

St. Louis Cemetery No. 1

Guidelines for Preservation & Restoration



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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, have 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, 1986.

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. (SOC) 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's Masters of Preservation Studies, at Tulane University. In addition, three tombs were completed as model conservation projects by SOC 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* were developed for tomb owners, cemetery caretakers, non-profit organization volunteers, professional craftspeople, conservators, and preservation consultants who are interested in the recommended repair, maintenance and restoration of above ground tombs in this and



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other local cemeteries. It is hoped that this document will promote new enthusiasm for the responsible care and maintenance of the many neglected tombs at St. Louis Cemetery No. 1, and for other historic above ground 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 above ground 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 has occurred 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 craftspeople.

Importance of the Site



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

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



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It is one of the first historic cemeteries in the United States 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 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 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 and materials, complemented by time, 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, 2001.

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Derelict condition of Tomb #238, 2001.

The 2001 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 with 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 is 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.



Mason rebuilding original roof of Esteve Tomb (#13), 2001.



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The Perrault Tomb, #351 above before restoration, 2001. Below, after restoration, 2002. One of the SOC pilot restoration projects.



During the recent preservation projects, interaction between building conservators and local artists and craftspeople was

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 weather-ability 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.



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Until the publication of these guidelines, information on preservation was not available for tomb owners. Instead, they had to rely on modern masonry approaches for repairs, 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*, the replacement of stucco and surface finishes 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



Bergamini Tomb (#12) after preservation, one of SOC pilot projects, 2002.

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and



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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.

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.



Esteve Tomb (#13) after restoration. One of the SOC pilot projects, 2002.

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.



Earlier reconstruction of a step tomb, 2002.

Organization & Use of Guidelines

This document is organized with a brief background history of the site and construction materials first with pages marked in blue, followed by basic preservation project research and planning principals in the yellow marked pages. The guidelines, all marked in purple, continue with separate sections for each of the major elements of masonry & stucco, surface finishes, metalwork, stone tablets and sculpture and tombscape



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considerations. 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.



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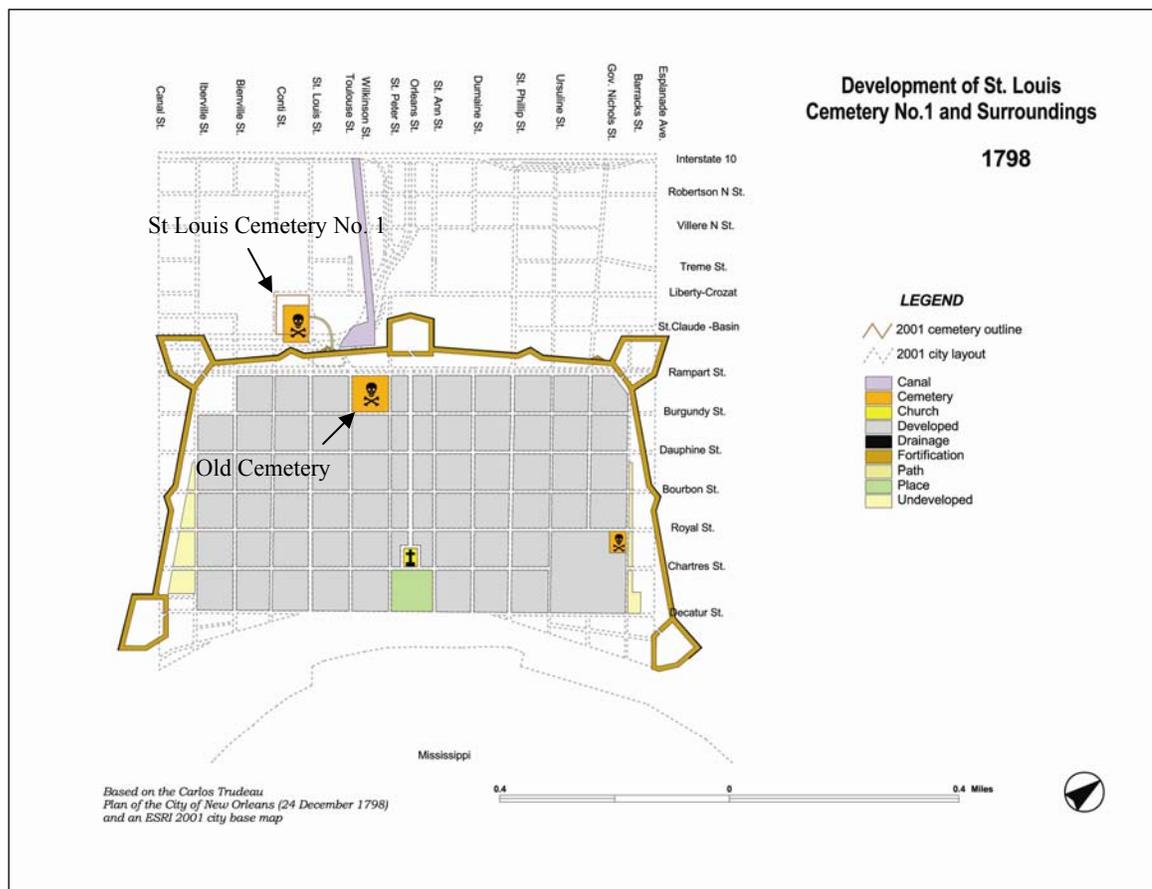
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Historical Background

