

landforms — in the relationship of site to topographic features or traditional routes of travel. Researchers also should consult records of land use for verification of the reason a burial place developed at a particular location, and not make assumptions. For example, in the communities of Colonial New England settled by Puritans, graveyards were perceived as secular, in conformance with Calvinist doctrine. In that region, the mere proximity of an early graveyard to a church property does not necessarily signify a historical relationship between church and burying place.

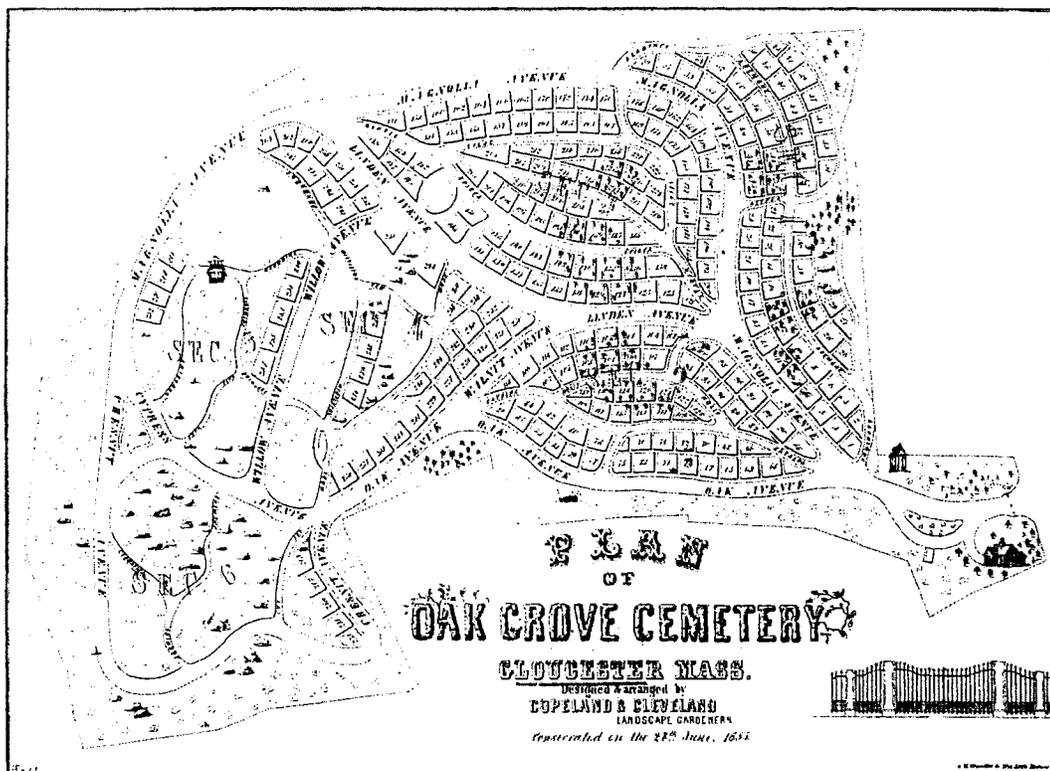
The arrangement of graves within a burial ground is a significant aspect of character also. In vernacular burial grounds, the relation of one grave to another may be irregular — not in compact rows. Such informal placement may be a sign of haphazard development over time, but it could also relate to the customs of a particular cultural group. The Christian belief in resurrection of the body after death prescribed earth burials for the faithful. Lot arrangement frequently was influenced by the scripturally-based tradition of orienting the foot of the grave toward the east to place the dead in appropriate position for arising at the day of final judgement.

The researcher should learn as much as possible about the character of the site as it was first developed or appropriated for burial purposes based on

documentary views, photographs, plats, plans and specifications, business and organization records, local histories, and oral tradition. The researcher then is prepared to describe the present condition of the site and determine how well it reflects the period in which it was developed.

The landscape and developed features of a burial place should be described in narrative form and represented graphically by means of a site plan or map. When it is known that significant historic features are missing or modified, as for example in the realignment of road or driveway, such missing features should be described and their former placement indicated graphically in dashed or dotted outline. Not all of the features listed below will appear in all burial places; however, the narrative description and site plan would include, but not necessarily be limited to the following, where applicable:

- general topography, including indication of the gradient (or slope) and elevation of the site in relation to the larger setting in which it is located;
- natural features such as streams, gullies, hills, and indigenous trees; naturalistic developed features such as ponds, lakes, or landforms;
- plat, or layout of cemetery plots, whether a rigid gridiron imposed on the site or an organization of plots conforming to natural contours;
- circulation system of roads, driveways, pathways, noting whether such features have axial alignment or are winding or curving; structural features of the system, such as bridges and drainage systems; and distinctive materials, such as cobble gutters or stone paths;
- views and vistas within the site from principal access points; views and vistas external to the site;
- characteristic vegetation, including the overstory of trees, understory of shrubs and grasses, exotic plant materials used as filler in burial plots, ornamental flower beds, and specimen plantings;
- gateways, fences, and hedges used for boundary and spatial definition;
- typical plot defining features such as wooden palings, iron fencing, and concrete curbing;
- prevalence of individual plot mausoleums, vaults, or above-surface tombs, and indication of the range and variety of individual grave markers;



The 1855 plan of the Oak Grove Cemetery in Gloucester, Essex County, Massachusetts, is an important source of cemetery documentation. (James O’Gorman, 1975)

- entrance signs, directional markers, outdoor lighting fixtures, and small-scale site furnishings such as benches, planters, ornamental sculpture, and fountains;
- maintenance and service features such as soil disposal and waste storage areas, greenhouses, tool sheds, and pumphouses; and
- buildings such as churches, memorial chapels, gatehouses, offices, residences, crematories, mausoleums, and columbariums.

RESEARCH AND FIELD INVESTIGATION

The object of the research phase is twofold: 1) to establish the contexts, or historical and cultural themes for documenting the property's significance, and 2) to determine the property's physical character and appearance during the important period(s) of its use or development. Toward the first end, general reference works on American burial customs, historical development of cemeteries and mortuary art and architecture; professional and trade journals, community histories, and ethnographic studies may be consulted to place the property in an overall cultural and historical framework.

Next, all available primary source material on the property under study should be assembled from church and municipal records, fraternal organizations, and cemetery corporations, as may be appropriate. Land records, maps and plats, census records, court documents, local histories, family and business papers, genealogies, newspapers, and other sources can provide information on settlement patterns, community development, and the lives of important people. Detailed information on the development of a particular burial place will be found in cemetery plats, architectural plans and drawings, landscape plans and planting keys, manufacturers' catalog orders, monument makers' statements of account, and gardeners' and sextons' diary

entries. Library collections may provide documentary views and descriptions in the form of prints, early photographs, newspaper accounts, and advertisements. Interviews with church sextons, cemetery superintendents, and descendants of original owners of family plots may be useful. Archeologists also will review reports and other documentation on related or comparable sites to frame appropriate research questions that could be illuminated by a burial site investigation. It also is important to consult with any cultural group with which a burial place or cemetery is affiliated or for which it has special meaning.⁶

The object of field work is to analyze the property's present physical character in comparison with the property's appearance during the period of significance as documented through research. Field investigation may help establish the period of significance; in any case, it produces a record of the characteristic features remaining from the period of significance, and changes through time. It establishes the present extent and integrity of the property.

SITE PLANS

The essential aid to conducting field work is a site plan on which the distribution of physical elements is recorded graphically. A cemetery plat may be used effectively as a complement to a site plan, but it is not interchangeable. If a base map of the site is not available from the local planning agency, the cemetery plat may become the model from which to produce a sketch plan of the site. Planning base maps showing contour intervals as well as building ground plans are most useful because they portray with precision the siting of particular features on level ground and at prominent elevations. If a complex burial place underwent distinct episodes of development over a long period of use, a series of maps of comparable scale overlaying a base map may be useful in recording the evolutionary changes, either for the sake of analysis or as an exhibit to accompany the nomination. Whenever possible, all graphic information should be reduced to 8 1/2" x 11" format, or folded to that size, when submitted to the National Register.

PHOTOGRAPHS

Photographs are indispensable as records of the present condition of the burial place and its characteristic features. When compared with historic views — which are not required, but which can be helpful when available — contemporary photographs assist the researcher in gaining an understanding of the phases of surface development over time. For purposes of preparing the National Register nomination for a graveyard or cemetery, it may not be practical in every case to photograph each gravemarker. It is important, however, to provide a number of general views to illustrate the overall character of the landform and its developed features. These should be supplemented by a variety of close views of individual monuments and markers to convey the range and quality of materials and workmanship. Care should be taken to photograph gravemarkers from near surface level and at times and under conditions when the high contrast of light and shadow will give sharpness and clarity to inscriptions and sculptural relief. In addition to the form, embellishment, and position of gravemarkers in relationship to other markers, epitaphs and vital inscriptions are an important aspect of the cultural content of cemeteries. If landscape design is significant, photographs of plantings, circulation patterns, and other features may be necessary to adequately represent the site.

As a practical matter, good photographic and transcription records for a historic graveyard or cemetery are highly desirable. Such records, keyed to a plat, produce scholarly archives and preserve some information should the cemetery suffer loss as a result of theft, vandalism, or damage from natural causes. Moreover, comprehensive documentation may form the basis of a cemetery maintenance and conservation master plan. Such work is labor intensive, but genealogical societies and other volunteers may be enlisted to a duly authorized and properly supervised effort.

ARCHEOLOGY

Archeological field work and documentation involves scientific techniques

⁶ Refer to *National Register Bulletin 38: Guidelines for Evaluating and Documenting Traditional Cultural Properties*, and the Native American Graves Protection and Repatriation Act of 1990 for additional guidance.

that invariably call for qualified professional supervision. Legal clearances normally are required. Where archaeological investigations have been authorized in accordance with Federal, State, and local laws; aerial infrared photography; ground-penetrating radar, and proton magnetometers are among the remote sensing techniques and devices that may be used to locate below-grade ground disturbances and gauge the density and state of preservation of burial deposits without invading the site. Dense materials, such as stone, metal, and ceramic are revealed in sharp contrast against the background of soils. Bone and other organic matter also register in these sensing techniques, to varying degrees. These techniques can be expensive.

Surface investigation to determine the extent of a burial site is most effective when combined with carefully controlled testing which allow skeletal remains to be preserved intact, and minimizes impact to the site generally. Site plans, stratigraphic profiles, scale drawings, and photographs make up the graphic record of an archeological site. They illustrate the geographic bounds of the area investigated, the depth of testing, and the concentration and relative position of the artifacts and site features. Documentation also includes a report describing the range and variety of burial objects; their age as determined by laboratory radiocarbon dating or other means, as appropriate and comparative analysis of other dated materials. The functions of the artifacts, inferred from form and placement, the identification of the cultural group that performed the burial, and architectural and associated features of the site — such as vaults, chambers, cairns, and landscaping — are essential parts of the archeological record accumulated for analysis and evaluation.

BOUNDARIES AND PERIODS OF SIGNIFICANCE

Using the information collected from research and systematic investigation of the site, the researcher should begin to establish the scope and extent of the area to be proposed for nomination and the period of time during which the nominated area was significant in American prehistory, history, or culture. Only after determining the geographical bounds of the nominated area and that



The traditional gravehouses, Christian crosses, and other features at LaPointe Indian Cemetery in Ashland County, Wisconsin, possess important associations with the Chippewa Indians in northern Wisconsin. (Michael M. Weburg, 1976)

period of time in which the property achieved the qualities which make it eligible for the National Register, is it possible to enumerate the features which contribute to the significance of the property.

OWNERSHIP

Determining ownership of burial places sometimes is complex. In some cases, family cemeteries on private land have been exempted from deeds and do not belong to the property owner on whose land they are located, but to the descendants of the family. When small private cemeteries in rural areas have been abandoned and are no longer maintained, they become the domain of the current landowner. For the volunteer group or family descendants trying to establish clear title and access to an abandoned cemetery, legal research and negotiation may be required. For documentation and assessment purposes, however, researchers may refer to deed records to establish the most likely owner. Sometimes the corporate body or trust fund that once provided care for a country cemetery, though

inactive for many years, was never legally dissolved. The rights of Indian tribes, Native Hawaiians, or other groups — as established by the Native American Graves Protection and Repatriation Act of 1990, other Federal laws, and State legislation — also must be considered in determining ownership.

Typically, in early community cemeteries founded by voluntary associations, the cemetery land remained under ownership of the founding organization while the individual plots were separately held by the original proprietors and their heirs. In the West, where the earliest established community cemeteries often were founded by fraternal societies such as the Independent Order of Odd Fellows, burial grounds today are being deeded to local governments whose agencies — commonly parks and recreation departments — are looked to for stable long-term stewardship of the community's "pioneer" cemeteries. In such cases, when it comes time to complete the National Register of Historic Places Registration Form, "public-local" or both "public-local" and "private," whichever is appropriate, should be checked.

COMPLETING THE NATIONAL REGISTER REGISTRATION FORM

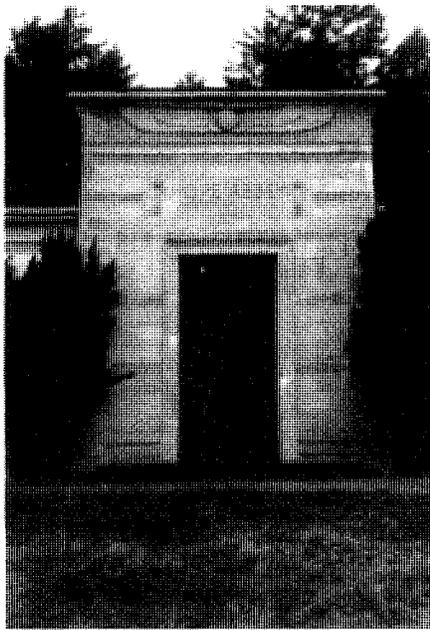
Nominations are processed according to the regulations set forth in 36 CFR 60, and are submitted to the National Park Service by the appropriate State or Federal Historic Preservation Officer. The following guidance supplements the instructions found in *National Register Bulletin 16A: How to Complete the National Register Registration Form*.

CLASSIFICATION

A burial place may be classified as a "site," "district," "building," "structure," or "object." A single or compound burial of limited scope, such as trailside graves or small family plots, would be classified appropriately as a "site." Also, when a cemetery is nominated as a significant or "contributing" feature within a larger historic district, such as a village or company town, it is counted as a "site."

