger quantity to be pigmented. Never add the pigment dry into the limewash as it will not evenly disperse and cause streaking. Mix well by hand or

Surface Finishes 49



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

with a mechanical mixer for not less than 15 minutes.

Before application of any paint finishes, stucco surfaces should be free of dirt, debris, oil, biological growth, and flaking paint; otherwise the limewash will not bond. Heavy accumulations of earlier finishes can be easily removed by hand scrapping aided by low pressure water such as a garden hose. More specialized methods of paint removal are possible; however these are best performed by an experienced professional as they can cause great damage to stucco and stonework as well as cause personal injury if misapplied.

Dampen the wall with water and then apply the limewash with traditional distemper or tampico fiber brushes, brushing it on in short multi-directional stroke applications. Due to the rapid drying, it should be applied in small areas to avoid drying at the overlap. Apply several thin coats (at least three), allowing each coat to dry before applying the next coat. Dampen the surface between coats and avoid working in direct sun.

If used properly, limewash finishes are durable, inexpensive, easy to apply and environmentally and user friendly. Their translucent appearance cannot be duplicated by opaque modern synthetic “latex” paints and their eventual build-up is easily removed unlike “latex” and oil-based paints.



*Limewashing the Esteve Tomb, #13.
Application of a dark grey limewash,
matched to the original limewash layer
historically intended to imitate the blue-grey
limestone closure tablet.*



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Guidelines – Surface Finishes

Do's

DO apply masonry paints, preferably limewashes, to the masonry on an annual or bi-annual basis if possible. If limewashing is not possible, select a masonry “latex” paint that resists build-up by chalking.

DO repaint periodically – every 2 years is best – to protect and keep the tomb clean.

Do Not's

DO NOT paint the stone closure tablet or stone surround, only the stucco.

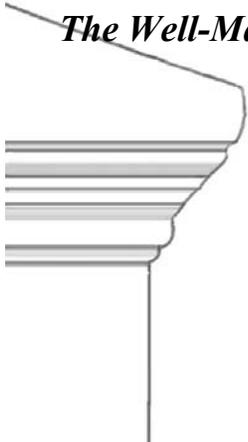
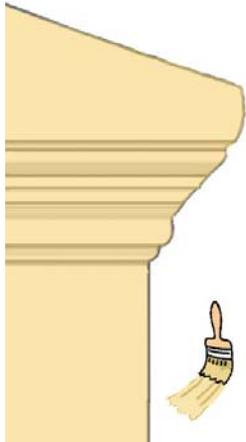
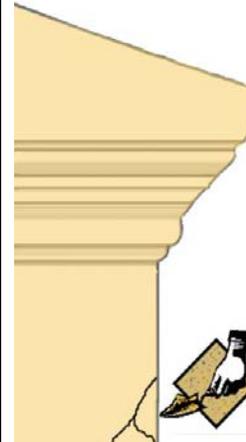
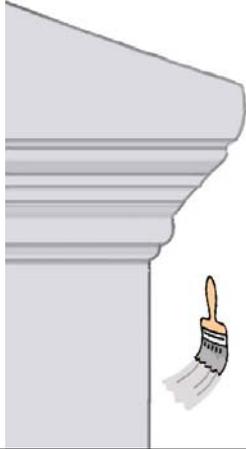
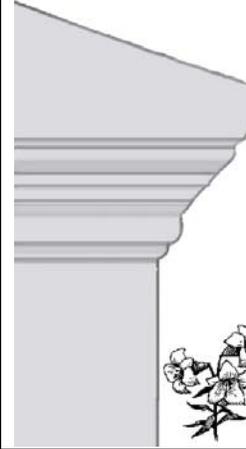
DO NOT try to waterproof the monument as moisture will be trapped inside, resulting in eventual masonry failure.

DO NOT use oil, alkyd, or other high performance coatings, as they will cause masonry decay and fail from entrapped moisture.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

<p><i>The Well-Maintained Tomb</i></p>  <p><i>Original Tomb</i></p> <p><i>Built of soft hand made brick, covered in stucco and limewashed.</i></p>	 <p><i>Regular Care</i></p> <p><i>Every year or two, a family member applies new lime wash.</i></p>	 <p><i>Regular Care</i></p> <p><i>As small cracks develop, repairs are made. Water is kept out of the interior.</i></p>
 <p><i>Regular Care</i></p> <p><i>As needed, the sacrificial stucco layer is replaced.</i></p>	 <p><i>Regular Care</i></p> <p><i>Fresh lime washing, new shades. Ready for visitation on All Saints' Day.</i></p>	 <p><i>Regular Care</i></p> <p><i>Well constructed & maintained.</i></p>

J. Peters, 2002



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Technical Guidelines – Stone Tablets & Sculpture

A fine-grained, white calcitic marble was used most frequently for closure tablets, tomb slabs, plaques and sculpture. Several other stones are also found in lesser quantities, including a medium to large grained grey veined white marble and a dark gray limestone. By far the most serious problem affecting tomb stonework is the deformation (bowing) and breaking of the closure tablets and their surface erosion (“sugaring”) from atmospheric weathering.



Tablets bowed and cracked.

Mechanical Repair

Marble, being highly crystalline, under-goes a volume increase with each thermal cycle, leading to permanent expansion and distortion. If restricted, eventual cracking and breaking of the stone often occurs in

order to relieve this built-up stress. This is clearly visible in the many bowed and deformed S- and C-shaped closure tablets. Their poor design as large thin (1”) slabs tightly fitted in the tomb opening and fine-grained structure have contributed significantly to their structural deformation and breakage in New Orleans’ hot damp climate.

Surface erosion and loss of inscription and carved detail on marble and limestone are due to these stones’ chemical sensitivity to acidic conditions caused by atmospheric pollution and micro-flora. Black staining commonly found on horizontal surfaces and joints is the result of black fungal growth.



Bergamini Tomb, #12. Eroded marble statue and fungal stained stucco.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Frequently, due to the conditions outlined above, inscription tablets and various architectural and sculpted elements become stained, eroded, fragile and fragmented, often disassociated from their original location. In such instances, if conservation work is not to proceed immediately, stonework should be photographed where found, and a precise record kept which will identify all of the elements. This is useful should elements be stolen and later retrieved. All of the fragments should be marked (on their reverse side) with their location using chalk or a graphite pencil. A copy of the record should be made and stored with the actual element, and the original copy placed with the governing body of the cemetery or preservation society. The fragments should be stored in a dry, cool, safe location that provides ready access to the fragments for restoration and reinstallation. Objects should be placed off of the ground to allow for air circulation and to avoid moisture damage.

Fragmented enclosure tablets and sculpture should be repaired as soon as possible before pieces become lost or damaged from handling. A trained conservator or

technician is best qualified to perform this work. For smaller breaks, a structural adhesive is adequate. Here it is important that the adhesive used be appropriate to the climate. A 2-part epoxy resin, which provides good adhesion and strength with a wider range of environmental tolerances, is more reliable for general stone repairs in subtropical climates. In cases where fragments or elements require structural reinforcement, threaded nylon rod, glass or carbon filled polyester, or stainless steel pins can be used in combination with adhesives or as a dry friction fit.