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.

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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 population of the greater United States. In 1788, New Orleans lost many citizens to epidemic and a great fire.



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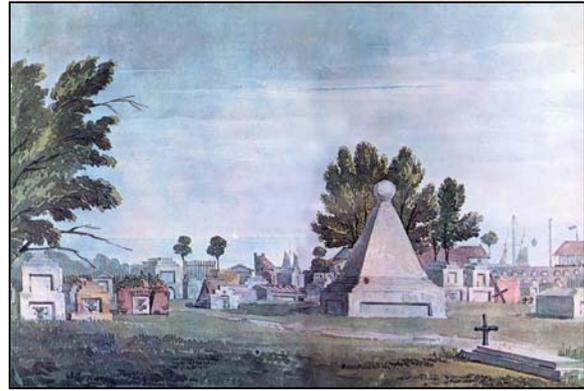
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The existing St. Peter Street cemetery, established in 1721 at the edge of the city, was over-filled and there was growing concern that burying the dead among the living contributed to the many outbreaks of disease. The city government ordered a new 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 firsthand the unique character of this unusual necropolis.

In 1818, noted architect Benjamin Latrobe visited the cemetery commenting on its curious aboveground 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 plaistered [sic] over, so as to have a very solid and permanent appearance.⁷

An early watercolor of St. Louis Cemetery No. 1 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 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 Bussière dePouilly, were commissioned by the city's prominent families in all of the historical styles popular at the time.

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



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tremendous wealth and power New Orleans had attained by the mid nineteenth century. Like their urban residential counterparts, 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. 398 Old St. Louis Cemetery by G. F. Mugnier
Source: New Orleans Public Library Collection
Date: ca: 1873.*

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



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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.

- **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 molded 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.
- 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. A base not required.



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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
			



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- **Plaque:** A non-freestanding plain or ornamental tablet affixed to a wall or structure, but not a tomb or 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