A complex burial site, such as a cemetery encompassing a multitude of burials, developed landscape features, and buildings, is a "district." Its component parts are enumerated and described, and those which contribute to the significance of the nominated area are distinguished from nonhistoric features which are unrelated to the period of significance. Individual monumental tombs may be classified as "structures," and gravemarkers having artistic merit or cultural significance may be counted as significant "objects." The overall landscape design — including roadways, ponds, and plantings — may be counted as a "site" within the district if the design is a significant feature.

Because the term "burial place" is broadly interpreted in this guidance to encompass individual buildings, such as crematory and mausoleum facilities, the category of "building" would be an appropriate classification when such buildings are nominated individually or when counting the number of contributing features in a cemetery district. Also, since a property consisting of two or more resource types should be classified under the major resource, if there is one,



A principal contributing feature of the Masonic Cemetery in Eugene, Lane County, Oregon, is the Hope Abbey Mausoleum, which meets Criterion C as the State's only truly monumental example of the Egyptian style. (Richard Roblyer, 1980)

a property consisting of, for example, a significant church and an associated graveyard would be nominated as a "building."

CONTRIBUTING FEATURES

The number and combination of features counted as contributing to the significance of the property will vary according to property type and will depend on the criteria under which the burial place is proposed for nomination. It is not expected that individual gravesites or markers in a cemetery would be counted as separately contributing or noncontributing features in most cases. However, buildings, structures, and objects of substantial size and scale, and those specifically discussed in the nomination text for their importance in understanding the burial place — including gravemarkers, should be counted. Plantings and other natural features should not be counted separately, but are included as part of a counted site.

In a cemetery district, individual gravemarkers would be counted as separately contributing features in those cases where gravemarkers have been comprehensively inventoried and

evaluated and those of outstanding rank can be identified. When a cemetery is significant primarily because of the examples it contains of the distinctive work of regional stone carvers and other craftsmen, the important markers should be enumerated by an inventory and each one counted as a separately contributing feature. Others may be counted collectively as a contributing object. Taking the example of a national cemetery, markers by regulation usually do not vary; the amassed number of, say, stone crosses of uniform size spreading across the landscape is one of the distinguishing characteristics of a national cemetery. The gravemarkers in such a case may be counted in the aggregate as a single undifferentiated object contributing to the character of the nominated area.

FUNCTIONS

The funerary functions of all contributing resources of the burial place, must be identified, and both historic and current functions classified on the form using the instructions provided in *National Register Bulletin 16A*.

DESCRIPTION AND ANALYSIS OF FEATURES AND SIGNIFICANCE

The purpose of the narrative portions of the National Register form is twofold: 1) to describe and analyze the characteristic features of the burial place, and 2) to present a coherent argument that explains why the property meets the Criteria for Evaluation, including the Criteria Considerations for graves, cemeteries, and other kinds of properties marked for special conditions.

Description

To prepare the descriptive narrative, the researcher needs to determine the characteristic features the burial place must have to be a good representative of its period, style or design, and method of construction or fabrication. Through systematic description, the researcher will show that the property possesses those characteristics. The features that date from the period of significance should be identified and described in Section 7 of the registration form, along with a discussion of any changes that might affect historic integrity. The completed description will provide an accurate image of the current appearance and condition of the cemetery, within which both significant historic

features and nonhistoric changes and additions can be ascertained easily. It is especially important in cases where individual features within a cemetery are not inventoried and described that the description, in conjunction with maps and photographs, provide clear information on the general topography and the distribution of developed features that give the cemetery its historic character.

Consider the original cemetery in a community settled in the period of westward expansion, 1840-1890. The researcher may expect to find that it was established by a fraternal organization, platted around the nucleus of an earlier burial plot, and situated on high ground affording good drainage above the flood plain or on marginal land unsuitable for cultivation. Moreover, the gravemarkers, whether grand or modest, would reflect the vertical density and the variegation and embellishment of material characteristic of Victorian design. A community cemetery of this era that lacked well defined plots and an array of monuments ornamented in high relief likely would not be a good representative of the type; therefore, it likely would not be individually eligible for the National Register under Criterion C. This same cemetery, however, could be a contributing site in a historic district, or it might possess significant associations with the community's historic development that would make it individually eligible under Criterion A. For example, the cemetery might be the only remaining evidence of an extremely important trading, communication, and outfitting settlement along a westward migration route. In this case, the researcher would have to reconsider what physical characteristics were important in conveying the cemetery's important historic associations.

Significance

The first step in preparing the statement of significance is to identify the National Register criteria, considerations, and "areas of significance" in which the property should be evaluated. A cemetery could be evaluated in the areas of social history, ethnic heritage, art, architecture, landscape architecture, community planning, archeology, and

others areas. In order to understand the property within an appropriate historic context, the researcher will have consulted reference works for information on the events, trends, and technologies which influenced development of resource types included in the area proposed for nomination. Based on information gathered in the statewide historic preservation planning process, the State historic preservation office may be able to provide data for a comparative analysis so the researcher can determine the appropriate level of significance — whether the property proposed for nomination is distinctive locally or in the State or nation. Guidebooks, conference proceedings, exhibits, and exhibit catalogs also may help the researcher place the nominated property into a larger perspective.

Periods of significance also must be specified. The period of significance cannot predate the extant features that compose the burial place. For example, the period of significance for the grave of a significant person would not include that individual's lifetime, but would be the year of burial. There may be several distinct periods of significance if the burial place remained active over a long span of time. If this is the case, all periods of significance should be noted. Ordinarily, the period of significance would not extend to the most recent period of 50 years unless specially justified under Criteria Consideration G on the basis of exceptional artistic values, historical associations, or potential to yield information.

It is desirable to keep the statement of significance as concise as possible while at the same time covering adequately the property's development and use during the period of significance. Those who shaped the burial place and its setting should be identified by name, if such information is available, or by cultural affiliation, if the property is a traditional cultural site or prehistoric burial place. It is important to focus on those aspects of the property's development and use which illustrate the property's significance under National Register Criteria A, B, C, or D.

Certain burial places may have potential for designation as a National Historic Landmark. If the property appears to have national significance and has been evaluated in a national context,

the supportive argument should be presented in the nomination. Designation as a National Historic Landmark may be dependent upon the National Park Service evaluating the property in the course of a theme study. A well-documented National Register nomination for a burial place of potential National Historic Landmark quality will facilitate the property's review by National Park Service professionals.⁷

BOUNDARY DESCRIPTION AND JUSTIFICATION

Determining and justifying the boundaries of a burial place are important steps in completing the registration form. Boundaries should be drawn to encompass, but not to exceed, the full extent of resources which contribute to the significance of the property. External vistas from a suburban landscaped cemetery or a vernacular cemetery spectacularly sited in the countryside may be important to the overall feeling of the place. Nevertheless, boundaries should not be drawn to include scenic buffer areas or other acreage not directly related to the property's historical development. Encompassing a broad vista in the bounds of a nominated area normally is impractical. The bounds of burial sites should be based on the extent of the features associated with the burials. In some cases, site limits for archeological sites may be determined by remote sensing techniques or surface examination combined with controlled sub-surface testing.

Boundary definition is simplified when the current legal property description of a graveyard or cemetery is the same as the property's historic boundaries. However, if portions of the burial place under investigation have been irreversibly altered or eroded, it may be necessary to deviate from the current legal description in drawing the boundary in order to exclude areas which are plainly lacking in integrity and no longer contribute to the significance of the property. Similarly, large tracts of fallow acreage known as "reserve ground" within the bounds of a cemetery plat should not be included in the nominated area unless they contain development such as road systems or service buildings relating to the historic period. In any

⁷ Further information concerning the National Historic Landmark Program may be obtained by writing to the Chief Historian, History Division, National Park Service, U.S. Department of the Interior, P.O. Box 37127, Washington, DC 20013-7127.

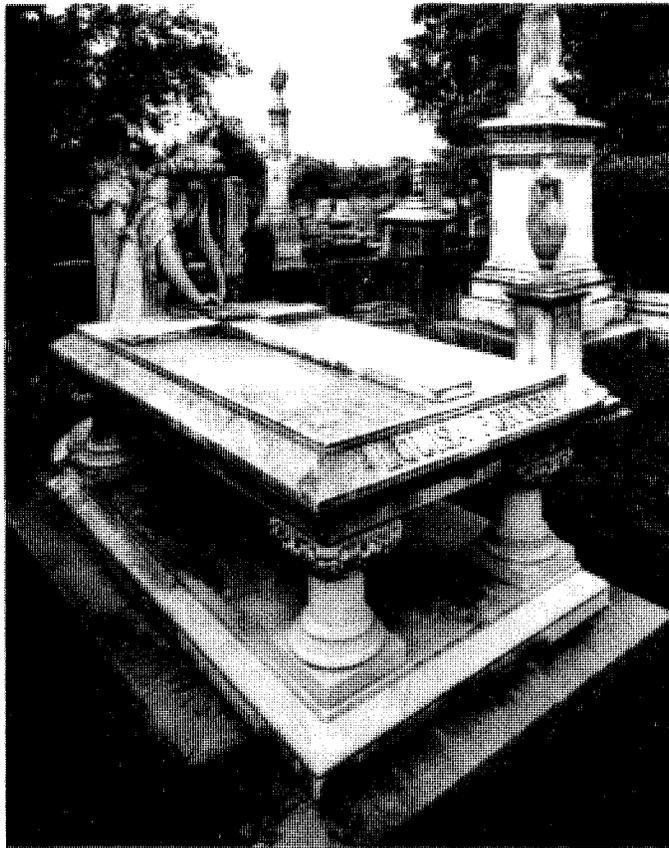
case, the boundary must be justified in a short narrative statement which explains why the boundaries were selected.

The delineation of boundaries may be documented in various ways. If appropriate, the current legal property description may be used. Where historic and current boundaries differ, the documentation may describe the area to be included from point to point, such as "from the northeast intersection of Rte. 5 and Cemetery Drive, north approximately 200 feet, . . . , then west fifty feet to the point of beginning." Although a fence may be located along the boundary, it should not be cited as defining the boundary because it may not be permanent. Features that are permanent, such as contour lines may be used to define boundaries when they constitute appropriate edges. Site plans, also called "sketch maps," may be used to indicate boundaries, if the map includes a scale indicator. For some large areas without obvious features to cite as edges, such as a rural site or a large cemetery, UTM points may define the boundaries, if the lines connecting the cited UTM points constitute the actual boundary lines of the area nominated.

Under the authorization of the National Historic Preservation Act of 1966 and the Archeological Resources Protection Act of 1979, the National Park Service will restrict information on the location or character of a historic resource if revealing this information would expose the property to vandalism, destruction, or other harm. The information must be included on the National Register Registration Form, but checking the "Not for Publication" box on the form ensures that sensitive information will not be reproduced or distributed.⁸

MAPS AND PHOTOGRAPHS

Each registration form must be accompanied by a United States Geological Survey (USGS) map with marked Universal Transverse Mercator (UTM) reference points for the purposes of locating the property geographically and illustrating its position in relation to prominent topographic features. In addition, for complex burial sites and cemetery districts, the nomination should include at least one site plan



Photographs should capture the essence of a cemetery's character. The Laurel Grove - North Cemetery in Savannah, Chatham County, Georgia, is significant, in part, for its large number of Victorian statues and monuments. (James R. Lockhart, 1982)

(sketch map). The site plan should locate the bounds of the property; give contour intervals, if relevant; and show the placement of major features, including nonconforming, nonhistoric development. Each feature identified as contributing or noncontributing in the form should be numbered on the site plan to correspond to a numbered inventory in the narrative discussion. Although, as stated above, it is not necessary to count and describe every gravemarker and other feature, all those specifically identified and counted must be shown on the map accompanying the nomination, either individually or collectively by area.

Copies of historic plats and building plans, if they are available, are helpful in documenting the original design intent and the integrity of some burial place property types.

A number of unmounted black and white photographs of high quality must accompany each nomination. There is no requisite number of photographs to be submitted. Requirements are that there should be as many photographs as necessary to depict the property clearly. Representative views of all characteristic features, as well as altered features and development outside the period of significance, should be included. Each photograph must identify the photographer, date, subject, and direction of the view. Prints of historic photographs are recommended as a means of documenting the integrity of the property. Photographs should be keyed to the inventory of contributing features in the narrative discussion, where appropriate. Numbered directional arrows may be placed on the site plan to indicate the direction of views shown in the photographs.

⁸ Refer to *National Register Bulletin 29: Guidelines for Restricting Information about Historic and Prehistoric Resources* for additional information.

VI. CONCLUSION

Discussion of burial practices in this bulletin is general rather than comprehensive in scope. Its purpose is to suggest the broad range of burial places from various periods that hold potential for listing in the National Register of Historic Places. In selecting examples for sake of illustration, it was not possible to touch on all regions of the

United States and its associated territories, nor all cultural groups and traditions. No value judgement is implied in these omissions. Neither should it be inferred that there is greater value in the high style cemetery than in vernacular examples. Users of this guidance should be encouraged that the criteria for evaluating significance and integrity

are applicable equally to urban graveyards, folk cemeteries, and small burial grounds in a rural setting. Above all, those wishing to pursue the registration process should know from this guidance that their efforts will be supported by ample precedent, a growing volume of reference literature, and organizations ready to assist.

VII. GLOSSARY

Altar tomb — A solid, rectangular, raised tomb or gravemarker resembling ceremonial altars of classical antiquity and Judeo-Christian ritual.

Bevel marker — A rectangular gravemarker, set low to the ground, having straight sides and uppermost, inscribed surface raked at a low angle.

Burial ground — Also "burying ground;" same as "graveyard" (see below).

Burial cache — A place of concealment for burial remains and objects.

Burial mound — A mass of earth, and sometimes stone or timber, erected to protect burial chambers for the dead.

Burial site — A place for disposal of burial remains, including various forms of encasement and platform burials that are not excavated in the ground or enclosed by mounded earth.

Cairn — A mound of stones marking a burial place.

Cemetery — An area set aside for burial of the dead; in Latin American culture known as "campo santo," or holy field.

Cenotaph — A monument, usually of imposing scale, erected to commemorate one whose burial remains are at a separate location; literally "empty tomb."

Chapel — A place of worship or meditation in a cemetery or mausoleum, either a freestanding building or a room set apart for commemorative services.

Chest marker — A solid, rectangular, raised gravemarker resembling a chest or box-like sarcophagus.

Cinerary urn — A receptacle for cremation remains, or ashes, in the shape of a vase.

Columbarium — A vault or structure for storage of cinerary urns.

Crematorium — A furnace for incineration of the dead; also crematory.

Cremation area — An area where ashes of the cremated dead are scattered or contained.

Crypt — An enclosure for a casket in a mausoleum or underground chamber, as beneath a church.