An example of a bad marble tablet repair with incompatible materials and poor workmanship.

For general adhesive repair, fragments should be cleaned as described for masonry. Adhesive repairs require completely dry, clean surfaces at the interface of the bonding. For surface preparation, the contact edges should be water



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

washed, swabbed with denatured alcohol followed by acetone. All joints should be dry tested for fit before the adhesive is applied. Surfaces and edges should be aligned with a straight edge to maintain original plane. Tests based on manufacturer's recommendations should be executed to determine the working time dependent upon temperature and humidity.

The adhesive should be mixed in quantities readily applied within the setting time. It should be applied as small spot welds very thinly and evenly to both edges, leaving a margin towards the outer surfaces for the spread of the adhesive at contact. The surfaces should be joined immediately and held in position until the initial set has occurred (approximately 15 minutes), preferably under tension with straps or clamps. All surfaces should be protected with padding to prevent abrasion. Any excess adhesive visible at the cracks should be mechanically removed in its gel state before it hardens as it will discolor and 'stain' the stone.



Conservator applying small dots of adhesive to stone fragments positioned for joining.

On those stones where areas of loss exist along narrow breaks, a fill of lime putty with fine banding sand or marble dust should be applied. The fill may be colored to match the stone by the addition of small quantities of masonry pigments or selecting a slightly yellow or grey sand. Larger losses of stone along breaks require more aggregate to control shrinkage, usually 2 parts aggregate to 1 part binder (lime and cement). Resin fills should be avoided as they will discolor under exposure to the sunlight.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

For most breaks it is necessary to provide reasonable alignment by working on a horizontal support. Improperly aligned joints are unsightly; growing more noticeable with age as the rough joint attracts dirt and bio-growth. A sheet of exterior grade 1/2" plywood may be placed on sawhorses to provide a suitable worktable on site. For tablets that have become deformed, temporary support of the deformation configuration must be constructed to achieve joint alignment and reduce stress at the joint. Mason's shims of various sizes, foam padding, a sand bed, or small balls of aluminum foil are useful for this localized support. Where continued interment is not anticipated, fragile, deformed tablets can be permanently reinstalled in a full mortar bed of 1 part white Portland cement to 2 parts hydrated lime to 9 parts mason's sand (by volume) with stainless steel supports. Surface mounted carbon fiber vinyl ester resin straps with adhesive welds are currently being tested to offer lightweight tensile reinforcement to the back of deformed tomb closure tablets.

For large stone losses, "Dutchman" joins

such as tomb thresholds where corrosion of the metal enclosure has cracked the corners. Such repairs require professional experience in the selection, sizing and installation of the stone Dutchman. New or reused stone should match the existing in color and texture and the joint should be as invisible as possible. Epoxy adhesives, with or without non-corrosive pins, should be used and kept well below the surface of the joint. Cosmetic fills are best made with cement, lime and marble powder. Stone dust and resins should be avoided as they will discolor over time.



Left - A marble Dutchman prepared to repair the Bergamini threshold. Right - the repair in place.

Where tablets are missing or need replacement, fine white marble should be selected over other stones. Tablets should be sized to a minimum of 1 1/2" in thickness. Where possible, new and reinstalled tablets should be shaved at the



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

bottom ¼” and placed on lead or polyethylene foam shims to allow for thermal movement.

The original single or double pinning assemblies used to retain the tablet in place should be reused or substituted in kind. If wooden blocks were used to anchor the pin into the vault masonry, these can be replaced if necessary with more durable composite wood to avoid future insect attack. Only non-corrosive stainless steel or bronze pins should be used and are available from the Archdiocesan Cemeteries office.

The recent substitution of gray granite and blue anorthosite for many of the historic white marble tablets is significantly impacting the historic appearance of the site as a whole. These new closure tablet replacements are dramatically different both in color and reflectivity from their marble precedents. While the closure tablet issue may seem like a minor aesthetic debate, it is indicative of the larger question of the contribution of repetitive architectural elements to the visual integration of the overall site and the impact of such changes.

Durable white marble is available from local stone suppliers at comparable costs and should be used in lieu of granite at this site.



A comparison of original marble (left) and inappropriate grey granite replacement (right) closure tablets.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Guidelines – Stone Tablet & Sculpture

Do's

Do Not's

DO document and protect fragments before they become disassociated from the tomb, vandalized or stolen.

DO NOT try to paint, coat, or re-carve the details and inscriptions that have been lost to natural weathering on sculptured marble ornaments.

DO save and remount existing tablets that must be replaced for continued tomb use.

DO NOT use dark colored stone for tablet replacements.

DO use white, preferably Carrara marble, of greater thickness (1 1/2 ") for new tablets.

DO repair rather than replace broken stone with matched stone Dutchman or mortar fills.

DO use similar pinning methods where possible to mount the closure tablet in place.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Cleaning

The decision to clean should be based on a genuine necessity, as all masonry cleaning techniques subject the stone to potential hazards. A monument which is darkened with soiling, biological growth and metallic staining, is not only disfigured but also is susceptible to masonry deterioration and, therefore, requires cleaning. A lightly soiled monument with legible details, however, does not require a major cleaning. All cleaning methods must be tested in a discreet location for each monument before full-scale treatment begins and all but the simplest methods should be left to the professional. The gentlest method should be tested first to avoid unnecessary damage. Fragile, bowed tablets should not be cleaned prior to stabilization.

Water washing is the gentlest, safest, and least expensive method for cleaning masonry and may be performed by the nonprofessional provided the tomb or stonework is sound. Most general surface soiling and some biological growth are easily removed with water. All open joints must be repaired first, to prevent penetration of large quantities of water into the masonry.

The water should have a low metals content to avoid staining. Usually, potable water is adequate.

Water can be applied at low pressure with a garden hose spray and may be supplemented by gentle scrubbing with nonmetallic soft bristle brushes and household detergent.



Wet cleaning bio-growth from a marble tablet.

Much of the black staining occurring on tomb marble and stucco is not atmospheric soiling, but fungal growth. This can be most effectively removed after wet brushing by applying a 2-5% solution of calcium hypochlorite as found in commercial pool chlorine (2-5 parts dry powder



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

to 100 parts water by volume) mixed with an inert clay such as talc or kaolin or paper pulp as a poultice. Once dry this can be removed by brushing and the surfaces well rinsed with a hose or pressure washer. Proper safety precautions must be taken as this material is a strong oxidizing agent. Eye and skin protection is required.