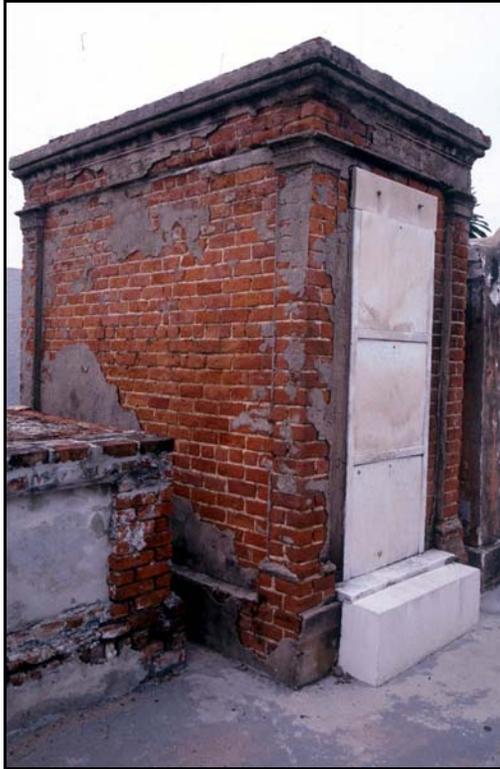
With the exception of the low step tombs, most of the tombs in St. Louis Cemetery No. 1 are designed to contain one or more aboveground interments, each in an individual vault. Nearly all tombs, regardless of type or style, are constructed of brick and covered by a stucco skin. Several ambitious designs are of stone, usually white marble or limestone. Individual vault openings are sealed with bricks, which are covered 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 aboveground burial has more to do with French and Spanish burial customs than the city's high water table.

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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 molded cornices and pilasters of stucco were often formed over this brickwork and all brickwork was protected by stucco and lime wash.



Molded 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 may not realize how the original tomb was designed.

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.



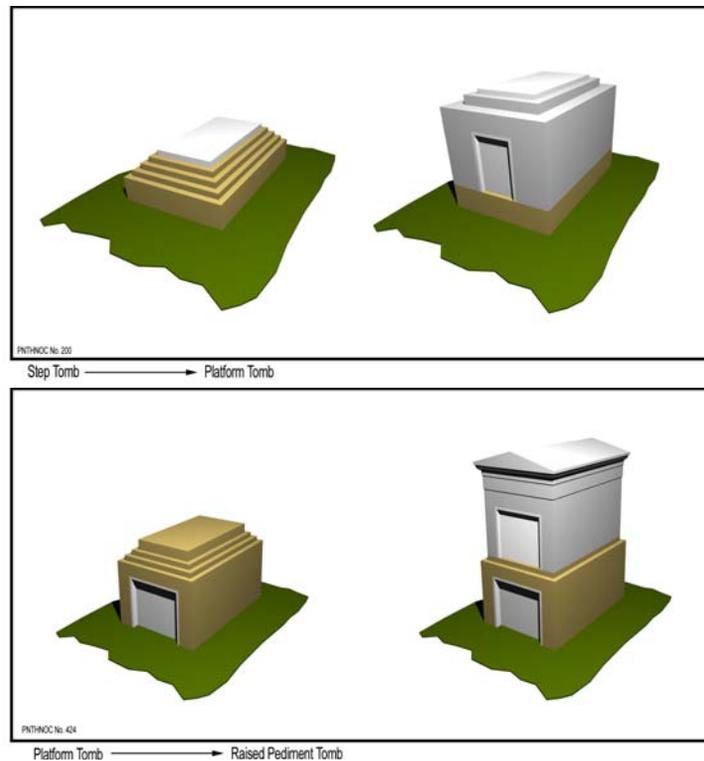
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If the space was needed for another burial, the vault could be re-opened, the coffin removed and burned, and the decomposed remains pushed to the back of the tomb or placed beneath the vaults in the semi-subterranean vault, or *caveau*, below. The 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



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



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yearly attention kept the tombs well-sealed and protected the structure from the aggressive New Orleans environment.