Epitaph — An inscription on a gravemarker identifying and/or commemorating the dead.

Exedra — A permanent open air masonry bench with high back, usually semicircular in plan, patterned after the porches or alcoves of classical antiquity where philosophical discussions were held; in cemeteries, used as an element of landscape design and as a type of tomb monument.

Family cemetery — A small, private burial place for members of the immediate or extended family; typically found in rural areas, and often, but not always, near a residence; different from a family plot, which is an area reserved for family members within a larger cemetery.

Flush marker — A flat, rectangular gravemarker set flush with the lawn or surface of the ground.

Gatehouse — A building at the main entrance to a cemetery that is controlled by a gate; a shelter or habitation for the gate keeper.

Grave — A place or receptacle for burial.

Gravemarker — A sign or marker of a burial place, variously inscribed and decorated in commemoration of the dead.

Graveyard — An area set aside for burial of the dead; a common burying ground of a church or community.

Grave shelter — A rectangular, roofed structure usually of wood, covering a gravesite, enclosed by boards or slats or supported by poles; in tribal custom used to contain burial offerings and shelter the spirit of the dead; also grave house.

Headstone — An upright stone marker placed at the head of the deceased; usually inscribed with demographic information, epitaphs, or both; sometimes decorated with a carved motif.

Interment — A burial; the act of committing the dead to a grave.

Ledger — A large rectangular gravemarker usually of stone, set parallel with the ground to cover the grave opening or grave surface.

Lych gate — Traditionally, a roofed gateway to a church graveyard under which a funeral casket was placed before burial; also lich gate; commonly, an ornamental cemetery gateway.

Mausoleum — A monumental building or structure for burial of the dead above ground; a "community" mausoleum is one that accommodates a great number of burials.

Memorial park — A cemetery of the 20th century cared for in perpetuity by a business or nonprofit corporation; generally characterized by open expanses of greensward with either flush or other regulated gravemarkers; in the last half of the 19th century, those with flush markers were called "lawn" cemeteries.

- Military cemetery** — A burial ground established for war casualties, veterans, and eligible dependents. Those established by the Federal government include national cemeteries, post cemeteries, soldiers' lots, Confederate and Union plots, and American cemeteries in foreign countries. Many States also have established cemeteries for veterans.
- Monument** — A structure or substantial gravemarker erected as a memorial at a place of burial.
- Monolith** — A large, vertical stone gravemarker having no base or cap.
- Mortuary** — A place for preparation of the dead prior to burial or cremation.
- National cemetery** — One of 130 burial grounds established by the Congress of the United States since 1862 for interment of armed forces servicemen and women whose last service ended honorably. Presently, the Department of Veterans Affairs maintains 114, the National Park Service (Department of the Interior) administers 14, and the Department of the Army has responsibility for two.
- Obelisk** — A four-sided, tapering shaft having a pyramidal point; a gravemarker type popularized by romantic taste for classical imagery.
- Ossuary** — A receptacle for the bones of the dead.
- Peristyle** — A colonnade surrounding the exterior of a building, such as a mausoleum, or a range of columns supporting an entablature (a beam) that stands free to define an outdoor alcove or open space.
- Pet cemetery** — An area set aside for burial of cherished animals.
- Potter's field** — A place for the burial of indigent or anonymous persons. The term comes from a Biblical reference: Matthew 27.7.
- Receiving tomb** — A vault where the dead may be held until a final burial place is prepared; also receiving vault.
- Rostrum** — A permanent open air masonry stage used for memorial services in cemeteries of the modern period, patterned after the platform for public orators used in ancient Rome.
- "Rural" cemetery** — A burial place characterized by spacious landscaped grounds and romantic commemorative monuments established in a rural setting in the period of the young republic and at the dawn of the Victoria era; so called for the movement inspired by the American model, Mount Auburn Cemetery (1831) in the environs of Boston; a cemetery developed in this tradition. The term is used with quotation marks throughout the guidance to distinguish this distinctive landscaped type from other kinds of burying grounds occurring in the countryside.
- Sarcophagus** — A stone coffin or monumental chamber for a casket.
- Screen memorial** — A vertically-set gravemarker consisting of a tablet with wing elements resting on a continuous base.
- Sepulcher** — A burial vault or crypt.
- Sexton** — Traditionally, a digger of graves and supervisor of burials in the churchyard; commonly, a cemetery superintendent.
- Shelter house** — A pavilion or roofed structure, frequently open at the sides, containing seats or benches for the convenience of those seeking a place to rest; erected in rustic and classical styles to beautify a cemetery landscape.
- Slant marker** — A rectangular gravemarker having straight sides and inscribed surface raked at an acute angle.
- Stele** — An upright stone or commemorative slab, commonly inscribed or embellished on one of the broader vertical surfaces; a gravemarker type revived from classical antiquity.
- Table marker** — A rectangular grave covering consisting of a horizontal stone slab raised on legs, which sometimes are highly elaborate; also "table stone."
- Tablet** — A rectangular gravemarker set at a right angle to the ground, having inscriptions, raised lettering or carved decoration predominantly on vertical planes, and top surface finished in straight, pedimented, round, oval, or serpentine fashion.
- Tomb** — A burial place for the dead.
- Tomb recess** — A niche or hollow in a wall that shelters a tomb.
- Tumulus** — A mound of earth protecting a tomb chamber; in the ancient world, important tumuli were encircled by drum-like constructions of stone.
- Vault** — A burial chamber, commonly underground.

VIII. SOME RECOMMENDED SOURCES

Cemetery researchers will be aided by innumerable regional studies, cemetery guidebooks, conference proceedings, exhibit catalogs, and even a growing body of videotaped material. Current publications of the cemetery and monuments industries also can be helpful. *American Cemetery, Stone in America*, and *MB News* (trade journal of the Monument Builders of North America), for example, frequently contain articles on historic cemeteries and the manufacture of traditional gravemarkers.

Bibliographic searches in the local library are recommended, as is consultation with State cemetery associations, genealogical societies, and the State historic preservation office. Many States have published guides to research and legislation affecting cemeteries and burial places. An extensive bibliography for the general study of cemeteries and gravemarkers compiled along disciplinary lines is found in *Cemeteries and Gravemarkers: Voices of American Culture*, edited by Richard E. Meyer, one of the recommended sources listed below.

The Association for Gravestone Studies (AGS), a non-profit organization, publishes an annual journal, *Markers*, as well as a quarterly newsletter, and serves as an information network for cemetery scholars and preservationists nationwide. AGS maintains an archive and a limited mail-order lending library service for members. AGS can be reached at the following address: 30 Elm Street, Worcester MA 01609.

In 1985 the City of Boston, steward of as many as 16 historic cemeteries ranging in date from 1630 to 1841, launched its "Historic Burying Ground Initiative," an ambitious, long-term program encompassing comprehensive inventories and treatment of gravemarkers, landscape rehabilitation, and improved maintenance and security procedures. The Boston initiative involves a number of city

agencies and community groups and is believed to be the largest cemetery recordation and restoration project undertaken by local government in the country. Further information may be obtained from the Boston Parks and Recreation Department, 1010 Massachusetts Ave., Boston MA 02118.

The following is a list of some of the sources available, and is designed to lead the researcher to more sources. Many of these works contain extensive bibliographies.

DOCUMENTATION, CONSERVATION, AND MANAGEMENT GUIDELINES

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NATIONAL REGISTER BULLETINS

National Register bulletins may be obtained by writing to the National Register of Historic Places, National Park Service, U. S. Department of the Interior, P.O. Box 37127, Washington, D.C. 20013-7127.

No. 15 *How to Apply the National Register Criteria for Evaluation*

No. 16A *How to Complete the National Register Registration Form*

No. 16B *How to Complete the National Register Multiple Property Documentation Form*

No. 18 *How to Evaluate and Nominate Designed Historic Landscapes*

No. 22 *Guidelines for Evaluating and Nominating Properties that have Achieved Significance Within the Last Fifty Years*

No. 24 *Guidelines for Local Surveys: A Basis for Preservation Planning*

No. 29 *Guidelines for Restricting Information about Historic and Prehistoric Resources*

No. 30 *Guidelines for Evaluating and Documenting Rural Historic Landscapes*

No. 32 *Guidelines for Evaluating and Documenting Properties Associated with Significant Persons*

No. 36 *Evaluating and Registering Historic Archeological Sites and Districts (in draft)*

No. 38 *Guidelines for Evaluating and Documenting Traditional Cultural Properties*

No. 39 *Researching a Historic Property*

No. 40 *Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields*

IX. NATIONAL REGISTER CRITERIA FOR EVALUATION

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack distinction; or
- D. that have yielded or may be likely to yield information important in prehistory or history.

NATIONAL REGISTER CRITERIA CONSIDERATIONS

Ordinarily, cemeteries, birthplaces or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the last fifty years shall not be considered eligible for the National Register.

However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- a. a religious property deriving significance from architectural or historical importance; or
- b. a building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a particular person or event; or

c. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life; or

d. a cemetery that derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

e. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. a property commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or

g. a property achieving significance within the past fifty years if it is of exceptional importance.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Name of Property

County and State

Name of multiple property listing (if applicable)

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 12-000523

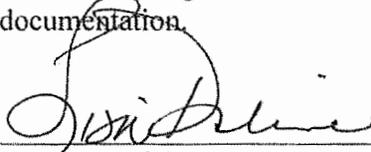
Date Listed: 8/22/2012

Property Name: Maple Hill Cemetery

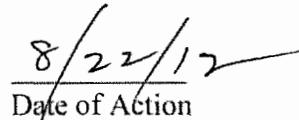
County: Madison

State: AL

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.



Signature of the Keeper



Date of Action

=====
Amended Items in Nomination:

This SLR is issued to amend the registration form to clarify the number of resources and the boundary justification.

Section 5. Classification. Contributing historic resources include 1 building (administration bldg.), 2 sites (representing unmarked graves and the overall landscape design), 5 structures (representing stone walls, cast-iron fencing, mausoleums, roadways, and masonry curbing) and 1 object (representing monuments and markers).

Section 10. Geographical Data. The district boundaries contain the cemetery's oldest historic sections, which are distinguished by the dates of gravemarkers (the vast majority date prior to 1962), the large mature plantings of trees and other ornamental plantings from prior to 1962, and the early twentieth century paths and roadways of the cemetery. The excluded sections of the cemetery reflect expansions and gravemarkers installed outside of the dates of the nominated property's period of significance.

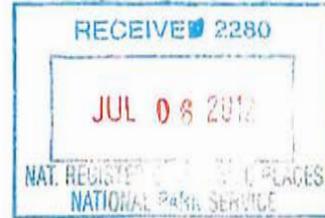
The State Historic Preservation Office was notified of this amendment.

DISTRIBUTION:

- National Register property file
- Nominating Authority (without nomination attachment)

(Oct. 1990)

United States Department of the Interior
National Park Service



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National Register of Historic Places
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Maple Hill Cemetery
other names/site number N/A

2. Location

street & number 203 Maple Hill Drive NA not for publication
city or town Huntsville NA vicinity
state Alabama Code AL county Madison code 089 zip code 35801

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set for in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)

[Signature] 28 June 2012
Signature of certifying official/Title Date
State Historic Preservation Officer, Alabama Historical Commission
State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria. (See Continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:

- entered in the National Register.
 See continuation sheet
- determined eligible for the National Register.
 See continuation sheet
- determined not eligible for the National Register.
- removed from the National Register.
- other,
(explain:)

Signature of the Keeper [Signature] Date of Action 8/22/12

Maple Hill Cemetery
Name of Property

Madison Co., AL
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply)

Category of Property
(Check only one box)

Number of Resources within Property
(Do not include previously listed resources in count.)

- private
- public-local
- public-State
- public-Federal
- building(s)
- district
- site
- structure
- object

Contributing		Noncontributing		
1		0		Buildings
2				Sites
5				Structures
1				Objects
9		0		Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

Number of Contributing resources previously listed in the National Register

N/A

N/A

6. Function or Use

Historic Functions
(Enter categories from instructions)

Current Functions
(Enter categories from instructions)

Funerary: Cemetery

Funerary: cemetery

Government: government office

Government: government office

7. Description

Architectural Classification
(Enter categories from instructions)

Materials
(Enter categories from instructions)

CLASSICAL REVIVAL

Foundation Concrete

walls Brick; Concrete

roof Asphalt shingle

other Stone, Metal, Concrete

Narrative Description

(Describe the historic and current condition of the property on one or more continuation sheets.)

See continuation sheets.

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B** Property is associated with the lives of persons significant in our past.
- C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is:

- A** owned by a religious institution or used for religious purposes.
- B** removed from its original location.
- C** moved from its original location.
- D** a cemetery.
- E** a reconstructed building, object, or structure.
- F** a commemorative property
- G** less than 50 years of age or achieved significance within the past 50 years.

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

Areas of Significance

(Enter categories from instructions)

- Exploration/Settlement
- Art
- Social History

Period of Significance

c.1820-1961

Significant Dates

- 1820: first documented burial
- 1916: stone wall constructed
- 1957: cemetery administrative office built

Significant Person

(Complete if Criterion B is marked)

N/A

Cultural Affiliation

Architect/Builder

Multiple

9. Major Bibliographical References

Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS): N/A

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- Previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____

Primary location of additional data:

- State Historic Preservation Office
- Other State Agency
- Federal Agency
- Local Government
- University
- Other

Name of repository:
Huntsville Pilgrimage Association

Maple Hill Cemetery
Name of Property

Madison Co., AL
County and State

10. Geographical Data

Acreeage of Property —Approximately 35 acres

UTM References

(Place additional UTM references on a continuation sheet.)

1	<u>16</u>	<u>538900</u>	<u>3843500</u>	3	<u>16</u>	<u>539260</u>	<u>3843070</u>
	Zone	Easting	Northing		Zone	Easting	Northing
2	<u>16</u>	<u>539285</u>	<u>3843500</u>	4	<u>16</u>	<u>538940</u>	<u>3843050</u>

See continuation sheet

Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Carroll Van West (reviewed by Susan Enzweiler, AHC NR Coordinator)
organization MTSU Center for Historic Preservation -date July 15, 2011
street & number Box 80 telephone (615) 898-2947
city or town Murfreesboro state TN zip code 37132

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items

(Check with the SHPO or FPO for any additional items.)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name City of Huntsville (Joy McKee, cemetery administrator)
street & number 203 Maple Hill Drive -telephone (256) 261-9304
city or town Huntsville state AL zip code 35801

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listing. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*)

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P. O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20303.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Section number 7 Page 1

Maple Hill Cemetery, Madison Co. AL

7. NARRATIVE DESCRIPTION

Maple Hill Cemetery, established c. 1820, is located in the city of Huntsville, the seat of Madison County, Alabama. The city-owned cemetery contains over 100 acres but the nominated property consists only of the historic sections of the cemetery, as marked on the attached cemetery map as sections 1-15 and 200-202 as well as sections A-K, and IV and VI, which comprise approximately 35 acres of the cemetery.