Since black gypsum crusts, resulting from the interaction of the marble or limestone with acidic atmospheric pollution, are water soluble, they may be removed with a slow water soak. For this method it is most important that all joints and seams are watertight to prevent the introduction of water to the tomb interior and the necessary drainage is provided to avoid water collection. As slight staining can sometimes develop on certain stones possessing iron impurities, which can react to form brown or yellow oxide stains, tests should always be done first. Many commercial chemical products are currently available for cleaning, based on acidic and alkaline compounds and detergents. If used improperly, these can cause etching of stone, insoluble residues, as well as introduce harmful salts which can

cause further stone decay. Use of such cleaning systems is best left to experienced professionals.

Abrasive cleaning involving any grit or aggregate applied under pressure should not be used on stucco, brick, or friable stone. The technique is aggressive and can cause irreversible damage to historic fabric. Abrasive cleaning can lead to accelerated weathering by pitting the surface, thus opening the masonry to increased moisture penetration, atmospheric reactivity, and subsequent deterioration. Basically, any method which removes stone should be avoided. Only an experienced conservator should perform such specialized cleaning methods and only after individual tests have been performed.

Consolidation

Once stone is deteriorated, the porous structure becomes more open and less resistant to deterioration. A professional conservator may recommend consolidation of the stone surface to improve strength and prevent additional decay. Consolidants generally recommended for marble are silicic ethyl ester based, such as Conservare® OH by Prosoco, Inc.. The



St. Louis Cemetery No. 1

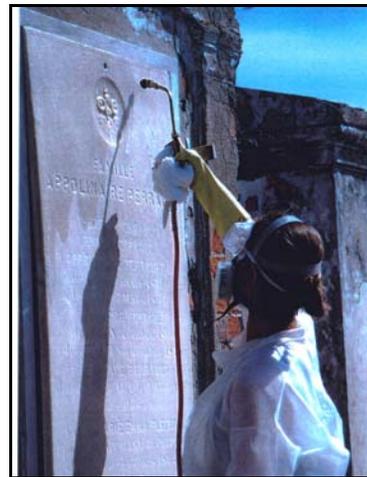
Guidelines for Preservation & Restoration

consolidant penetrates the porous surface and establishes a silicon dioxide matrix to supplement the stone's natural calcareous binder. The consolidant is a clear, penetrating liquid, which enters the stone's composition and collects at contact points between individual grains. As the material cures, the liquid consolidant is converted into silicon dioxide, a glass-like material that binds the grains together. One advantage of this particular consolidant is that the treated stone remains water vapor permeable.

Before use, consolidants should be tested in a small, discrete area to ensure that no unintended reactions occur. Consolidation requires a fairly elaborate process of cyclical applications, with periodic testing between applications to determine when sufficient consolidant has been applied. Each cycle may consist of 2-3 applications spaced at 5-15 minute intervals. A more lengthy 30-40 minutes drying time separates each cycle. The consolidant is applied very gently with soft brushes or spray to reach intricate design details.

After the last application, the surface is usually treated with an organic solvent which removes any unabsorbed material from the stone surface. The stone material is then covered to protect it from rain. It should remain protected and undisturbed for 2-3 days of drying time and 2-3 weeks for a full cure.

It should be noted that because of the complicated technique involved in applying and in determining the correct quantities of consolidant, there is great potential for incorrect application. Consolidation is a highly specialized operation involving expensive and toxic materials and should only be executed by an architectural or sculpture conservator.



Conservator applying consolidant.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Guidelines – Cleaning & Consolidation

Do's

Do Not's

DO clean the monument by the gentlest means possible. Begin with clean water and a soft bristle brush, followed by a solution of household detergent or household ammonia and water (one part ammonia to four parts water) if needed.

DO contact a conservation professional before undertaking chemical or abrasive cleaning techniques.

DO NOT use household bleach, metallic brushes or abrasive techniques such as abrasive pads or sandblasting.

DO NOT attempt to clean an item, such as a broken tablet, that might appear to be fragile or unstable.

DO NOT use consolidants or water repellants without the assistance of a stone conservator.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Technical Guidelines - Metalwork

Common Problems

Years of deferred maintenance and vandalism have left the metalwork in the cemetery in very poor condition. The following conditions are among the most commonly observed.

Missing elements

Theft is the major cause of most missing metalwork in the cemetery. Many of the enclosures are completely or partially missing, the most vulnerable elements being the gates, crosses, and decorative details. Smaller items such as the relief sculpture and cast iron urns have also been lost to theft. The deteriorated condition of the metalwork sends a message that it is



expendable and makes it easier for elements to be wrenched loose.

An earlier attempt to remove the cross on Lacoul Tomb, #493, left it bent and damaged. It has since been stolen.

Structural failure & corrosion

Failed joints, broken hinges and loose and corroded anchoring into the tomb masonry are primarily the result of corrosion and racking.



Failed spline connection at post.

Corrosion is the process whereby metals combine with other elements and compounds to revert to a more stable state, thereby losing their desired properties. Corrosion can be caused by intrinsic microstructural flaws in the production of the metal or by extrinsic environmental attack from oxidation, weathering, and electrochemical action. Despite the relative resistance, wrought iron and high purity cast zinc show to corrosion; these have suffered from a lack of protection and the excessive



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

local weather conditions. Poor maintenance and frequent flooding has allowed moisture to penetrate joints causing corrosion of the relatively thin mortises and rivets. Galvanic corrosion has occurred between lead boots and the wrought iron posts to the extent that the wrought iron posts have corroded away causing collapse. Partial joint and anchoring failure has exerted stresses on the railings causing deformation, wear, and breakage.



Railing with corroded post bases and stained curbing.

Active corrosion of the iron has stained the zinc ornament and the stone thresholds and curbing. Nevertheless, much of the overall

surface corrosion appears stable having formed a protective blue-black or red-brown oxide. Other areas, especially joints and basal elements, display severe flaking caused by sulfide and chloride salts in the environment.

Zinc has good resistance to corrosion as long as it is permitted to form its protective dull gray finish of insoluble basic carbonate. Some of the zinc rosettes and hubs at the intersection of bars have split allowing water to collect, which has caused the iron to corrode, expand, and push the zinc connectors further apart. Other zinc details such as the picket spear points are experiencing cracking where the iron was not completely covered by the zinc when cast.



Remnants of cast-on zinc hub.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Racking

Differential settlement of the tombs and their thresholds has caused serious racking of the partial enclosures. Since the top rails of the enclosures are anchored into the tomb walls and thresholds, settlement has put tremendous stress on the structure of the railings causing them to fail at their joints and even to bend bars and pop riveted top rails. Aside from damage to the metalwork, racking contributes to the problem of threshold corner spalling where the ironwork was anchored to the masonry with molten lead.



*Side view
showing racking
of metalwork on
the Bergamini
Tomb #12.*

Alterations

Past and recent repairs to the metalwork consisting of on-site arc welding and metallic fasteners of mild steel have often resulted in failed or unsightly work.

Treatments

Treatments include stabilization with temporary measures, surface protection, repairs and replacement.

Temporary Repair and Storage

Temporary measures can do much to stabilize loose and detached metalwork and safeguard its loss to theft and vandalism. Bracing and wiring loose elements and installing locks on gates allow elements to remain in place. If removal is necessary, all elements should be tagged and stored in a safe and dry location until repairs can be undertaken.