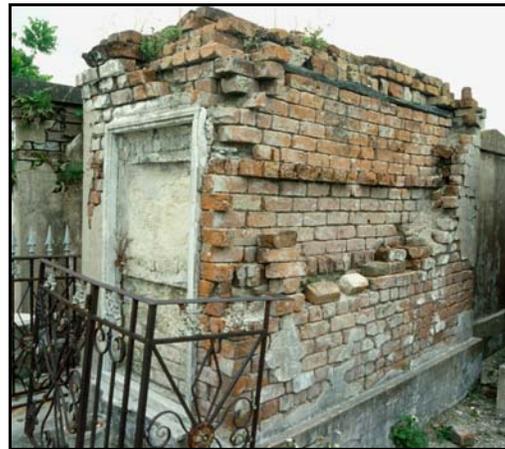
Bricks and Mortar

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-molded, 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.



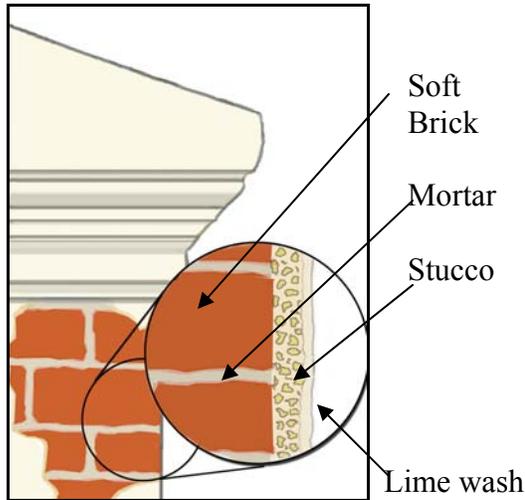
Exposed brick construction details on Tomb #238.

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 sub-tropical environment. The harder, denser stuccos protected the vulnerable brickwork beneath from water absorption but allowed free passage of ever-present water vapor.



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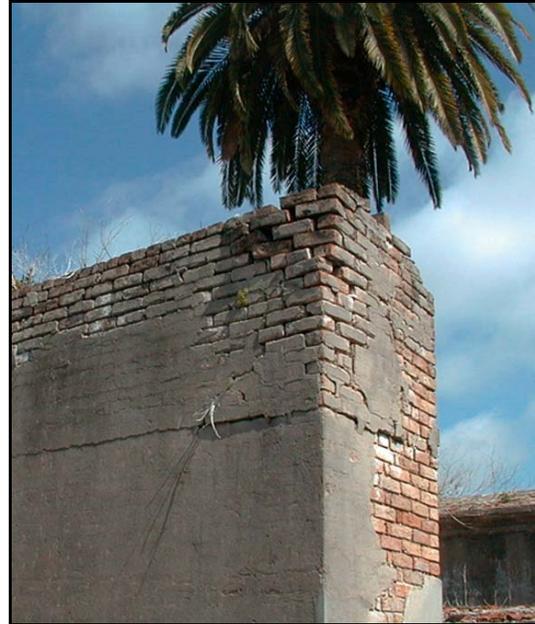
Tomb building materials. (J. Peters, 2002)

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 uniform, smooth 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 shift. Stresses built