The nominated property is situated adjacent to the historic downtown district of Twickenham, and is roughly bounded by Wells Avenue, Girard Street, Kingsbury Avenue, Maple Hill Avenue, McClung Avenue and California Street. A low stone wall, erected c. 1916 by the Woman's Club of Huntsville, separates the nominated property from streets and sidewalks. The nominated property is crossed by original roads and paths, which have been paved surfaces since c. 1950, and is characterized by numerous historic plantings of trees, especially oak, dogwood, and maple trees. Historic cemetery furniture such as benches and stools are uncommon; beginning c. 2000 modern metal and concrete benches have been added by families, situated throughout the historic sections of the cemetery. The new pieces are limited in number and do not detract from the nominated property's overall historic and architectural appearance.

The historic section of Maple Hill Cemetery has two sets of vehicular entrance gates: on its north side on Wells Avenue, an entrance that once provided access to a no longer extant Cumberland Presbyterian church (originally located within sections 201-202), and the main entrance, on Maple Hill Avenue.

As the only burial place for white Huntsville until c. 1965, the markers in the cemetery represent a mixture of social classes, occupations, and ages. The historic sections of the cemetery also contain markers from different ethnic and religious groups. Before the creation of the legally separate African American cemetery at Glenwood in 1870, African American slaves and free blacks were buried at Georgia Graveyard (not extant—it has been impacted by the twentieth century construction of the Huntsville Hospital). Consequently, there may be no African American burials at Maple Hill until after the end of public segregation c. 1965, but a "potter's field" at section VI may include slaves and other African Americans from the nineteenth century since few records of burial for that section of the cemetery exist prior to 1895. Other markers document that Jewish and Catholic members of the community were buried among whites until legal segregation led to the designation of separate Catholic (Section 15) and Jewish (a portion of Section 10) areas within the cemetery. The Catholic section is further designated with an in-the-ground stone that says "OUR DEAD" (photo 40). Gypsies were also allowed to bury their dead in Section 7 along the wall facing Maple Hill Avenue.

The cemetery contains a mixture of tombstone forms and styles. Markers range from simple tablet styles and ledger stones to elaborately carved obelisks and life-size sculptures, representing significant examples of cemetery art. A few large family crypts or mausoleums are also present.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

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Maple Hill Cemetery, Madison Co. AL

Symbolic motifs include a variety of both religious symbols and secular decorative elements, from the weeping willow tree of the early nineteenth century to Gothicized monuments and crosses from the end of the nineteenth century. The design influence is varied. Vernacular hand-carved or hand-blocked markers are found in burials from 1820 to 1860. Classical style is seen in the columned stones and statues, while Gothic style is noticeable in the pointed arches and finials that adorn various stones. Egyptian influence is present with numerous obelisks of varying sizes and stones scattered throughout the cemetery. In addition, more eclectic Victorian-styled markers dignified many graves from 1880 to 1910. Hollow cast-iron markers began to appear at Maple Hill in the 1880s in limited numbers, a trend found in many southern cemeteries (photo 45). Statuary depicting angels are also found in limited numbers within the cemetery; perhaps the best example is the beautiful Kathleen D. Thompson memorial of 1908 (photo 38) and the McGee family memorial of 1913 (Photo 39). Art Nouveau style is rare, but mid-twentieth century markers often exhibit Art Deco-influenced styling.

A few crypts are scattered through the cemetery. A Greek Revival styled stone crypt (c. 1835) holds the remains of Mary S. Bibb and William D. Bibb in Section 2; it was the cemetery's first crypt and legend has it that the house-like appearance and height was so Mary S. Bibb could be buried sitting in a chair.¹ The Burritt Mausoleum is Gothic Revival in style (photo 43) and located in Section 13. The Erskine Mausoleum, a classical temple, is associated with the last significant expansion of the historic cemetery and also led to the construction of a circular automobile turn-around at the mausoleum. Since those alterations the original road system and paths of the cemetery have remained extant (photo 54).

As found at other nineteenth century-established cemeteries, several family sections, such as the family of Thomas Fearn (photo 6), the William H. Moore family plot (photo 15), the Beirne family (photo 31) and the Teal family (photo 8), are surrounded by either iron fencing or stone or concrete curbing to denote their separateness from the rest of the cemetery.

The Potter Field is a distinct zone within the historic cemetery (photos 55 and 56). Burials began here at an unknown date but prior to 1860. Many graves have no markers, others have purchased, standardized design stones while some have roughly etched engravings in limestone or concrete. In 2000, a monument was erected listing the known names of burials from 1895 to 1984.

Most markers are marble, limestone, granite, or concrete. A few markers used locally available sandstone and hollow cast-iron designs.

The cemetery contains several historic memorials. 187 unknown Confederate dead from the Civil War are buried in Section 3, marked by an unadorned 1901 stone marker provided by Anna Buell

¹ Diane Robey, et al., *Maple Hill Cemetery: Phase One* (Huntsville: Huntsville-Madison County Historical Society, 1995), 11.

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Drake Robertson. In 1935, low stone markers worded "CSA Unknown" were added to the memorial.²

A metal historic marker, erected in 1962, notes the history of the cemetery as well as the five Alabama governors buried there.

The Huntsville Meridian, an 1807 surveyor's line that intersects the cemetery and served as the basis of the land surveys in northern Alabama, is marked and memorialized by a large obelisk in Section 4 that was provided by Richard W. Anderson as a memorial to his relatives who are buried adjacent to the meridian itself.

The Maple Hill Cemetery Office (c. 1957) is a one-story Classical Revival-styled symmetrical three-bay brick building with a concrete foundation and asphalt shingle gable roof. Its classical pediment is supported by four fluted posts and fluted pilasters and a fanlight frames the entrance door (photo 163). The cemetery office is a contributing building to the cemetery. (C)

The nominated sections of Maple Hill Cemetery retain a high degree of historic and architectural integrity. The road and path system remains unchanged since c. 1922; many historic plantings of trees, boxwoods and other ornamentals remain extant. The City of Huntsville maintains the grounds and the markers on a regular basis. While some markers need repair, the vast majority are intact from their initial placement in the cemetery.

² "Sons of Confederate Veterans Egbert J. Jones Camp #357" website, www.scv357.org, accessed May 15, 2011; Michael A. Davis, "In Remembrance: Confederate Funerary Monuments in Alabama and Resistance to Reconciliation, 1884-1923," M.A. thesis, Auburn University, 2008, p. 114.

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8. STATEMENT OF SIGNIFICANCE

Maple Hill Cemetery, in Huntsville, Madison County, Alabama, is eligible for the National Register of Historic Places under Criterion A for its locally significant association with the town's settlement history and as a reflection of the ethnic and social history of the city from c. 1820, when the first burials occurred in the beginning years of settlement in Huntsville; to the agricultural boom of the late antebellum era of the 1840-50s; through the impact of the Civil War, with burials from both armies; onto the impact of ethnic settlements and the rise of segregated sections for Jews and Catholics; and to the city's twentieth century history of industrial growth in the 1900s and 1910s to its rapid development as a Cold War military-industrial complex from the 1940s to the end of the period of significance in 1961.

The cemetery is also eligible under Criterion C for its locally significant examples of antebellum, Victorian-era, and early to mid-twentieth century funerary art, design, and commemoration. It contains the work of local carver A. A. Baker, among others, and early work from nationally recognized sculptor R. E. Launitz. The cemetery contains a wide range of artistic expressions from vernacular hand-carved stones to ornate Victorian, Classical, and Art Deco styled work. A vast majority of the markers in the nominated property date from 1820 to 1961, with the greatest concentration of burials dating from 1890 to 1956.

Due to its significant associations with the significant patterns of Huntsville history, such as exploration/settlement and ethnic and social history, and due to the significance of its cemetery art, the nominated property meets the Criteria Exception D that calls for a National Register-listed cemetery to derive "its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events."

Settlement and Social History Significance

Maple Hill Cemetery is one of the oldest historic properties in Huntsville and Madison County. Established in 1822, three years after statehood, the cemetery's oldest identified burial, the grave of Mary Frances Atwood, dates to 1820. There may have been burials on this property prior to that date but these are unknown and unidentified.

The cemetery also is significantly associated with the initial federal survey of lands in Alabama. It contains the marker of the Huntsville Meridian, designated in 1807 by U. S. Surveyor Thomas Freeman as a point of reference for later land surveys in northern Alabama. Federal survey of the region began after treaties and land purchases from the Chickasaws in 1805 and the Cherokees in 1806. U.S. Secretary of War Henry Dearborn then directed Freeman to plot the new lands and prepare them for government sale. Freeman, a native of Ireland who came to Pennsylvania in 1784, had long experience with federal surveys, having previously been involved with the survey of the District of Columbia, the 1795 Spanish Treaty, and the Louisiana Purchase. Freeman met with the federal Cherokee Indian Agent Return J. Meigs, General James Robertson of Nashville,

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Tennessee, and Native American leaders to establish formal boundaries on September 11, 1807. They created the original boundaries for Madison County, some 345,000 acres south of the Tennessee state line. At this point Freeman established what was named the Huntsville Meridian as the base point for the northern Alabama survey. Freeman followed his survey work with an 1809 census of Madison County, finding 353 heads of households and some 2,233 white residents and 522 slaves. Federal land sales began in August 1809 in Nashville and the legal white settlement of the region was underway. Freeman, who died in 1821, is also buried in the cemetery.³

The nominated property's first known name was the Public Grave Yard, as documented in an 1849 map of the estate of William H. Pope. It remained a small property in the 1820s and 1830s, but expanded at an unknown date c. 1850. This growth coincided with Huntsville's rise to prominence in early Alabama history. The cemetery, the oldest municipal burial ground in Madison County, was the final resting place for many of the town's and county's founders, leading business operators, and key civic and religious leaders. Consequently, Maple Hill Cemetery is a significant document of Huntsville's statewide political prominence from the beginning of settlement and statehood in 1819 to the end of Reconstruction in the 1870s. It is the resting place for five Alabama governors from that period of history: Thomas Bibb (1820-1821), who was buried there in 1839; Clement C. Clay (1835-1837), who died in 1866 (photo 13); Reuben Chapman (1847-1849), who was buried in 1882 (photo 19); Robert M. Patton (1865-1868), who was interred in 1868; and David P. Lewis (1872-1874), who was buried in 1884 (photo 34). It also contains the remains of four U.S. senators from the years between statehood and the Civil War: John W. Walker (1819-1822), who died in 1823; Clement C. Clay (1837-1841), who was buried in 1866; Jeremiah Clemens (1849-1853) who was interred in 1865; and Clement Claiborne Clay (1853-1861), who died in 1882.⁴

The most significant U.S. Senator buried at Maple Hill Cemetery lies outside of the period of significance for this nomination. John S. Sparkman, who served for thirty years from 1949 to 1979, was a powerful voice for the continuation of segregation during the Civil Rights Movement but also for such progressive causes as public housing and public works spending. Sparkman also spent 12 years in the U.S. House of Representatives. He was instrumental in having Huntsville chosen as the location of the Redstone Arsenal and the Marshall Space Center.⁵

³ Frances C. Roberts, "Thomas Freeman—Surveyor of the Old Southwest," *Alabama Review* 11(July 1987): 216-230; Diane Robey, et al., *Maple Hill Cemetery*, Phase One (Huntsville: Huntsville-Madison County Historical Society, 1995), ix-x; Daniel S. Dupre, *Transforming the Cotton Frontier: Madison County, Alabama, 1800-1840* (Baton Rouge: Louisiana State University Press, 1997), 18-20; Malcolm J. Rohrbough, *The Land Office Business: the Settlement and Administration of American Public Lands, 1789-1837* (New York: Oxford University Press, 1968); John M. Allman III, "Yeoman Regions in the Antebellum Deep South: Settlement and Economy in Northern Alabama, 1815-1860," Ph.D. diss., University of Maryland, 1979.

⁴ Samuel L. Webb and Margaret E. Armbruster, *Alabama Governors: A Political History of the State* (Tuscaloosa: University of Alabama Press, 2001).

⁵ Samuel L. Webb, "John J. Sparkman," *Encyclopedia of Alabama Online*, accessed July 13, 2011.

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In addition to the governors and senators, the cemetery is also the final resting place for significant early settlers, planters, and local civic and economic leaders. In many cases, due to Huntsville's two eras of significant growth from 1890 to 1910 and from 1940 to 1970, the cemetery grave marker is the only extant historic resource associated with these early town leaders and settlers. Neal Rose (died 1835) operated the Planter's Hotel (not extant). Dr. Thomas Fearn (died 1863) was a physician who was "one of the lead researchers in the use of Cinchona bark to produce quinine for treatment of Malaria" and was prominent in Huntsville politics, serving in the Confederate Constitutional Convention and the first Confederate Congress.⁶ (Fearn's house stands at 517 Franklin Street.) Elizabeth Adaline Hurd (died 1840) taught at the Huntsville Female Seminary (not extant) at her death. James H. Weakley (died 1856) was the surveyor general of Alabama (neither office nor dwelling extant). Stephen Neal (died 1839) was the first Huntsville sheriff (neither courthouse nor his dwelling extant; his heirs later owned the Italianate-styled Neal house from 1849 to 1949). George Steele (died 1855) was a prominent antebellum architect who designed several still extant Greek Revival landmarks in the city. Benjamin Patteson (died 1862) served in the War of 1812 with General Andrew Jackson, served as a major general in the Alabama militia, and was the U.S. Marshall in Huntsville from 1830 to 1850 and 1852 to 1862 (house is not extant).