Surface Protection - Cleaning

Most if not all cemetery metalwork traditionally received some type of coating for protection. The application of paints and coatings are therefore both historically appropriate and necessary to preserve the



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

decorative metalwork. Prior to applying any finishes, the metalwork must be properly prepared or the finishes will fail prematurely or even cause accelerated corrosion by trapping moisture underneath. Careful cleaning is also useful in revealing structural defects that might require attention prior to refinishing.

Good bonding of any applied finish occurs when all loose material such as peeling paint and corrosion layers as well as harmful corrosive salts are removed. Where paint exists, prior to cleaning and removal, samples should be taken from protected locations on the chance that they might identify the original or historic colors used.

Several different techniques exist for the cleaning of metalwork, each requiring different equipment and skill and each resulting in different degrees of preparation. Cleaning by hand with wire brushes, synthetic abrasive pads and with small power-driven wire wheel brushes allows easy and reasonably effective removal, especially for localized areas; however, the method is slow and sometimes incomplete.

Pressurized air-abrasive systems offer the fastest and most effective method of surface preparation and cleaning on- or off-site. Coatings on air-abraded surfaces generally adhere better than on brush-abraded surfaces. Pressure (psi), dwell (or contact) time, and the abrasive type all affect the performance of the air-abrasive system selected for surface cleaning.



Walnut shell blasting on the grillwork of the Bergamini Tomb, #12.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Mild air-abrasive materials such as walnut shell and corn cob grit have been used effectively at low pressure (40 psi) at St. Louis Cemetery No. 1 and elsewhere to remove all loose corrosion and paint as well as other contaminants that will interfere with coatings adhesion. Selection of the optimum parameters for each project depends on testing and the skill and knowledge of the operator. For this reason, air-abrasive cleaning should only be performed by knowledgeable professionals.

Provided no other repair work is required, abrasive cleaning and refinishing should be performed in place, providing proper protection is made to the surrounding masonry. Should repair and replacement work be required, removal of the metalwork to a shop or studio affords the best environment in which to clean and refinish under controlled conditions. Cleaning off-site allows the option of chemical and electrolytic solution baths for the complete removal of tenacious coatings and corrosion; however the chemicals used must be thoroughly neutralized. Such methods must be carefully monitored especially for zinc,

which is vulnerable to deterioration from the strong alkalis in chemical strippers.

Regardless of the method of cleaning chosen, all bare metalwork should be taken to a dull grey finish (not shiny metal) and wiped down with mineral spirits to remove residual dust and oils. All cleaned ironwork must be immediately treated with a quality inhibitive primer or coating to prevent the formation of rust which will interfere with adhesion of the new coating. This is especially important in the humid environment of New Orleans.

Although little paint has survived on the cemetery's metalwork, proper precautions must be taken to contain hazardous materials such as lead in the removal of paints. Mechanical cleaning will create harmful airborne dusts therefore proper eye and skin protection, respirators, and disposable suits are necessary for personal protection. These are all available from occupational safety equipment suppliers. A thorough means of containing and disposing of contaminated waste from cleaning must also be devised in compliance with local environmental regulations.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Surface Protection - Filling

All small holes and pitting that might hold water should be filled with a quality patching material designed for metal such as auto body putty or filled epoxies. Gaps in joints provide places for the entrapment of water and subsequent corrosion. Their repair is best addressed by dismantling the pieces, cleaning, priming, and reassembling them in a bed of non-hardening silicone sealant.

Surface Protection – Paints and Coatings

A coating system should be selected that can be easily applied depending on the application context (on- or off-site). Only paints meeting all the current health, safety, and environmental standards should be used. Alkyd vehicle paints have been a standard for years, but with new and evermore stringent legislated controls on volatile organic compounds (VOC) emissions, research and development of high performance water based paints has accelerated. Acrylic paints are building a relatively good track record for protection of metalwork and should be used over other irreversible coatings such as epoxy based paints.

Paints and coatings should only be applied when surfaces are perfectly dry and temperatures are above 50 degrees F. Brush applying paint insures the best coverage. If railings are removed, they can be spray painted in a controlled environment followed by “back-brushing” to ensure that the paint is worked into the surface and into all joints.

Three-coat work consisting of a primer, intermediate, and finish coats is standard for bare metal. A good quality corrosion inhibitive, “direct-to-metal” (DTM) primer should be used followed by two compatible finish coats. If the paint is applied in thin coats, there will be better adhesion, build-up will be minimized, and the detail of the metalwork will be less obscured. Maintenance of the finish should involve periodic inspection and spot repainting to prevent rust from spreading.

Ironwork with particularly active corrosion, or corrosion inaccessible to removal, might require the extra protection afforded by the application of a conversion coating. Iron and zinc phosphate coatings can be applied



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

after cleaning to convert the chemical character of the metal surface, neutralizing rust and to provide a better bonding surface for paint.

Surface Protection – Wax Coatings

Archival evidence suggests that architectural wrought iron was sometimes wax and oil treated rather than painted. In these cases, a microcrystalline-based wax formulation can be used to protect and enhance the metalwork. This method has been extensively used with success on outdoor bronze sculpture and at St. Louis Cemetery No. 1.



Applying wax finish on the Bergamini Tomb ironwork after cleaning with walnut shell blasting.

The wax mixture is applied hot to a previously cleaned and heated surface to chase off condensed moisture on the surface

and to insure adequate flow of the wax for complete coverage. Different formulations are possible including mixtures of microcrystalline and low melting point polyethylene waxes and pigments such as lampblack and are best prepared and applied by a professional conservator.



Anthemion finial on the Bergamini Tomb treated with a pigmented wax finish.

Repair

Most repairs to metalwork require a qualified professional. While repair using original techniques is expensive because of the specialized skills needed, there are excellent reasons for making the investment. Repairs often require the replacement of material, which should be done in-kind



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

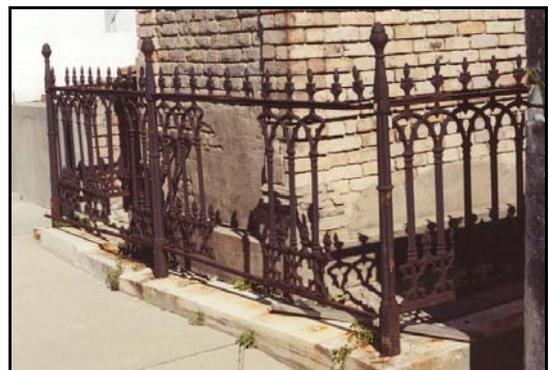
when at all possible. New products can and should be used when it makes good conservation sense such as the filling of pits and cracks with synthetic fillers or the use of sealants to make open joints watertight.