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



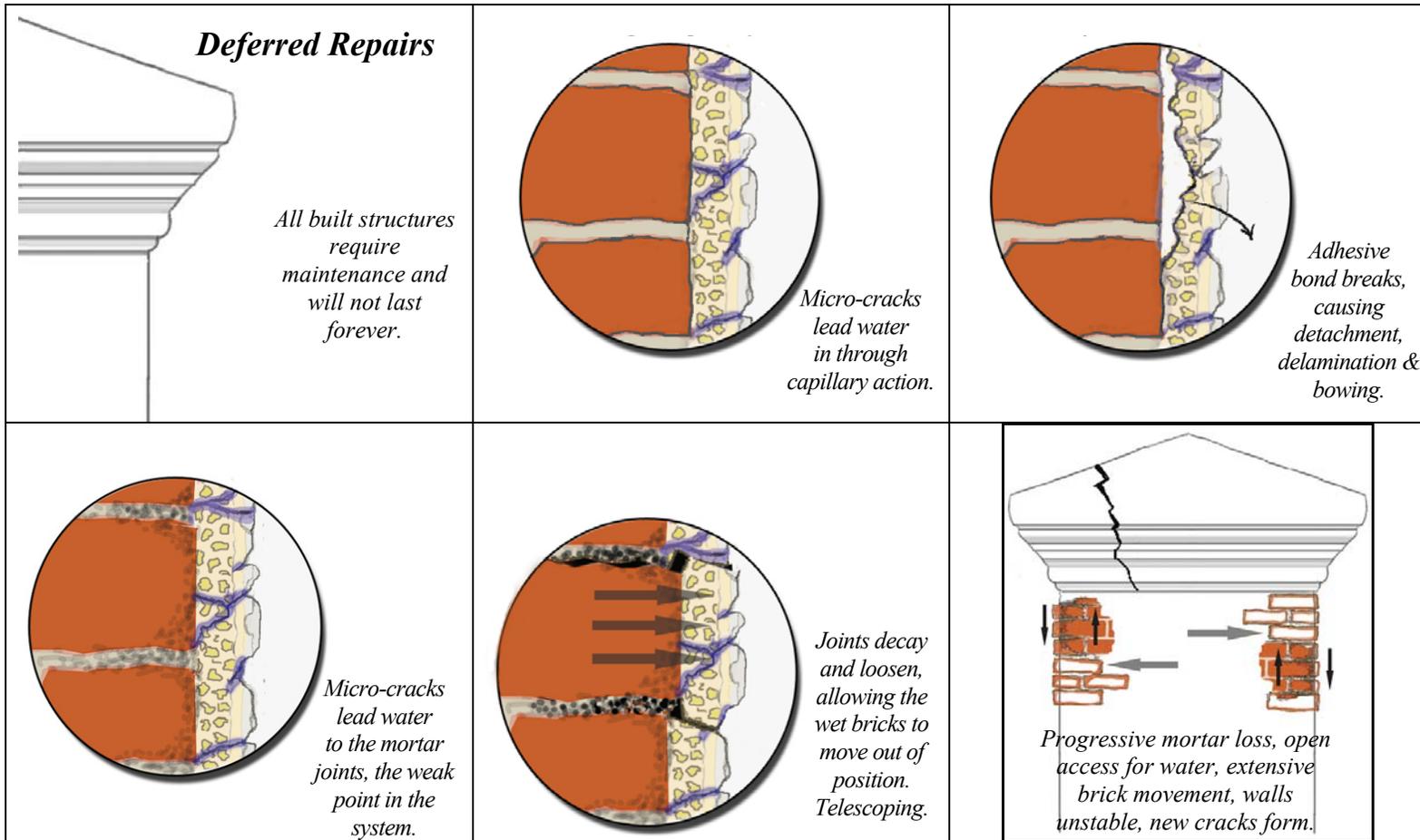
Tomb #135, typical cracking & brick movement from deferred stucco maintenance.

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.



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J. Peters, 2002



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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 Portland cement stucco, probably in the mistaken belief that once applied, maintenance would no longer be required. There is a mismatch of properties between the interior brick structure, the historic stuccos, and the modern cements. The different materials each hold different amounts of moisture and have different drying rates. These property incompatibilities have led to structural

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.

damage far in excess of the damage seen in tombs that were not repaired with cement.



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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, 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 to provide a waterproof barrier.

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, 2001.



Grey limestone tablet on Tomb #560, 2001.