Huntsville, a station on the Memphis and Charleston Railroad, became an important Union occupation base during the Civil War from 1862 to 1865. Maple Hill Cemetery reflects that history in that its grounds served as burial grounds for both Federal and Confederate dead. By November 1862, at least 180 Union soldiers had been buried in Rows 2 and 3 of Section 1 of the cemetery; the total number of Union soldiers buried there during the war is unknown although c. 1867 the U.S. army removed the federal dead from the cemetery and re-interred them at the new national cemetery in Chattanooga or turned the remains over to families for burial.⁷ Presumably all of the Union dead were removed to the national cemetery; but these two rows have not had burials since the removal of the Union soldiers.⁸

Prominent Confederate Civil War leaders interred in the cemetery include the previously mentioned Clement Claiborne Clay, Lt. Col. Nicholas Davis, Jr. (died 1875); LeRoy Pope Walker (died 1884) who was an Alabama Secession Commissioner before becoming the first secretary of war for the Confederate States of America (photo 20); and Richard Wilde Walker (died 1874) who served in the Confederate States Senate for the last two years of the war. The most famous Confederate military veteran buried at the cemetery is Col. Egbert J. Jones of 4th Alabama Infantry, who died at the first Battle of Manassas in the first weeks of the war. At one marker, that of Edward Babcock (who died September 29, 1865), sentiments about the war were conveyed—in this case with a carved inset showing a sword laying on top of a copy of the Constitution (photo 26). Another marker for Richard Winter Goodloe (died 1863) is a hand-blocked carving with the

⁶ "Fearn Fellows," University of Alabama School of Medicine website, accessed July 2, 2011; Mike Marshall, "Some possessions of a prominent Huntsvillian to be up for auction in Pensacola," *Huntsville Times*, April 8, 2011.

⁷ Robey, 2.

⁸ *Ibid.*, 1-2.

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note that Goodloe died “Of wounds received at MURFREESBORO, TENN. Aged 20 Years” (photo 30). Later 19th and early twentieth century markers sponsored by Confederate heritage groups are found throughout the property; H. P. Turner (died 1911) was memorialized with a carving of the Southern Cross of Honor (photo 50).

Significantly, the cemetery also contains the burials of two Union brigadier generals, William T. H. Brooks (died 1870) and Gilbert M. L. Johnson (died 1871). Brooks (photo 35) is especially interesting since he fought in major battles in the Eastern Theater and was wounded at the Battle of Antietam. But he moved to Huntsville in 1866, established a plantation, and rather than being considered a “carpetbagger” Brooks became a respected member of the planter elite in Madison County. Historian Lawrence Powell noted that Brooks “was so esteemed by the local whites near Huntsville, Alabama, that when he died in 1870 they marked his grave with ‘a Confederate emblem secured in concrete.’”⁹ Johnson, on the other hand, had commanded the city’s occupation force of the 13th Indiana Cavalry in 1864. He returned to Huntsville after the war, married, and served as postmaster from 1869 to his death in 1871. Maple Hill Cemetery also contains a few graves of Union soldiers, such as that of Joseph Monroe Hinds (died 1901) which was marked by the G.A.R., the Grand Army of the Republic (Photo 44). Interestingly, none of these three Union veterans (who died after the war) are buried in Section 1.

The cemetery was significantly expanded in 1873 when the city purchased almost twelve and a half acres of land. This followed the city’s earlier 1870 purchase of property for a legally segregated cemetery for African Americans named Glenwood Cemetery. Maple Hill, in the new world of emancipation, became segregated space within the town’s public landscape, reserved for white Protestants, since the new land also allowed city council to designate separate segregated spaces within the cemetery for white Jews (first known burial in 1878) and Catholics (photo 40). It is important to note that as late as 1861, as documented by the grave for Simon Lowman (photo 33), Jewish residents were buried with their white, Protestant neighbors; it was only after the war that religious segregation became part of the cemetery’s landscape. A subsection of Section 10 was reserved for Jewish burials; most of Section 15 was reserved for Catholic burials. Prominent Jewish citizens buried in the reserved section included Morris Bernstein (who founded Huntsville B’nai B’rith in 1875 and the Temple B’nai Sholom in 1876); Robert Herstein (who served as city treasurer and in the city council during the 1870s); and Oscar Goldsmith (who was the treasurer for Dallas Mill and president of the Huntsville Land Company). Prominent Catholics included George Mahoney (a successful mid-twentieth century Huntsville merchant and civil leader) and John N. Mazza (who operated a famous Huntsville candy shop).¹⁰

In 1881, an additional 3.2 acres were added to the cemetery.¹¹ Twenty years later, in 1901, the property was renamed Maple Hill Cemetery following a suggestion of Eliza Hill Thomas Cooper,

⁹ Lawrence N. Powell, *New Masters: Northern Planters during the Civil War and Reconstruction* (New Haven: Yale University Press, 1980), 144.

¹⁰ Robey, 80, 142.

¹¹ *Ibid.*, xiii-xiv.

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who died in 1905 and is buried in the cemetery.¹² The cemetery during the years of 1870 to 1910 contains many monuments from the rising number of Huntsville's working and middle classes, as it transformed from an agriculture-based county seat to a city where the cotton mill industry was much more important. With the town's industrialization came the rise of fraternal lodges during the Victorian era. Whereas monuments prior to 1860 documented the predominance of the Masons (an organization that remained strong in numbers throughout the century, as seen by multiple markers in Sections 7-9), markers associated with the Woodmen of the World (a standardized design depicting a tree with its limbs and top cut off) (photo 51) and the International Order of Odd Fellows gained in number as well. The marker of Jon Spears (died 1871) also noted the presence of labor unions, in this case the unadorned hand-blocked marker was "ERECTED by Huntsville Division, No. 91, Brotherhood Locomotive Engineers." T. J. Harrison sponsored another memorial to a worker, Jessup Whitehead (died 1889), who was "Chef de Cuisine of Hotel Monte Sano and author of Cook Books" (Photo 49). Pre-eminent turn-of-the-century civic capitalist Tracy W. Pratt is also buried in Maple Hill Cemetery. When Pratt died in 1928, his funeral at the cemetery was an elaborate civic event. Allegedly all businesses in the city observed five-minutes of silence when the funeral began.¹³

Complementing the hundreds of markers to Huntsville's elite and its everyday middle-class residents from 1820 to 1961 is the burial place of the truly nameless from Huntsville's past. The Potter's Field, located in a corner of the historic cemetery, was deliberately situated at a distance from the heart of the cemetery. No record exists of how earlier burials took place in this section, but the earliest unmarked graves are believed to date prior to 1860 and may have included African American slaves. At least one slave, known only as "Mammy" is buried in the Jones family plot in Section Six. She may have been the first African American buried in the historic section of the cemetery. Better records exist after 1895 and in 2000 the cemetery erected a memorial listing the known names of those buried between 1895 and 1984.

The construction of the Erskine Mausoleum (photo 113) on a slight rise overlooking the historic sections of the cemetery completed the property's early twentieth century landscape design. Albert Russel Erskine (1871-1933) was a Huntsville native who was an automobile executive, then president of Studebaker and the past president of Pierce-Arrow automobile company. Erskine acquired a large piece of property to hold a classical-styled mausoleum for the remains of his parents, William E. and Ursula Ragland Erskine and eventually himself and his wife, Annie Lyell Erskine. Albert Russel Erskine deeded the first property to the cemetery in 1918, and finished his gift of land by 1922. In between the city acquired three additional properties (now Sections 200-202) to complement the Erskine gifts, which allowed the cemetery to extend from the Erskine mausoleum to Wells Avenue, except for a small plot of land allowed for a Cumberland Presbyterian Church. The city acquired the church in 1936 and demolished it, using the land for additional burials from that point to c. 1960.¹⁴

¹² "Maple Hill Cemetery Stroll," May 3, 2009, Huntsville Pilgrimage Association.

¹³ Patricia H. Ryan, *Northern Dollars for Huntsville Spindles* (Huntsville: Huntsville Planning Department, 1983), 38-39.

¹⁴ Robey, xv.

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10. GEOGRAPHICAL DATA

Verbal Boundary Description

The Maple Hill Cemetery is located at 231 Maple Hill Drive Street in Huntsville, Madison County, Alabama. The nominated sections of the cemetery are Sections 1-15 and 200-202 as well as sections A-K, and IV and VI , as marked on the attached cemetery property map.

Verbal Boundary Justification

The nominated boundaries contain all of the extant historic property significantly associated with the cemetery.

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The Erskine gifts along with the city's recent purchases convinced the local government to create the City Cemetery Association on September 9, 1922. The new commission was empowered to administer all affairs of Maple Hill Cemetery and to receive donations of property as well as recommend to the city when new land purchases would be necessary. In 1924 Maple Hill Cemetery took its present form of approximately 100 acres with the commission's purchase of 59 acres. Six years later, in 1930, the City Council took over all operations, land, and administration from the cemetery commission. Maple Hill Cemetery took on a new public role over the next decades. Beginning at least c. 1950, its quiet, winding roads, with no traffic, seemed perfect to city officials for driver's license tests. The tests were administered at the cemetery with the written portions taken at the cemetery office.

In fact, the city built a new brick, Classical Revival-styled administration building at the cemetery's main entrance gate c. 1957. This building not only served as a cemetery administrative center, it also was used for driver license's tests and as a voting precinct. The most famous ballot cast from the cemetery office came during the gubernatorial election of 1970 when Dr. John L. Cashin, an African American dentist from Huntsville (who died in March 2011), came to the cemetery office with his wife and they cast ballots in the historic election, an event covered by media from across the country. Cashin was the gubernatorial nominee of the National Democratic Party of Alabama and he received 15 percent of the vote in his race against George C. Wallace. Cashin also had earlier launched an unsuccessful campaign to be mayor of Huntsville.¹⁵ An account of the gubernatorial vote at Maple Hill Cemetery was recorded by journalist L. H. Whittemore in his 1971 book *Together: A reporter's journey into the new black politics*.¹⁶ Whittemore wrote:

"At eleven o'clock that morning, [John Cashin] and [his wife] Joan arrived at the exclusively white Maple Hill Cemetery in Huntsville in order to cast their votes inside the little brick house within the gate. Joan mentioned that a television crew was supposed to be along soon. 'Stop trying to please those people,' Cashin snapped. 'If they aren't here, we're not waiting for 'em.'

Two white photographers were on hand in the cemetery to greet them as they emerged from their car. The Cashins entered the house and voted, then came out on the concrete patio, a handsome couple, to pose to the cameras.

'Did y'all know,' Cashin joked as the cameras clicked, 'that there are four governors [actually there were five] of Alabama buried just over there?'"

The cemetery office remained a voting precinct until 1987.

¹⁵ "Dr. John Cashin, Legendary Black Civic and Political Leader Passes" *Los Angeles Sentinel*, July 14, 2011; Matthew C. Edmonds, "National Democratic Party of Alabama," *Encyclopedia of Alabama Online*, accessed July 7, 2011.

¹⁶ L. H. Whittemore, *Together: A reporter's journey into the new black politics* (New York: Morrow, 1971), 283.

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Art Significance

Maple Hill Cemetery has a significant array of funerary art. The range of artistic expressions is impressive. Representing folk or vernacular styles is the simple 1824 stone tablet of Isabell Harris (Photo 4) which has beautiful hand carved script that reads "Here lies the body of Isabell harris who departed This Life September the 13 Aged 73 1824." But this type of hand carving is rare, although it persisted as late as 1939 with a marker in the Potter's Field. More common vernacular secular expressions are block hand carved descriptions on unadorned stone tablets such as those of Nancy Miller (no date, photo 2). One hand blocked rectangular tablet, for John Lloyd (died 1849), is signed S & B, H'VILLE, but this carver remains unidentified. The weeping willow motif is found on several markers erected before the Civil War. The stone column for William T. Weaver (died 1852) is a good example (Photo 23).

Classical motifs predominate among markers from 1825 to 1875. The tallest memorial in the cemetery, the Huntsville Meridian memorial of Richard Anderson, is an ornate classical pillar, again topped by an urn (photo 11) that was laid on a square stone base with classical pilasters. The Civil War veteran Egbert J. Jones (died 1861) has a tapered square post adorned by an urn and rests on a classical base that in turn rests on two square stones. The stone pedestal marker for Eliza Brandon (died 1827) is the earliest identified carving from A. A. Baker of Huntsville (photo 10). This marker is one of several identified as Baker works in the cemetery. Baker worked in Huntsville throughout the antebellum decades. In 1859-60, he operated the Huntsville Marble Works on Washington Street near the public square (building not extant).¹⁷ Another early Baker design was the obelisk for Governor Thomas Bibb (died in 1839). For the departed governor, Baker created a tall tapered classical obelisk topped by an urn and resting on a three-part stone base. For "The Moore Sisters" marker of 1855-1859, located within the cast-iron fence defined family plot of William H. Moore, Baker created paired fluted classical columns, topped by identical urns and wrapped together by an elaborate band of flowers (photo 14). A post-Civil War Baker monument, that of Janie McDavid, who died in 1866 (photo 28), is a clear departure from his earlier classicism. The marker is a large cross, enwrapped in a vine, with a Victorian-influence design to the base.

Historian Drew Gilpin Faust has recently analyzed the cult of death and mourning that surrounded the Civil War and its aftermath¹⁸, a pattern clearly documented in markers beside that of McDavid. The cult of mourning after the Civil War also is captured by Section 4's Edith G. and Oliver Sledge memorial (photo 12), which has a Gothicized stone base topped by a statue of an angel kneeling in prayer. Another angel statue adorns the classical base of the Lewellen and Nancy Jones memorial, dated March 1870, in section 7.

The William Patton monument (died 1846) is a beautiful, carved Gothic styled tapered column topped by a Gothic finial, a rare style in the antebellum South (photo 22). Traditional Victorian

¹⁷ Huntsville City Directory, 1859-1860, accessed from Madison County Alabama GenWeb, accessed July 13, 2011.

¹⁸ Drew Gilpin Faust, *This Republic of Suffering: Death and the American Civil War* (New York: Knopf, 2008).

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motifs of the wreath (Mollie Teal, died 1899) and of open drapes framing an open Bible for Mary A. Smith (Teal's mother, died 1872) characterize the Teal family plot, which also is adorned by a low stone border with Eastlake-styled posts designating the entrance to the plot (photo 8).

Elaborate Victorian styled cast-iron (some of the metal fences are of zinc) scroll fences marked the family plots of Dr. Thomas Fearn (Photo 6) and William Brandon (Photo 21). The Brandon fence is especially notable for its log-like corner posts, topped by an open ear of corn, all cast in iron. The rear fence along Erskine Street was formerly the cast-iron fence surrounding the county courthouse until it was moved to the cemetery, c. 1900.