The original methods of assembly are the only ones that will be most visually compatible with the metalwork and offer similar performance. For wrought iron, the disassembly, cleaning and rejoining of joints and elements is the preferred method of repair for weak and broken assemblies. Welding, though easier to perform, cannot work at all junctures particularly where there is a small difference in section between the two pieces being joined. Modern welds also tend to set up corrosion cells, which can eventually destroy the joints they were intended to repair. For mortise and tenon joints, a compromise solution could involve the use of a round dowel instead of a tenon assemblage coupled with plug welding to prevent pivoting of the rail in the post.

Riveted connections such as those used to assemble the scroll and cross work on gate tops are highly prone to corrosion and can

be easily replaced in-kind. Existing bent and broken elements can be reformed or replaced (see below) and the same attachment methods employed.

Cast iron presents a more difficult problem as broken elements cannot easily be repaired after casting. The welding or brazing of broken cast iron is extremely difficult to achieve without causing further damage to the metalwork. Only the most experienced expert should be entrusted with the work. The alternative in many cases will be a mechanical repair involving the drilling and tapping of the cast iron and possible reinforcement with ferrous metal backing fastened with electrolytically compatible screws or bolts.



Broken and missing cast iron sections on Thomas-Hazeur Tomb #330.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Whenever dismantling of the metalwork is required, this should be taken as an opportunity to thoroughly clean and re-prime all pieces before reassembly. This is especially critical with laminated bars such as top railings, which should have a bed of compatible non-hardening sealant applied before reassembly. In this case, original designs can be “improved” to be more watertight and help prevent future deterioration.

Replacement

The replacement of single elements or whole sections of metalwork will be required for many of the enclosures in the cemetery. As a general rule, accepted preservation practice advocates the use of similar materials and fabrication techniques wherever possible. There are cases where substitution of materials and techniques can provide a more durable or less expensive alternative; however caution should always be exercised when changes are made, as these can cause unforeseen future problems.



Replicated cross of forged wrought iron.

Wrought Iron

Although wrought iron is difficult and expensive to obtain today, it should be used over mild steel for replacement parts in repairs to existing enclosures. Wrought iron offers greater workability and resistance to corrosion than mild steel. Straight forging as a technique was used primarily for the fabrication of the wrought iron crosses once found on many of the early step tombs and several enclosure gates. Much of the wrought iron shaping that was done hot occurred with the use of jigs using standard bar stock such as the cross and scroll work



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

cresting gracing many of the tomb gates. The scroll ends were then forged to provide a mass for fastening the zinc rosettes.



Hand forging a cross.

By far, the majority of enclosures were fabricated from round and square iron stock using hand tools and hand-powered machinery. Assemblies were fabricated for each tomb using joinery details similar to those for wood carpentry. Fabricated ironwork has generally performed quite well despite years of neglect. Where necessary, replacements can be made either with hand tools or with the aid of machinery, or by a combination of both techniques.

Cast Zinc, Iron and Lead

Casting as an original production method easily lends itself to the replication of missing or broken parts. Given the small scale of most cast iron, zinc and lead ornaments and fasteners, new molds can be taken directly from the surviving originals. The shrinkage factor that results in casting would be negligible at this small scale. Some specialty companies also produce stock designs of cast ornamental elements that may prove suitable replacements for missing metalwork. The larger cast iron panels and posts of the tomb enclosures would require the expensive creation of new patterns to retain the same dimensions of the cast replicas.

While zinc is still a viable material for recasting, zinc-aluminum alloys would provide greater durability and strength and protect against possible future breakage from vandalism. Cast iron should be used to replicate missing cast iron elements given its low material cost and strength. Despite its lower shrinkage, cast aluminum should not be used to replace cast iron as it will corrode



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

in contact with cast and wrought iron and painted finishes will adhere poorly to it.



*Above, sculptor preparing for casting.
Below, custom sand molds and zinc cast elements for Bergamini Tomb.*

The most obvious case where a substitute material is called for is that of the protective lead base anchor detail (or “boot”) at the base of the railing posts. These have been a problem since their installation due to galvanic action between the two metals

causing the iron to corrode preferentially. This results in weakened attachments and eventual collapse of the metalwork.



Corroded post flange “boot”.

To address this problem, a more durable zinc aluminum alloy replacement would be justified in this very vulnerable application and would look similar to the lead originals. Whereas the lead bases were cast-on the posts after installation, the higher melting temperatures of the zinc-aluminum alloy would require a pre-cast assembly installation. This will require removal of the railing for fitting; however most post insets are loose and the stone threshold or curbing cracked. Removal would allow repair to the corroded post ends, installation of the new



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

protective bases, and reinstallation in the repaired stone supports (see **Stone Guidelines**). This multiple repair remains among the most urgent and critical of all preservation activities in the cemetery.

With all replacement, an economy of scale could be achieved if a series of elements could be contracted for replication warranting the construction of specialized tooling and methodologies required for quick and accurate fabrication.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Guidelines – Metalwork

Do's

DO take measures to stabilize the metalwork and prevent needless additional damage. Take temporary measures to secure loose parts and maintain the finishes.

DO inspect the metalwork periodically for any signs of deterioration and take immediate measures to arrest its progress.

DO repair damage and report theft immediately and take measures to forestall repeat.

DO limit yourself to work for which you are qualified and which you can do safely.

DO enlist the aid of qualified professionals especially in the beginning to help devise a conservation plan for the enclosure.

Do Not's

DO NOT jeopardize the integrity of the metalwork by using inappropriate materials and metalworking technologies that might permanently damage the metalwork.

DO NOT ignore the context of the metalwork. This includes such issues as anchoring to shifting masonry, site drainage, visitor wear and tear and collaboration with other stakeholders on the general management of the cemetery.



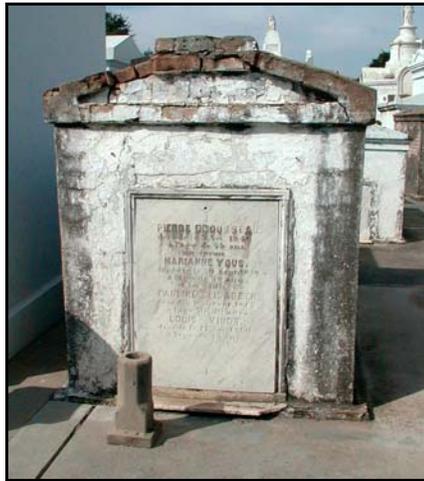
St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Technical Guidelines – Tombscapes

Ground Surface

Many of the tombs repaired in the past 20 years have had the marble or grassy precinct replaced with a concrete slab in the mistaken belief that the impermeable material would keep the problem of rising damp from occurring. The impact on the tombs and on the site as a whole has been dramatic, as the practice has become widespread.



Early tomb now surrounded by a concrete pad.

The water table is very close to the surface in the cemetery. Covering the surface with cement serves to reduce the ability of the ground to evaporate moisture, but does not change the fact that the ground water is right below the tomb providing a ready source of moisture for rising damp. The interior

structure of highly porous bricks, with numerous capillary sized pores, are powerful water absorbers and will overcome gravity to pull ground water into the structure.