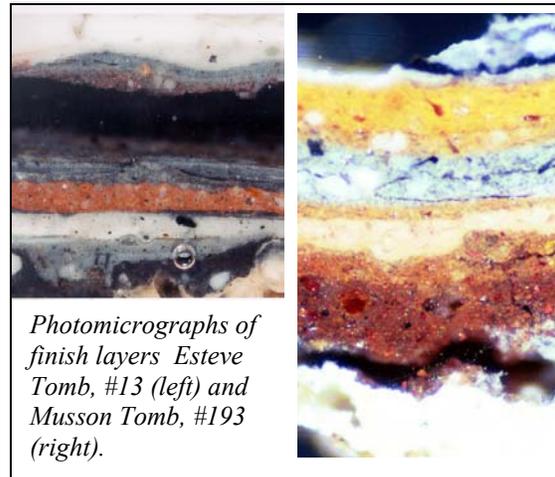
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Lime and Limewash

Traditionally, stucco surfaces were finished with plain and pigmented limewashes. Limewashing was done frequently for protection and aesthetic enhancement and was traditionally applied annually during religious holidays. Limewash is a mixture of slaked lime putty (calcium hydroxide) and 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 finishes on masonry produces a hard, well-bonded finish that is unaffected by ultraviolet light (unlike oil, alkyd and latex paints.) It is easy to apply, weathers well, and costs significantly less than commercial synthetic “latex” paints. Limewashes were traditionally white, but were often tinted with natural earth pigments (such as red and yellow ochres and lampblack). Analyses of the many surviving finishes on the tombs indicate that the cemetery was a more colorful place than its current predominantly white appearance.



Photomicrographs of finish layers Esteve Tomb, #13 (left) and Musson Tomb, #193 (right).