Egyptian Revival motifs are reflected in the stone for David and Virginia Harrison (c. 1840), signed by the stonemason R. E. Launitz of New York. Egyptian designs, such as the cavatto pediment found on the Harrison monument (photo 17), were popular in urban American cemeteries from the 1830s to the 1850s. Launitz was described by the *American Architect and Building News* of August 6, 1887 as "the first and only personality entitled to any consideration from an art point of view, that has appeared in the history of monumental art in the United States."¹⁹ Launitz was praised for several cemetery monuments, including those for Major Theodore O'Hara in Frankfort, Kentucky, and the Civil War Soldiers Monument in that same city. A native of Russia, Launitz came to the United States and by 1837 to 1844 he worked as a sculptor with builder/architect John Frazee in New York City. During this time—when Launitz created both the Harrison monument and the nearby more Greek Revival styled monument (photo 18) of Dr. David Moore (died 1845)—the 1887 article related that Launitz was not "very successful. Marble work in those days was confined almost entirely to small grave-stones, plain memorial-tablets, mantel pieces, and occasionally a trifling piece of carving."²⁰ But the 1850s were another story and he received major commissions for a memorial to James Fenimore Cooper in New York City, for Henry Clay in Lexington, Kentucky, and for multiple monuments and memorials in Greenwood Cemetery in New York City.

The move toward standardized, mass-produced styles of grave markers was underway at the cemetery by the 1880s, a trend perhaps best expressed by the striking set of three hollow cast-iron markers for the Vandeventer family, erected between the 1880s and 1899 (photos 45 and 46). Many of the twentieth century markers were granite stones produced in mass and having a standardized shape—the only difference from a marker in Huntsville and one in Cullman would be the machine-carved inscription on the marker's face. But twentieth century styles are found in the cemetery. Art Nouveau style is represented by the marker for Carrie Ridley Herreshoff (died 1924) (photo 7). Art Deco style is expressed by the script of the London family marker (see photo 60).

Many of the markers and memorials in the cemetery from the twentieth century came from an adjacent stone mason shop, the Sparkman Marble and Granite Works on Wells Avenue. The

¹⁹ T. H. Bartlett, "Early Settler Memorials," *American Architect and Building News* (August 6, 1887), 59.

²⁰ *Ibid.*

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shop has been in business since 1892.²¹ Robert L. Sparkman and his craftsmen used hand tools to prepare markers until c. 1910 when he bought an electric stone carver to do most of the firm's work. Another local monument maker was J. F. Hummel, a Union veteran who moved to Huntsville c. 1870. He carved such notable local sculptures as the "Little Lion" at the city's Big Springs International Park and the "Confederate Soldier" for the courthouse square monument, but the latter was destroyed in a late 20th century accident and has been subsequently replaced by a new sculpture similar to that of Hummel's. But no Hummel marker has been identified yet at Maple Hill Cemetery.²²

Many military veterans from all of the nation's wars (from the Revolution to the Iraq War) are buried within the historic sections of the cemetery.

²¹ Jacquelyn Procter Reeves, *Remembering Huntsville* (Nashville: Turner Publishing, 2000), 39.

²² Communication from Henry P. Turner of the Huntsville Pilgrimage Association, February 13, 2011.

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National Park Service**

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MAPLE HILL CEMETERY

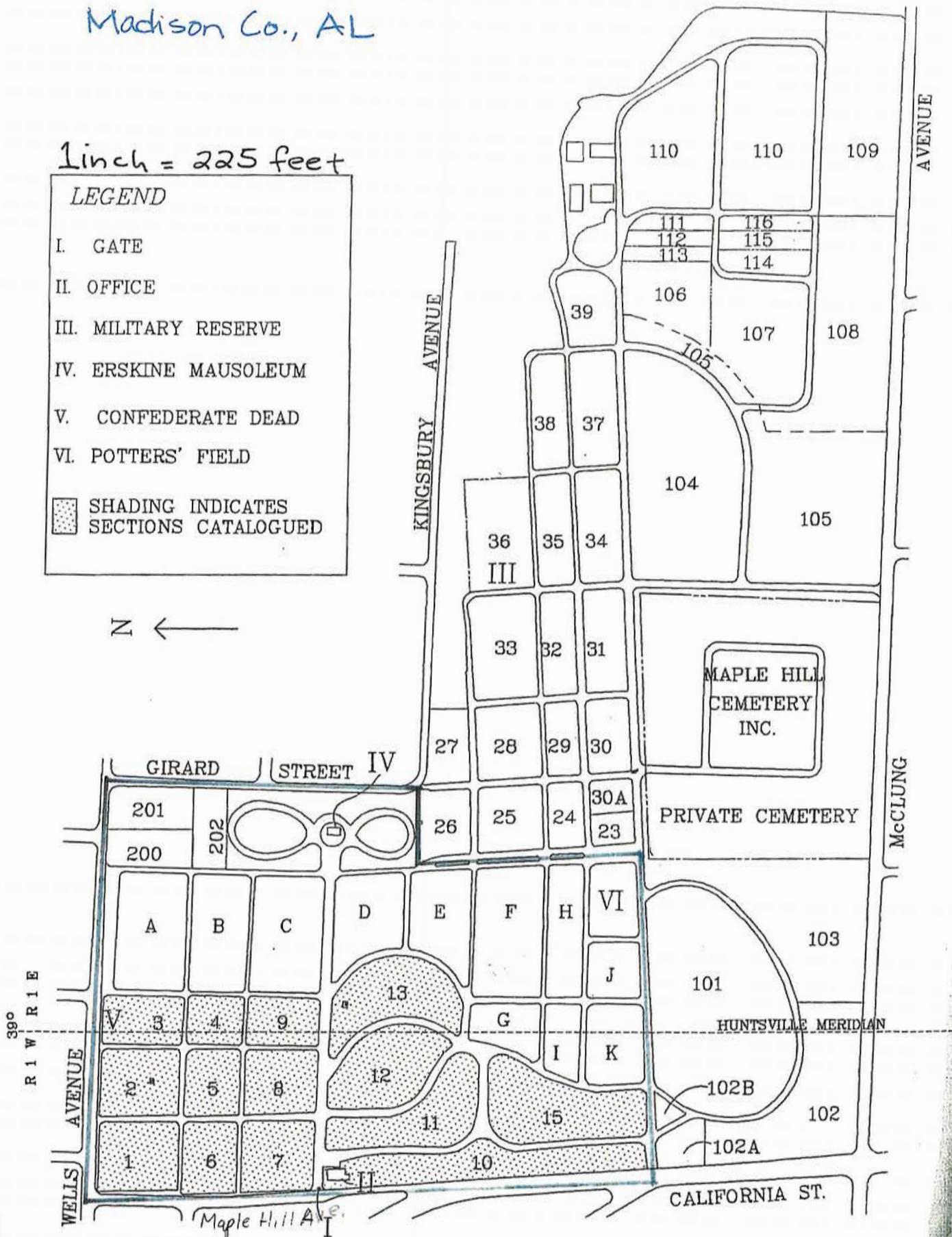
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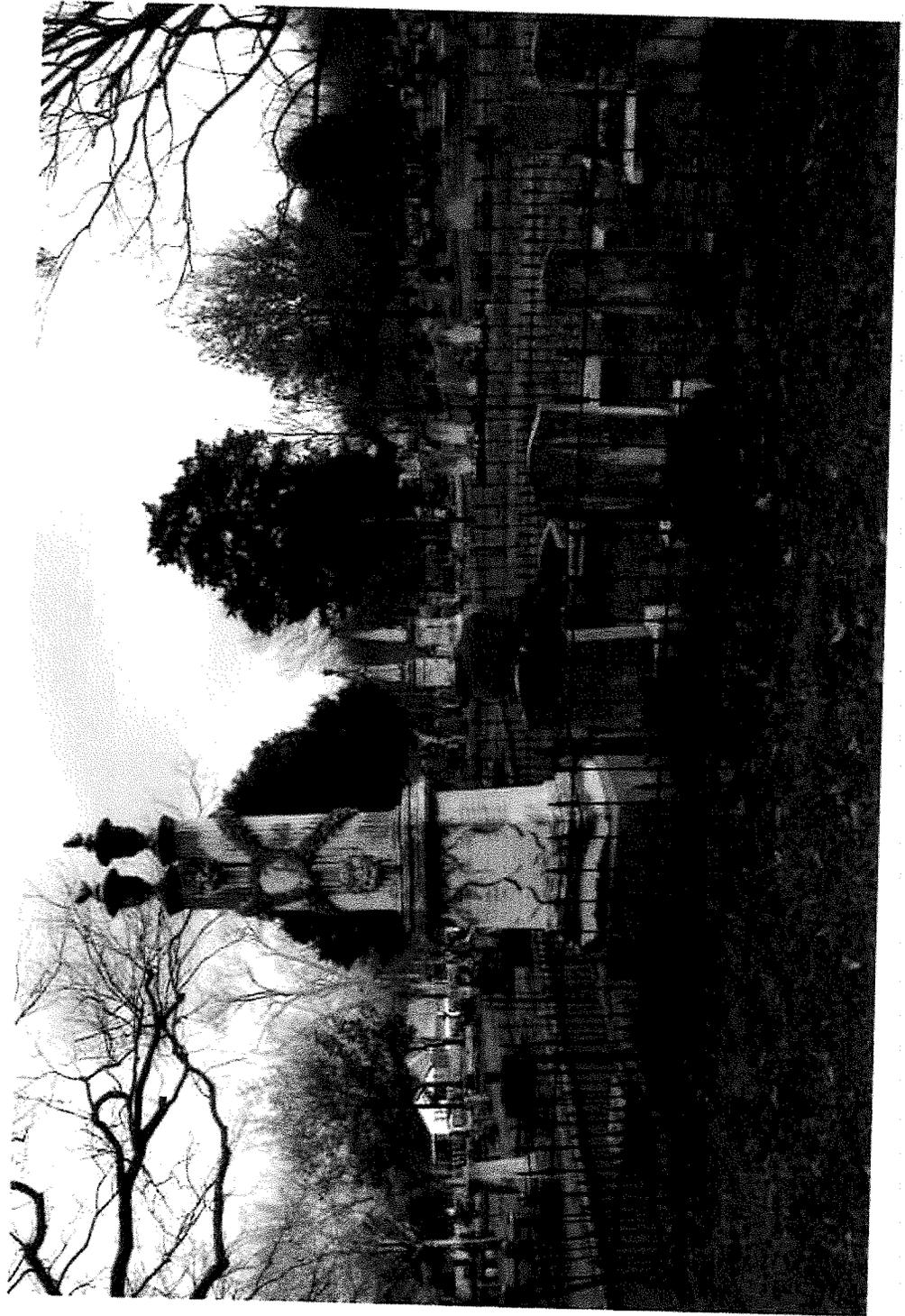
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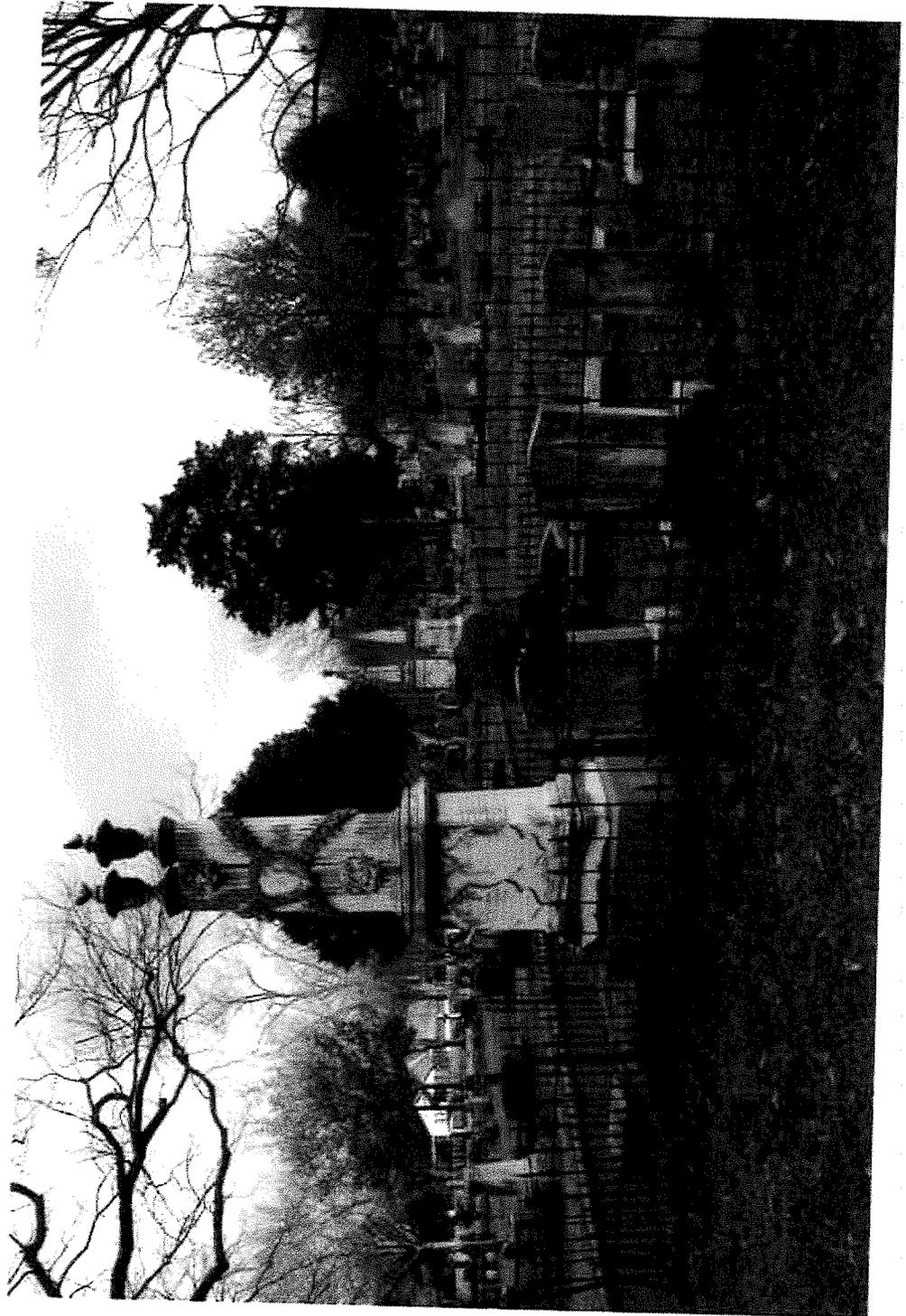
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 - II. OFFICE
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 - V. CONFEDERATE DEAD
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48 PRESERVATION BRIEFS



Preserving Grave Markers in Historic Cemeteries

Mary F. Striegel, Frances Gale, Jason Church, & Debbie Dietrich-Smith



National Park Service
U.S. Department of the Interior
Technical Preservation Services

Cemeteries found across the country are not only places of burial, but they also provide a vivid record of community history. Whether large or small, well maintained or neglected, historic cemeteries are an important part of our cultural landscape. The vast richness of expression through form, decoration and materials informs our understanding of the individuals buried in historic cemeteries and their cultural significance.