It is time to reevaluate this practice. The historical character of the site was one of a permeable grassy space with crushed shell walkways. As time has passed, the tombs have slowly subsided into the damp earth, some have acquired a slight tilt, but most have not. If these individual tomb maintenance practices continue at the current rate, in 30 to 50 years most of the site will be covered in concrete, an impermeable surface. The very character of the site will have been irreparably altered, and the long-term condition of the masonry possibly worsened.

Plantings

As in the case of domestic architecture, a range of garden features, such as planters, accompanies the various types of tomb that have developed in the cemetery. Used for both visual and olfactory decoration of the tomb and cemetery as a whole, gardens played an important role in the design of the tomb, and



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

specialized plant palettes encoded with the language of mourning were used as part of this design.

By the middle of the nineteenth century, the cemetery had become increasingly urban. The loss of the cemetery's pastoral quality led to an increased allocation of the purchased tomb area to be used to endow the tomb with its own landscape setting, often distilled to the symbolic placement of a few plants, a shrub, or even plant cuttings attached to the tomb itself. The design of these garden spaces accompanying the tombs varied with the design of the tomb and with the precinct area surrounding the tomb. Gardens are present in the form of above-ground containers, below-ground containers, accompanying beds, and associated landscape features.

Family memories and documents may describe the traditional flowers used in the planters and to make the immortelles placed on the tomb for All Saints' Day and other special occasions. If the precinct has not been paved over, consider re-establishing the grass and shell ground cover and replace

plantings that once existed. A variety of evergreen and deciduous trees and shrub species traditionally associated with the cemetery are suggested, including *Quercus agrifolia*, *Magnolia grandiflora*, *Magnolia soulangiana*, *Lagerstroemia indica*, *Phoenix spp.*, *Gardenia jasminoides*, *Rhodeodendron spp.*, *Azaleas spp.*, as well as various annuals indigenous to New Orleans. Plants and trees with invasive roots should be avoided, as they can damage tomb masonry.

If the precinct has already been paved in concrete, consider removing it during the restoration project.

Further information on planting can be provided by a landscape architect or horticultural specialist.



New palm plantings have been made recently in the Protestant section.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Guidelines – Tombscapes

Do's

DO care for landscaping adjacent to the tombs. Caution must be taken with power equipment near masonry or iron work. Grass and ground cover should be cut with nylon filament trimmers only.

DO preserve shell paths where they survive.

Do Not's

DO NOT use herbicides as they can cause deterioration of masonry and corrosion of metals, in cases where contact might occur.

DO NOT undertake such interventions that create a discordant appearance in the cemetery landscape.

DO NOT attempt to excavate around the tomb.

DO NOT repave with concrete.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Conclusions

These guidelines have been prepared to protect and preserve the historical character of New Orleans' unique tomb architecture and cemeteryscapes. The recommendations are based on tried and true solutions designed to repair and maintain the family tomb for many years to come.



Repair and maintenance are critical for good tomb preservation.

In general, the replacement of historic fabric is to be avoided. When structural problems demand repair, similar compatible masonry materials should be used. In those instances where faulty design or construction details have led to structural problems, design modifications should be built into the new work without altering the appearance. For instance, where severely deformed marble slabs must be replaced, a thicker slab should be substituted to avoid future deformation. Original tablets should be saved and reinstalled on the side or rear of the tomb when replacement is necessary.

As stated previously, preservation professionals should be employed for major restoration work. Such professionals should present to the tomb owners information on the condition; recommendations on cleaning, conservation and repair; and cost proposals for performing all work. They should also be willing to supply data on all products to be used. After repair, no tomb can survive without a program of cyclical maintenance.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

The preservation or restoration of a family tomb can be a very rewarding experience. The research phase will provide a great deal of information on family, neighborhood and city history. The project can involve the children of the family or neighborhood, giving them a greater understanding of local history and of their own part in that history.



Local history programs using the cemetery and its preservation help establish a sense of place.

Proposed aesthetic, repair or structural changes to a tomb may bring out strong opinions from various family members, based on their memories and perceptions. These family interactions, combined with archival research experience and exposure to contractors and preservation professionals will make this a long-term learning

experience. By the end of the project, the family will be very proud of the tomb and a celebration is certainly in order. The many things learned throughout the project will also be of interest to others in the community and should be published in a local preservation newsletter, the newspaper or one of the many good New Orleans based magazines. Finally, remember to let all the friends and relatives no longer in New Orleans know about the successful completion of the project, and thank everyone who contributed.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Endnotes

1. Kay D. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*, Washington, D.C.: National Park Service, 1995.
2. Peter Marquis-Kyle and Meredith Walker, *The Illustrated Burra Charter: Making good decisions about the care of important places*, Sydney, Australia: Australia ICOMOS, 1992.
3. *AIC Code of Ethics and Guidelines for Practice*, aic.stanford.edu/pubs/ethics.html. (6/02).
4. Weeks. p. 1.
5. Weeks. p. 2.
6. John Pintard wrote a series of articles published in the *Daily Advertiser* April 15 to May 22, 1802 while an editor of that paper in New York City.
7. Benjamin Latrobe, March 8th 1819. Latrobe's Journals have been published by two sources. *Impressions Respecting New Orleans Diary & Sketches 1818-1820*, Edited with introduction and notes by Samuel Wilson, Jr. 1951. p 82. *The Journals of Benjamin Henry Latrobe 1799-1820 From Philadelphia to New Orleans*, ed. Edward C. Carter II, John C. Van Horne, and Lee W. Formwalt, Samuel Wilson, Jr. Consulting Ed. 1980, p. 241.
8. St. Louis Cemetery No 1 in 1834, Watercolor sketch by John H.B. Latrobe. Image reproduced from cover art on The St. Louis Cemeteries of New Orleans, October, 1988.
8. Grace King, *New Orleans: The Place and The People* (New York: Macmillan and Co., 1895), p. 401.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Bibliography