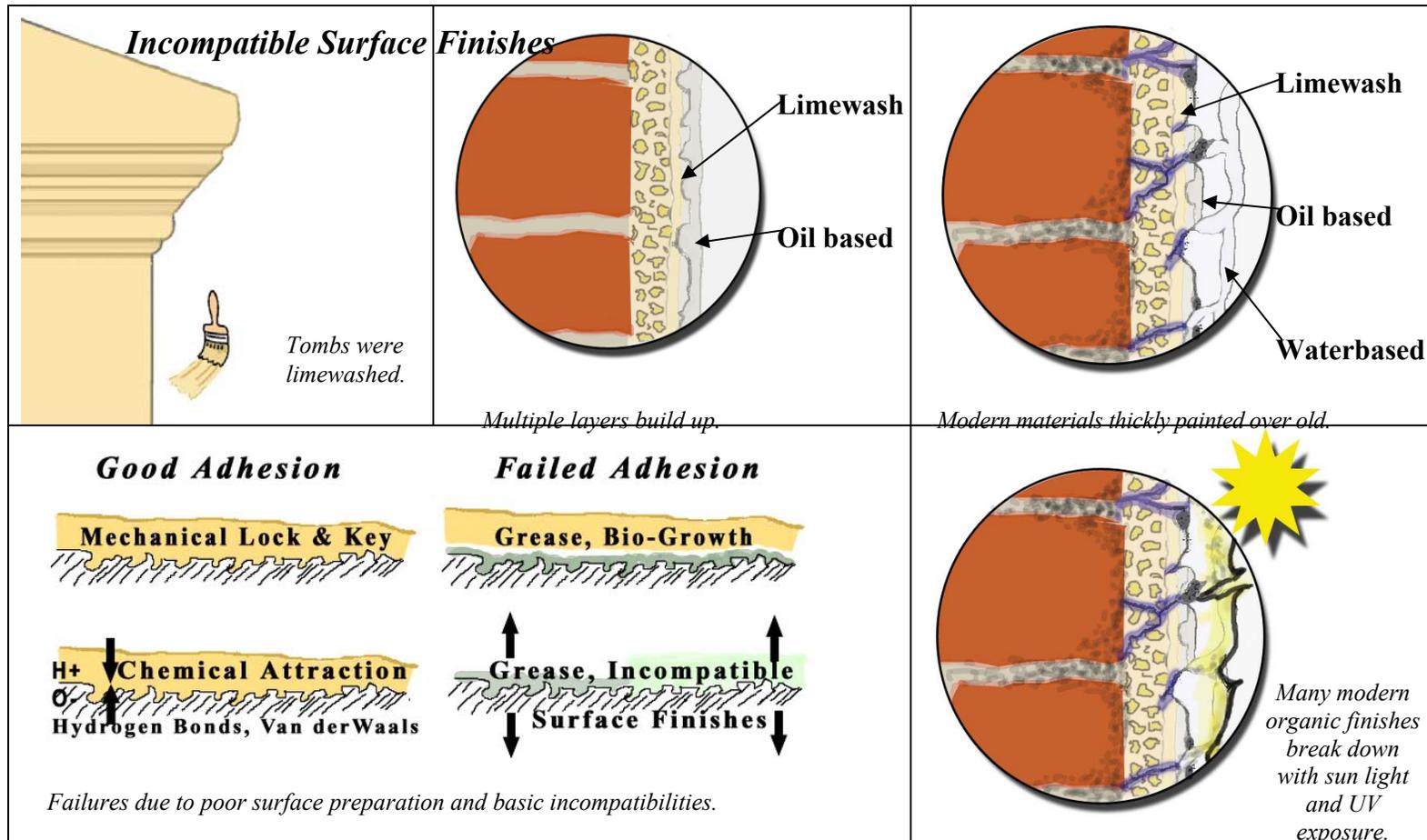


Tomb 228 still exhibits traces of past red and grey limewashes, 2001.



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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 decorative “shoes” as a visual anchor for the posts.

- **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 other traditional techniques for working wrought iron hot, including the modification of the section of bar stock with drawing out or upsetting, hot splitting, swaging and forge welding.



Wrought iron cross from Bonabel Tomb (#395) 2001.

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. Wrought iron bar stock was imported from England and Sweden in the early nineteenth century and increasingly from domestic sources as the century progressed. Wrought iron as a component material is found on most of the metalwork in the cemetery; however, the traditional means of working it hot were gradually replaced by cold work or fabrication.

- **Transitional Composite Metalwork**

The most prevalent type of metalwork found in the cemetery, transitional composite metalwork, was produced roughly between 1830 and 1860. It was used exclusively to fabricate enclosure railings and relies on the combination of wrought



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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 for reinforcing gate frames at the corners. The use of forge welding is just as rare.

All transitional composite metalwork possesses some form of ornament in zinc, either cast directly on wrought iron bars such as spear pickets or cast separately and then riveted on. The cross and crest 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 capped by cast lead shoes, some of highly ornamental design.



Cast and wrought railing ornaments – Bergamini Tomb (#12), 2002.

- **Cast Iron**

Cast iron is an alloy of iron with a high (2-4%)



Bermudez Tomb (#35) with iron cross and cast zinc sun medallion, 2002.

carbon content which can be poured in a molten state into sand molds. It is hard but 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.

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



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place of fabricated work, first mounted in wrought iron frames.



Enclosure of Tomb #382, Cast iron panels in wrought iron frames, 2001.

As the technology became more sophisticated in the 1870s and 1880s, completely cast fence systems with posts and gates became very popular. Their intricate patterns would come to dominate the metalwork in the city, especially as façade galleries, out-pricing the more labor-intensive transitional composite metalwork. All cast iron was painted at the time of its initial installation for protection from corrosion. While there is some documentary evidence for historic architectural metalwork being waxed or oiled, chances are that the

transitional composite metalwork was painted. Existing paint evidence suggests that the cast zinc elements were painted black to match the oiled or waxed iron. More research is needed to determine the historic finishes for metalwork.

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, 2001.

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 palette of forms and details, jumbled together in a



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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 fabricated and cast metalwork, and occasionally plantings.

Traditionally, crushed shell was used to pave and elevate pathways within the 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 replaced to provide raised access to the tombs during periods of flooding.



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



Concrete pathway and drain, 2002.

Concrete pavements were introduced into 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 surrounding Perpetual Care tombs. However, this concrete acts as a water collector, preventing 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.



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Flooded concrete path after a rain, 2002.

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 the 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, 2002.