While cemeteries are often considered to be perpetual, their most prominent feature—the grave markers—are not. They weather, naturally decay, often are poorly maintained and repaired and, on occasion, are vandalized (Fig. 1). Grave markers are usually noteworthy not only for their inscriptions but also for their craftsmanship. Exceptional markers are considered works of art.

This Preservation Brief focuses on a single aspect of historic cemetery preservation—providing guidance for owners, property managers, administrators, in-house maintenance staff, volunteers, and others who



Figure 1. Sandstone and slate grave markers in the Ancient Burying Ground in New London, CT, display a variety of weathering conditions. Markers in the cemetery date from the mid-17th to the early 19th centuries. Photo: Jason Church.

are responsible for or are interested in preserving and protecting grave markers. Besides describing grave marker materials and the risk factors that contribute to their decay, the Brief provides guidance for assessing their conditions and discusses maintenance programs and various preservation treatments.

Also identified are a number of excellent references that address materials used in all grave markers, including several other Preservation Briefs (listed in Additional Reading). This Brief highlights particular issues that should be considered with historic grave markers.

Types of Traditional Grave Markers

The great variety in the types of grave markers is a fascinating aspect of the study and appreciation of historic cemeteries. Three broad categories can be used to describe grave markers—(1) single-element, (2) multiple-element, and (3) structures. Single-element grave markers are stone, cast iron, or wood elements that are set in a vertical position or placed as a horizontal slab on the ground (Fig. 2). Early examples of this simplest type of grave markers are field stone and basic wooden or wrought iron crosses, with the name of the deceased person scratched into or engraved on the marker. Often, these rudimentary grave markers are overlooked, significantly deteriorated, or lost. Vertical stone slabs and large stone ledgers laid horizontally over the gravesite are more sophisticated examples of this type.

Multiple-element grave markers are found in a number of different forms (Fig. 3). In the most typical form, a grave marker would consist of two stones—an upper headstone placed on top of a base stone. The upper headstone may be secured in a number of different ways to the base. In the simplest of forms, the upper stone was placed on the base, set in a bed of mortar on top of the base, or joined with pins and mortar. With a “tab-and-



Figure 2. These mid-19th century, single-element stone grave markers in the Grove Cemetery in Bath, NY, are set in a vertical position. Photo: Jason Church.

slot” grave marker, the tabbed upper stone was set in a slotted base. More common today, the upper headstone is secured with a technique that uses small spacers set on the base and a setting compound. This technique or one that uses an epoxy adhesive may be found on older markers where the stones have been reset.



Figure 3. A multi-element grave marker from the early 19th century in the St. Michael's Cemetery, Pensacola, FL, consists of a vertical element with tabs (left image) into a slotted base (right image). Photo: Fran Gale.



Stacked-base grave markers use multiple bases to increase the height of the monument and provide a stable foundation for upper elements. Tall, four-sided tapered monuments, known as obelisks, are typically placed on stacked bases. Columns or upright pillars have three main parts – a base, shaft, and capital. Multiple-element grave markers may also include figurative or sculptural components. Traditionally, stacked base grave markers were set on lead shims with mortar joints or with lead ribbon along the outer edges.

Grave markers can also be engineered structures. Examples of grave marker structures include masonry arches, box tombs, table tombs, grave shelters, and mausoleums (Fig. 4). The box tomb is a rectangular structure built over the gravesite. The human remains are not located in the box itself as some believe, but rather in the ground beneath the box structure. The table tomb is constructed of a horizontal stone tablet



Figure 4. This sandstone table tomb, located in Cedar Grove Cemetery, New London, CT, is an engineered grave marker structure consisting of a horizontal stone tablet supported by four vertical table “legs” with and a central column,. Photo: Jason Church.

supported by small corner supports or columns. Grave shelters, also called grave houses, can be simple or elaborate wooden structures built over the gravesite. Mausoleums are above-ground buildings with compartments for multiple burials. Engineered structures also include hillside and underground tombs.

Guidelines for Evaluating and Registering Cemeteries and Burial Places, National Register Bulletin 41, provides a concise review of grave marker types.

Materials

Stone, brick, concrete, metal, and wood are the most common materials used for grave markers and for fences and gravesite enclosures in historic cemeteries. This section briefly describes the composition and properties of these diverse materials

Masonry materials

There is a wide variety of masonry materials used in historic cemeteries; some are naturally occurring and others man-made. Although there are notable exceptions, most masonry materials are durable, have high compressive strength, and are resistant to weathering. As grave markers, they typically represent the work of masons and stone carvers.

Stone is a naturally occurring material with a wide range of properties and is available in a variety of colors (Fig. 5). Geologists classify stone according to the way in which it was formed with the three categories being igneous, sedimentary and metamorphic rock. Stone found in cemeteries is predominantly quarried, though the use of field stones is not uncommon. The mineralogy and chemical composition of stones vary. Some are composed primarily of silicate minerals; granites, sandstones, slate, and schist are examples. Other stones contain calcium carbonate with marble and limestone in this group. Mineralogy, chemical composition, and physical structure of the stone influence weathering and

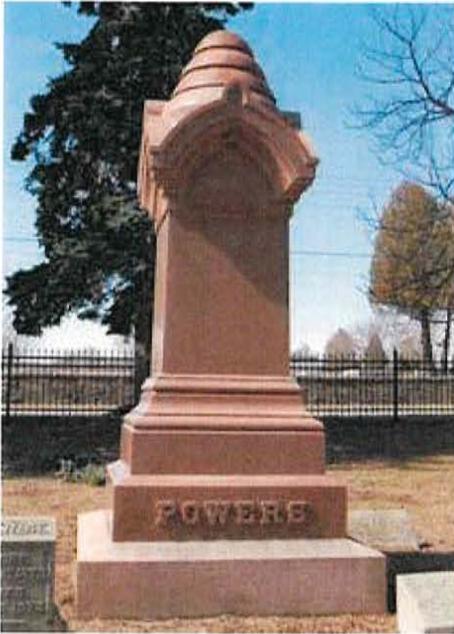


Figure 5. A variety of colors of natural stone are found in historic cemeteries, such as this pink granite marker in the Cedar Grove Cemetery, New London, CT. Photo: Jason Church.

the selection of materials and procedures for its cleaning and protection.

Man-made masonry materials are manufactured from naturally occurring raw materials. For example, the raw materials used to make brick include clay, sand, and shale. During firing, clay minerals and sand melt and come together forming silicates, aluminates, and metallic oxides. The resulting brick material has a hard-fired outer surface with a softer interior.

Concrete is a man-made material composed of cement, sand, gravel, and water. Most concrete produced after 1870 contains Portland cement, another manufactured product. In its plastic or wet state, concrete can be cast or poured. It hardens by hydration, a chemical-curing process. The resulting product has excellent compressive strength, but much lower tensile strength. Reinforcing concrete with steel helps compensate for this limitation.

All masonry materials are porous with an interior network of pores. The porosity of sedimentary rocks such as limestone and sandstone can be as high as 20 percent while the pore volume of granite is very low. Because moisture is a key factor in many deterioration processes, porous masonry materials are more vulnerable to weathering.

Metals

Metals are solid materials that are typically hard, malleable, fusible, ductile, and often shiny when new (Fig. 6). A metal alloy is a mixture or solid solution of two or more metals. Metals are easily worked and can be melted or fused, hammered into thin sheets, or drawn into wires. Different metals have varying physical



Figure 6. Decorative cast-iron grave markers like this late-19th century one in Oakland Cemetery in Shreveport, LA, are produced by heating the iron alloy and casting the liquid metal into a mold. Photo: Jason Church.

and mechanical properties, aesthetics, and weathering characteristics.

Ferrous metals and alloys, including cast iron, wrought iron, and steel, all contain iron. Cast iron also contains carbon and silicon and has a relatively low melting point. When heated to a liquid state, it can be molded into a variety of shapes. Wrought iron is an alloy with low carbon content. Its fibrous inclusions (called slag) are sometimes visible to the naked eye. Unlike cast iron, wrought iron is heated to the point where it becomes soft and then is hammered or “worked” into desired shapes. Most of the wrought and cast iron in historic cemeteries is ornamental rather than structural. While cast iron, steel, and wrought iron all contain iron, steel and wrought iron are more resistant to corrosion. Paint was often applied to ferrous metals to help protect them from corrosion and for decorative purposes. Metal elements were painted in a variety of colors including black, white, and green, among others.

Nonferrous metals and alloys, such as bronze, zinc, and lead, do not contain iron. Bronze contains about 85% copper, 10-15% tin, and sometimes lead. Historic bronze cemetery markers were created by casting processes that involves pouring liquid bronze into a mold. The completed casting is hollow. Bronze work may comprise a single molded component, such as a plaque, or multiple molded components welded or fitted together as with large statuary. Chemical patinas were applied to enhance color, and clear coatings for protection. Cast zinc monuments were popular from 1870 through the early 20th century. Most cast zinc is bluish-gray in color. Although cast zinc is resistant to corrosion, it is a brittle material with a tendency to “creep” or deform, especially when exposed to high outdoor temperatures.

Wood

Wood is a porous organic material composed of tubular cells in a parallel arrangement. The structure and characteristics of these cells determine the wood’s



Figure 7. As shown by this 1877 marker in Silver Terrace Cemetery, Virginia City, NV, exposure to sunlight can damage wood grave markers, making the wood more susceptible to water damage and cracking. Photo: Jason Church.

appearance and influence wood properties. Wood-cell walls and cavities contain moisture. Oven drying reduces the moisture content of wood. After the drying process, the wood continues to expand and contract with changes in moisture content. The loss of water from cell walls causes wood to shrink, sometimes distorting its original shape (Fig. 7).

Hardwoods come from deciduous trees such as oak, maple, and walnut; softwoods from conifers such as pine, cedar, and fir. In general, hardwoods have higher density than softwoods, which makes them more durable materials, and are darker in color. Wood cut at different orientations affects its strength and weathering. As an organic material, wood is also particularly vulnerable to termites, carpenter ants, and other wood-destroying insects and fungi. Paints, coatings, and fungicides such as borates are used to help protect wood from various insect damage and fungal rot.

Other materials

Old cemeteries often include a wide variety of other materials not normally associated with contemporary grave markers, such as ceramics, stained glass, shells, and plastics (Fig. 8). As with masonry, metals, and wood, each has its own chemical and physical properties which affect durability and weathering. These materials



Figure 8. A fired ceramic, this cameo is set in a marble grave marker, located in Elmwood Cemetery, Memphis, TN. Different materials may require different conservation approaches. Photo: Mary Striegel.

present unique challenges and their properties must be understood before establishing appropriate maintenance and repair. Documentation of unusual materials is critical when repair is not possible.

Weathering

All grave marker materials deteriorate when they are exposed to weathering such as sunlight, wind, rain, high and low temperatures, and atmospheric pollutants (Fig. 9). If a marker is composed of several materials, each may have a different weathering rate. Some weathering processes occur very quickly, and others gradually affect the condition of materials. Weathering results in deterioration in a variety of ways. For example, when exposed to rainwater some stones lose surface material while others form harder outer crusts that may detach from the surface.



Figure 9. The limestone and sandstone grave markers in this historic cemetery have different weathering processes. On the left, the limestone shows surface loss in areas exposed to rainwater and gypsum crust formation below. The sandstone marker on the right displays uniform soiling, but surface hardening may be occurring. Photo: Fran Gale.

Granite is a durable grave marker material considered resistant to weathering. It is a compact, hard rock with low porosity, and granite deterioration can be imperceptible for many years. Slate also has low porosity, but its layered structure can result in delamination. Some stones used to make grave markers, like sandstone, limestone and marble, are softer than granite and more porous. These materials are more vulnerable to weathering with deterioration noticeable during the initial years of exposure. With slate and other stones with layered structures, weathering sometimes results in delamination, defined as the separation of layers along bedding planes. Different rates of weathering are related to the chemical composition and physical structure of the material.

Deterioration affects other grave marker materials in different ways. With brick, durability is related to its firing temperature, which influences the brick's compressive strength and absorption. Brick fired at high temperatures has a protective fire skin. The weathering of concrete also is variable, and largely depends on the materials used in its manufacture. For example, Portland cement concrete is generally more resistant to weathering than lime concrete. With wood, grave markers fashioned from heartwood (the dead inner wood) are more durable than those of sapwood (the living exterior wood), and some wood species such as cedar, Osage orange and black locust contain extractives that provide decay resistance.

The term "inherent vice" is used to describe a material with a naturally occurring problem that leads to premature deterioration (Fig. 10). An example of this problem is marble that has cracked due to natural locked-in stresses. Inherent vice also describes grave markers that are composed of incompatible materials, where decay is accelerated in one or both materials because of chemical interactions caused by their close proximity. An example is the galvanic corrosion that occurs when dissimilar metals, such as copper and iron, are in contact and exposed to moisture.

Risk Factors

There are two major categories of risk factors that can impact historic grave markers. The first comprises naturally-occurring deterioration phenomena known as the forces of nature, including weathering. The list of natural risk factors includes climate, biological issues, and natural hazards such as fire and floods. The other category includes the many degradation phenomena that are related to human activities. The results of humans and their actions include pollution, lack of maintenance, inappropriate repairs, arson, and vandalism. While some of the factors related to human activities, such as improper repair, may not be intentional, the results can be just as damaging to grave markers.

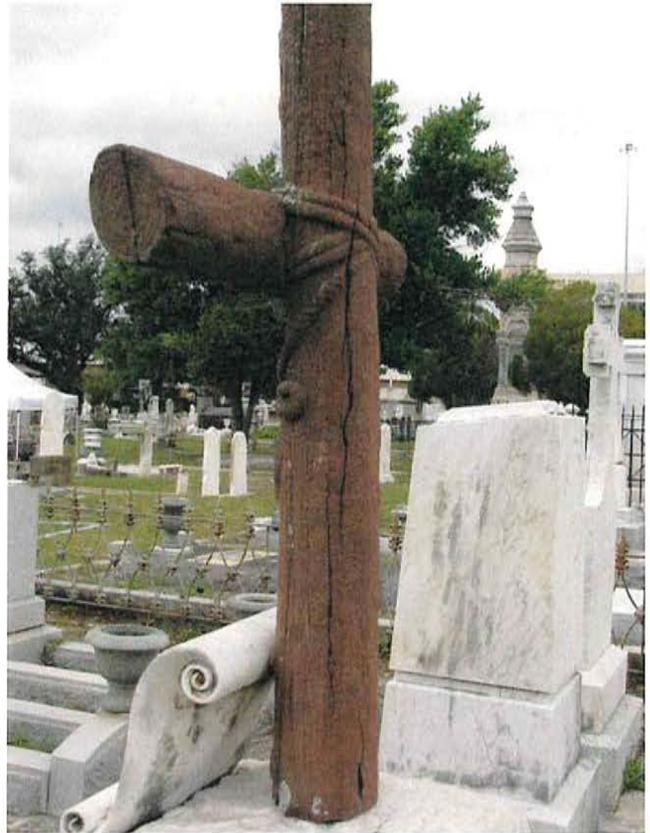


Figure 10. The sandstone cross (carved to look like wood) in this grave marker in St. Michael's Cemetery in Pensacola, FL, provides an example of inherent vice – the severe delamination affecting the sandstone has occurred along its natural bedding planes. Photo: Fran Gale.