- Anson-Cartwright, Tamara, ed. *Landscape of Memories: A Guide for Conserving Historic Cemeteries*. Toronto: Ministry of Citizenship, Culture and Recreation, 1997.
- Ashurst, John et. al., *Practical Building Conservation*. English Heritage Technical Handbook, Vol. 4, New York: Halsted Press, 1988.
- Ashurst, John and Nicola Ashurst. "Mortars, Plasters and Renders." *Vol. 3, Practical Building Conservation. English Heritage Technical Handbook*. New York: Halsted Press, 1988.
- Ashurst, Nicola. *Cleaning Historic Buildings, Vol. 2: Cleaning Materials and Processes*. Chapter 7: "Removal of Paint and Graffiti." London: Donhead Publishing Co., 1994.
- Bealer, Alex W., *The Art of Blacksmithing*. New York: Funk & Wagnalls, 1976.
- Berthaux, Louis, *Le Parfait Serrurier*. Paris: Léonce Laget, 1841, Réimpression 1979.
- Brock, Eric J. *Images of America: New Orleans Cemeteries*. Charleston, SC: Arcadia Press, 1999.
- Carey, Joseph S. *Saint Louis Cemetery Number One, Souvenir Booklet*. New Orleans: St. Louis Cathedral, 1948.
- Carter, Edward C. II, John C. Van Horne, and Lee W. Formwalt, eds. *The Journals of Benjamin Henry Latrobe 1799-1820: From Philadelphia to New Orleans*. New Haven: Yale University Press for the Maryland Historical Society, 1980.
- Christovich, Mary Louise, ed. *New Orleans Architecture, Vol. III—The Cemeteries*. Gretna, LA: Pelican Publishing, 1974.
- Christian, Marcus, *Negro Ironworkers of Louisiana. 1718-1900*. Gretna, LA: Pelican Publishing Co., 1972.
- Curtis, Steven O’Ryan. "St. Louis I Cemetery, New Orleans: Transitional Composite Metalwork, (19th- C)." Masters thesis, University of Pennsylvania, Aug. 2002.
- Durno, A.G. "Old Burial Places." *Standard History of New Orleans*. Edited by Henry Rightor, 256-266. Chicago: Lewis Publishing Co. 1900.
- Federal Writers’ Project, *The WPA Guide to New Orleans*, Boston: Houghton Mifflin, 1930.
- Feilden, Bernard M. *Conservation of Historic Buildings*. Oxford: Architectural Press, 1994.
- Florence, Robert. *City of The Dead: A Journey Through St. Louis Cemetery #1*. New Orleans: University of Southwestern Louisiana, Center for Louisiana Studies, 1997.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

- Gayle, Margot, David W. Look and John G. Waite. *Metals in America's Historic Buildings: Uses and Preservation Treatments*. Washington D.C.: U.S. Government Printing Office, 1980.
- Geerlings, Gerald K., *Wrought Iron in Architecture: An Illustrated Survey*. NY: Dover Publications, Inc., 1983.
- Gloag, John and Derek Bridgwater, *A History of Cast Iron in Architecture*. London: George Allen and Unwin Ltd., 1948.
- Graduate School of Fine Arts, University of Pennsylvania. *Dead Space: Defining the New Orleans Creole Cemetery*. Philadelphia: GSFA - University of Pennsylvania, June 2001.
- Grimmer, Anne. *Preservation Brief 22: The Preservation and Repair of Historic Stucco*. Washington, D.C.: Department of the Interior, National Park Service, Technical Preservation Services, 1990.
- Gurcke, Karl. *Bricks and Brickmaking: A Handbook for Historical Archaeology*. Moscow, ID: University of Idaho Press, 1987.
- King, Grace. *New Orleans: The Place and The People*. New York: Macmillan and Co., 1895.
- Kumar, Rakesh. *Biodeterioration of Stone in Tropical Environments*. Los Angeles: Getty Conservation Institute, 1999.
- Latrobe, Benjamin Henry Boneval. *Impressions Respecting New Orleans: Diary & Sketches 1818 – 1820*. Edited by Samuel Wilson, Jr, 115-125. New York: Columbia University Press, 1951.
- Lemmon, Alfred E., ed. The Southern Cemetery. Special issue. *The Southern Quarterly. The Southern Quarterly: A Journal of the Arts in the South*, Vol. XXXI, No. 2, (Winter 1993).
- London, Mark. *Masonry: How to Care for Old and Historic Brick and Stone*. Washington, D.C.: The Preservation Press, 1988.
- Massari, Giovanni and Ippolito Massari. *Damp Buildings Old and New*. Rome:ICCROM, 1993.
- Masson, Ann M. "Père La Chaise and New Orleans Cemeteries." *The Southern Quarterly: A Journal of the Arts in the South* 31, no. 2 (Winter 1993).
- Masson, Ann M. and Lydia H. Schmaltz. *Cast Iron and the Crescent City*, New Orleans: Louisiana Landmarks Society, 1995.
- Matero, Frank G. et al. *A Conservation Program for Louisiana's Above Ground Cemeteries*. New York: The Center for Preservation Research, unpublished report, 1987.
- Matero, Frank G., with Joel C. Snodgrass, "Understanding Regional Painting Traditions: The new Orleans Exterior Finishes Study." *APT Bulletin* 24 (1-2, 1992): 45-47.
- McKee, Harley J. *Introduction to Early American Masonry, Stone, Brick, Mortar*



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

- and Plaster*. Washington DC: National Trust for Historic Preservation, 1973.
- Meier, Lauren G. and Betsy Chittenden. *Preserving Historic Landscapes, An Annotated Bibliography*. Washington, D.C.: National Park Service, 1990.
- Olivier, Alan. *Dampness in Buildings*, 2nd ed., Revised by James Douglas and J. Stewart Stirling. London: Blackwell Science, 1997.
- Peters, Judith A. "Modeling of Tomb Decay at St. Louis Cemetery No. 1: The Role of Material Properties and the Environment," Masters thesis, University of Pennsylvania, Aug. 2002.
- Ransom, W.H. *Building Failures: Diagnosis and Avoidance*, 2nd ed. London: E&FN SPON, 1996.
- Records and Deliberations of the CABILDO, typescript by WPA, 1936.
- Strangstad, Lynette. *Preservation of Historic Burial Grounds*. Washington, D.C.: National Park Service, n.d.
- Teutonico, Jeanne Marie. *ARC A Laboratory Manual for Architectural Conservators*. Rome: ICCROM, 1988.
- Thompson, Sharyn, Joey Brackner and Alfred E. Lemmon. "Historic Cemeteries in the Southern United States: A Preliminary Bibliography." *The Southern Quarterly: A Journal of the Arts in the South*. Vol. XXXI, No. 2, (Winter 1993).
- Thompson, Sharyn and Lynette Strangstad. *Florida's Historic Cemeteries, A Preservation Handbook*. Tallahassee: Historic Tallahassee Preservation Board, 1989.
- Touchet, Leo. "New Orleans Jazz Funerals." *The Southern Quarterly: A Journal of the Arts in the South*, Vol. XXXI, No. 2, (Winter 1993).
- Torraca, Giorgio. *Porous Building Materials: Materials Science for Architectural Conservation*. Rome: ICCROM, 1981.
- Vieux Carre Masonry Maintenance Guidelines*. Revised from the initial report prepared by Mary L. Oehrlein in 1977. New Orleans: Vieux Carre Commission, 1980.
- Waite, John G. *Preservation Brief 27: The Maintenance and Repair of Architectural Cast Iron*. Washington, D.C.: Department of the Interior, National Park Service, Technical Preservation Services, 1991.
- Weaver, Martin E. *Conserving Buildings*, Revised Ed. New York: John Wiley & Sons, 1997.
- Thompson, Sharyn, Joey Brackner and Alfred E. Lemmon. "Historic Cemeteries in the Southern United States: A Preliminary Bibliography." *The Southern Quarterly: A Journal of the Arts in the South*. Vol. XXXI, No. 2, (Winter 1993).



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Weeks, Kay D. and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*, Washington, D.C.: National Park Service, 1995.

Wilson, Samuel, Jr. and Leonard V. Huber. *The St. Louis Cemeteries of New Orleans*. New Orleans: St. Louis Cathedral, 1963, 1988, 2001.



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Resources



Project Website

- **University of Pennsylvania, Graduate School of Fine Arts**
www.noladeadspace.org



Sites for New Orleans & Family Historical Documentation

- **Archdiocese of New Orleans**
Archdiocesan Archivist
1100 Chartres Street in the French Quarter,
three blocks from Jackson Square
Telephone: (504)529-2651
FAX: (504)529-3075
e-mail: archives@archdiocese-no.org
Web Address <http://www.archdiocese-no.org/archives/>

The Archdiocesan Archivist has published multiple volumes of Sacramental Records of the Roman Catholic Church of the Archdiocese of New Orleans. All are available for purchase and may be ordered.

The reference books are also available at the New Orleans Public Library.

- **New Orleans Archdiocesan Cemeteries**
Suite 500
1000 Howard Avenue
New Orleans, La. 70113
Vox: 504.596.3050
Fax: 504.596.3055

For questions relating to specific tombs, lots, ownership, Perpetual Care, etc.

- **The Historic New Orleans Collection**
533 Royal Street
New Orleans, LA 70130
504-523-4662, 504-598-7108 (fax)

The Williams Research Center of The Historic New Orleans Collection, composed of curatorial, manuscripts, and library collections, is housed in a restored police and court building at 410 Chartres Street.

Web Address: <http://www.hnoc.org/>

“The Survey of Historic New Orleans Cemeteries, a project sponsored by the Collection in conjunction with Save Our Cemeteries, is housed at the Collection. This survey includes inscriptions, photographs,



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

general descriptions, and condition reports of tombs in nine historic New Orleans cemeteries: St. Louis I & II, Lafayette I & II, St. Joseph I & II, Cypress Grove, Odd Fellows Rest, and Greenwood.” (from on-line description) Their manuscript collections include personal and legal papers of families and organizations. Also available in microfilm are New Orleans newspapers from 1803 to the present.

- **The Louisiana State Museum**

<http://lsm.crt.state.la.us/lsm4.htm>

The original source for the George François Mugnier and Samuel T. Blessing photographs of the cemeteries.

<http://www.lsu.edu/diglib> LSU digital library – can view much of the Louisiana State Museum Photograph collection, including the George François Mugnier and Samuel T. Blessing photographs of the cemeteries.

- **New Orleans Public Library**

219 Loyola Ave.
New Orleans, LA 70112-2044
504-529-READ
Web Address <http://www.nutrias.org>

Microfilms of the Tombstone Index by the WPA in the 1930s, (New Orleans cemeteries-[GS36 266-308]. The original index is at the Historical Center of the Louisiana State Museum, 400 Esplanade Ave.

Also available at the library is the multi-volume set of the Sacramental Records of the Roman Catholic Church of the Archdiocese of New Orleans. Cross-references maiden and married surnames, combination names & significant surname variations. LouR 929.3 W894s [Ask at the reference desk]

- **The Preservation Center**

Leeds-Davis Building
923 Tchoupitoulas Street
New Orleans, LA

Web Address: <http://www.prcno.org>

The Preservation Resource Center is a private non-profit organization that promotes the preservation of New Orleans architecture and neighborhoods.

- **Save Our Cemeteries, Inc.**

P.O. Box 58105
New Orleans, Louisiana 70158-8105:
E-mail: soc@saveourcemeteries.org
Phone: 504-525-3377, 504-525-6677 (Fax)
1-888-721-7493 (Toll Free)



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

Save Our Cemeteries Web Address:
<http://www.saveourcemeteries.org>

- **Fred Hatfield's searchable site:**
<http://www.geocities.com/SiliconValley/Monitor/1248/>
A SOC volunteer. On this site, the Lafayette Cemetery tombs can be searched by name.

- **Tulane School of Architecture –
Preservation Studies**

Web Address for the measured drawings of
St. Louis Cemetery No. 1 tombs:

<http://www.tulane.edu/~tsahome/page1.html>
Measured drawings and research on selected
tombs at St. Louis Cemetery No. 1

- **Tulane Special Collections
(Architectural, Manuscripts, Louisiana
History, Jazz and more)**

Jones Hall

Tulane University Libraries

New Orleans LA 70118 USA

ph: 504-865-5699, fx: 504-865-5761

Web Address:

www.specialcollections.tulane.edu
Architectural plans, maps, cemetery
documentation and hundreds of collections

of family papers within the Manuscripts
Department.

- **Vieux Carre Commission**

Vieux Carré Commission, 334 Royal Street,
New Orleans, LA 70130.

(504) 528-3950; Fax: (504) 528-3945

Web Address:

<http://www.new-orleans.la.us/cnoweb/vcc/>



Other sites of interest

- **Louisiana Division of Historic
Preservation, Office of Cultural
Development**

Web Address:

<http://www.crt.state.la.us/crt/ocd/hp/ocdhp.htm>

- **Louisiana Legislature**

Web Address:

www.legis.state.la.us/tsrs/tsrssearch.htm

- **City of New Orleans**

Web Address:

www.new-orleans.la.us/cnoweb/body.htm



St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration

- **Library of Congress**

<http://memory.loc.gov/>

Can search for or New Orleans cemetery or city images from the Library of Congress

- ***Illustrated Secretary of the Interior's Standards for Rehabilitation***

<http://www2.cr.nps.gov/tps/tax/rhb/stand.htm>

- **National Park Service**

www.nps.gov

- **National Center for Preservation Technology and Training**

Web Address: <http://www.ncptt.nps.gov>

- **National Trust for Historic Preservation**

Web Address: www.nationaltrust.org

- **American Institute for Conservation of Historic & Artistic Works (AIC)**

1717 K Street NW, Suite 200

Washington, DC 20006

202-452-9545, 202-452-9328 (fax)

info@aic-faic.org

Web Address: <http://aic.stanford.edu/>

Selecting a Conservator:

<http://aic.stanford.edu/faic/refer.html>

Code of Ethics & Guidelines for Practice:

<http://aic.stanford.edu/pubs/ethics.html>

- **Conservators On-Line:**

<http://palimpsest.stanford.edu/>

- **Heritage Preservation**

1730 K Street, NW Suite 566

Washington, DC 20006-3836

202-634-1422 / 888-388-6789

Fax 202-634-1435

Web Address: www.heritagepreservation.org/

Save Outdoor Sculpture program might be of interest.

- **The Association for Gravestone Studies**

30 Elm Street, Worcester, MA 01609

Web Address: www.gravestonestudies.org

- **The Association for Preservation Technology (APT)**

Web Address: <http://www.apti.org>