Often, it is not possible to separate natural risk factors from those related to human activities. For example, pollution is deposited on grave markers by rain and other forms of precipitation, resulting in discoloration and often material degradation. Whether due to natural risk factors, human activities or both, "synergism" occurs when the result of two or more risk factors is greater than the sum of the individual effects. An example is the damage that occurs to salt-laden masonry materials during freeze/thaw cycles. The combined effect of these two deterioration factors is severe.

Natural Risk Factors

Climate plays an important role in weathering processes. Depending upon the climate, cemetery grave markers are exposed to rain, snow, sleet, ultraviolet (UV) light, humidity, high and low temperatures, and wind. All of these forces can damage masonry, metals, and wood. For example, with wood, the UV rays present in sunlight accelerate the weathering process.

Exposure to repeated changes in temperature can have an adverse effect on materials such as stone and other porous masonry. High temperatures deteriorate and weaken many materials while low temperatures cause materials to become brittle. In some climates there are rapid changes during spring and fall that



Figure A. Cemeteries are cultural landscapes made up of a variety of features. Grave markers are but one component of cemeteries that also include walkways, drives, fences, coping, trees, shrubs, and other vegetation. Each component adds to the understanding of the cemetery landscape. Photo: Debbie Dietrich Smith.

Vegetation Management

Carefully monitoring and managing of trees and other vegetation is an integral part of a cemetery preventive conservation program. Mature trees and ornamental shrubs can add character, shade, and seasonal color to historic cemeteries (Fig. A). However, if not properly maintained, they can damage grave markers, fencing, and other historic features. Mature trees may fall during storms and drop large limbs that topple grave markers and mangle fencing. Overgrown vegetation creates wet, shaded areas and fosters biological growth that can accelerate deterioration of stone, iron, and wood objects.

A treatment plan for cemetery vegetation should address trees, shrubs, vines, and "volunteer" growth. For the assessment and treatment of trees that pose hazards, consult an International Society of Arboriculture (ISA) certified arborist. Prune trees and shrubs adjacent to grave markers to allow air circulation and light penetration. Certified arborists and master gardeners should carry out this work or direct others in pruning trees and shrubs, as many may be historic features integral to the cultural landscape and worthy of preservation.

Regarding lawn care, historic cemeteries were not designed for today's large riding lawnmowers, yet this is the mower of choice for many cemeteries, as mowing is one of the most time-consuming and costly maintenance tasks generally undertaken. Mowing between tight spots with a large riding mower deck is destined to cause damage. Best practices include using a smaller, push mower between particularly sensitive features, and outfitting riding mower decks with protective bumpers. Low-cost options include using fire hose padding or a foam swimming 'noodle' (Fig. B). Additional damage is caused by riding over low stones or coping, especially when the blade height is set low. If rolling over these features is unavoidable, many riding mowers have a hand-control adjustment to temporarily raise and lower the blade height.

Improper use of a string-trimmer is also potentially destructive, especially when it comes into contact with soft materials such as marble, limestone, and wood. Using the lightest trim line and angling the trimmer head towards the ground will help reduce damage if the trimmer hits unintended targets. Consider hand trimming around the most significant, fragile features.

As a time-saving measure, herbicides are sometimes used around the base of features to remove unwanted grass and weeds. In most cases, use of herbicides for this purpose is not recommended, as salts within the herbicide can wick into the stone (especially soft stones) and cause spalling and deterioration. The removal of vegetation also exposes soil around the base of the grave marker, which, in a heavy rain, can cause soil splashing that may result in staining.

If fertilizer is applied, choose a natural organic fertilizer to minimize salt content for the reasons stated above. For any chemical application, be sure to rinse away residue from grave markers, etc., with water using a low pressure hose or spray bottle, to minimize continued contact.

Ongoing maintenance of cemetery vegetation is essential to conserve grave markers and fencing. Periodic inspections may warrant removing trees; trimming tree limbs, shrubs, and vines; and removing volunteer vegetation. All trees should be inspected at least every five years. Annual inspections are necessary to assess the condition of shrubs and vines, and to identify volunteer growth for removal. Mowing and trimming around the hundreds of stone, brick, iron, and wood features found in many cemeteries is a weekly or bi-weekly chore. Lawn care is the most time-consuming, and, if not done carefully, potentially destructive maintenance activity in historic cemeteries.



Figure B. A pool 'noodle' can be fitted to the deck of a lawnmower to prevent damage to grave markers. Photo: Debbie Dietrich Smith.

cause damaging cycles of expansion and contraction. Adjacent dissimilar materials may respond differently to temperature changes, resulting in distortion. High winds can carry water and abrasive particles causing abrasion and erosion, especially to soft materials. Wind may also drive rain water into masonry joints and permeable elements and materials.

Water, in liquid, solid or vapor form, plays a critical role in the deterioration process. Most grave marker materials are porous, and moisture from precipitation, ground water, or frequent landscape watering can enter the pore system. If temperatures drop below the freezing point, water in interior pores, joints and cracks freezes, and its increased volume often applies internal pressure, resulting in damage to the grave marker such as cracks or spalling.

Ferrous metals are particularly vulnerable to water-related deterioration. Iron increases in size when it corrodes, sometimes as much as 20 percent. As the corrosion process proceeds, the ferrous metal eventually weakens. When embedded within concrete or masonry materials, the corroding iron often causes cracks and spalls in the masonry.

Woody vegetation can damage grave markers in a variety of ways (Fig. 11). Trees, bushes, and vines can shade grave markers, extending the time that the markers are exposed to moisture. Tendrils and roots may burrow into mortar joints and openings, causing mechanical damage and large plants may lift up or shift markers. Even leaves and twigs, when allowed to collect on the ground near grave markers, can affect water drainage and evaporation (Fig. 12).

Microorganisms such as algae, fungi, and lichens may affect grave markers. Microorganisms hold in moisture and some produce acids. With acid-sensitive materials such as limestone and marble, the result is surface erosion. Sometimes the organisms use the material as a food source, dissolving minerals in the stone and attacking the cellular structure of wood. Wood is especially vulnerable to fungi, algae, and other microorganisms when its moisture content is above 25%.

Infestation by termites, carpenter bees and ants, and other insects can affect the appearance and structural integrity of wood. Unsightly bird droppings can also affect paint and other surface finishes.

Human Activities

Aside from vandalism and purposeful neglect, most risk factors attributable to human activity are unintentional. Sometimes damage to grave markers is the result of cleaning or repair done with the best of intentions. These unfortunate mistakes can be the result of insufficient training and funding, misuse of tools and equipment, and poor planning. With proper training and supervision, human risk factors can be lessened.



Figure 11. Woody vegetation can damage grave markers and pose a risk to visitors unless well managed and maintained. Photo: Jason Church.

Deferred maintenance usually accelerates the deterioration of grave markers and can be a safety hazard. All materials have a service life with mortar, paints, and other coatings requiring periodic upkeep to be effective. For example, unless ferrous metal has a sound protective coating, exposure to weathering can result in corrosion. Loose, misaligned or detached grave markers may lead to further damage or deterioration if not corrected in a timely manner. When nearby trees and shrubs are overgrown and invasive vegetation is present, needless risks to historic grave markers may also occur.

Inappropriate maintenance activities can be devastating. One of the most common threats stems from improper lawn care, particularly the misuse of mowing equipment and string trimmers (weed whackers). The use of large mowers or mishandling them can lead to displacement of markers. Scrapes, gouges and even breakage also can occur. Improper use of string trimmers in areas immediately adjacent to grave markers can result in



Figure 12. A cemetery professional undertakes a tree inventory in American Cemetery, Natchitoches, LA, to determine the health of trees in the cemetery. Management decisions for trimming or removal are based on the inventory. Photo: Debbie Dietrich Smith.

Avoiding 10 Common Maintenance Mistakes

1. Maintain records on conditions and treatments of historic markers.
2. Seek advice from persons experienced with preserving historic markers when initiating a major maintenance or repair program.
3. Discourage visitor use of chalk, shaving cream, and other materials to highlight carvings and lettering.
4. Train grounds crews in methods to avoid damage to historic markers, including flat grave markers which can be easily damaged by machinery, fertilizers and weed killers.
5. Remove graffiti as quickly as possible, using appropriate methods, so as not to encourage further marker disfiguration and vandalism.
6. Maintain ground cover around cemetery markers to avoid surrounding dirt from splashing back and staining grave markers.
7. Never use rotary grinders to resurface or "clean" historic markers.
8. Avoid the use of coatings on masonry without proper investigation.
9. Avoid high pressure water washing to clean historic markers.
10. Repair rather than replace damaged and deteriorated grave markers. For markers encased in cement, leave any repair work to trained conservators.

scratching and even cutting into softer stone and wood. Generally, the use of chemical weed killers at the base of grave markers should be avoided, especially if there is a risk that the marker would absorb the chemicals.

Repointing masonry grave markers using Portland cement mortars that are harder than historic mortars often results in accelerated deterioration of the masonry material. Mortar should be softer than the adjacent masonry, enabling trapped moisture to migrate out, and serve as the sacrificial material when cracking occurs to relieve excessive stress. Problems also result when using impervious "protective" coatings that can trap moisture within the masonry, resulting in damage during wet/dry and freeze/thaw cycles (Fig. 13).

Figure 13. The impervious coating used to "protect" this sandstone grave marker trapped moisture within the stone, eventually resulting in deterioration and surface loss. Photo: Fran Gale.



Figure 14. High-pressure water washing can damage grave markers. The photograph shows "wand marks" on the headstones produced by inappropriate pressure washing. Photo: Jason Church.



Harsh cleaning products and techniques can have a detrimental effect on grave markers. Acidic cleaners such as muriatic acid can dissolve minerals in many masonry materials and can attack metals. Alkaline cleaners, such as bleach, are notorious for leaving residual salts that are deposited on the surface (a process called efflorescence). Both acidic and alkaline cleaning can result in staining, especially if rinsing is inadequate. Using high-pressure water, above 500 to 1,000 psi, can needlessly damage materials as well, increasing their vulnerability to weathering (Fig. 14). If the marker is fragile, even low pressure water can be damaging. Techniques to avoid include aggregate blasting with sand or other harsh media and the use of power tools with abrasive wire or Nylox™ brushes.

Pollution

Grave markers can be both visually and materially affected by pollution. Most readily apparent is the discoloration that takes place when airborne pollutants are deposited on markers. Depending on the exposure, how water is shed, and the marker material and intricacies, discoloration on markers will usually appear uneven and in streaks.

While the visual effect of pollution is often discoloration, less apparent is the potential damage caused by pollution to the grave marker materials themselves. Most rain is slightly acidic, and its pH (a measurement of acidity) becomes more acidic when pollutant gases, such as sulfur dioxide and nitrous oxides, are present. Acid rain damages materials containing calcium carbonate, such as limestone and marble, resulting in surface loss or erosion. When erosion is severe, the grave marker inscription, carvings and sculptural elements may become discernable. Recarving the inscription is not recommended. Instead, a small stand-alone interpretative sign could be placed nearby.

Acid rain also damages bronze grave markers. Pollutant gases alter the composition of exposed bronze, often producing water-soluble minerals. These minerals are washed away during subsequent rains, resulting in surface erosion. If the bronze element is positioned on a masonry pedestal or plinth, the minerals are deposited on the masonry below. These effects of acid rain are disfiguring to the bronze element and associated masonry.

Condition Assessments

Condition assessments help identify potential safety hazards, required preservation work, and any additional conservation that is needed for stabilization and protection of grave markers. Assessments also provide important baseline information about deterioration affecting grave markers. The collected information is helpful in determining and prioritizing maintenance tasks, identifying unstable conditions that pose an immediate threat, and for developing a plan for any needed repair or conservation work. Assessments should be recurring, preferably every spring. Condition assessments also help determine the extent and severity of damage following a disaster.

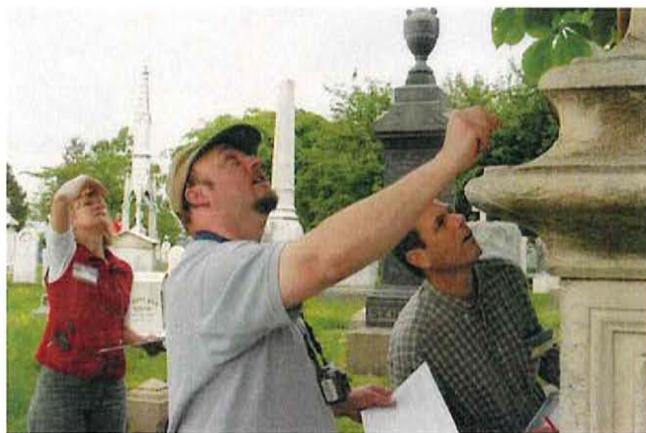


Figure 15a. Condition surveys are undertaken to document current conditions, determine safety issues, and plan both emergency stabilization and future treatment plans. There are a variety of survey forms available that can be tailored to the specific cemetery. Photo: Mary Striegel.

Depending upon the size of the cemetery and funding available, the initial assessment may be carried out by a team consisting of cemetery staff, a materials conservator, and, where necessary, an architect or structural engineer for cases involving large monuments and mausoleums (Figs. 15a and 15b). For smaller cemeteries without large monuments and mausoleums, and where funding is problematic, volunteers can be trained to prepare a condition assessment under the guidance of an experienced individual.

The first step in any condition assessment is to gather background information, including cemetery records and documents, historical photographs, records of previous repair and maintenance work, and current practices. The next step is to conduct an on-site survey. Following the survey, recommended maintenance procedures should be provided. If the team or individual conducting the survey is experienced in repairing historic grave markers, their assessment should include information about appropriate materials and techniques for restoration and stabilization.

Survey forms facilitate both recording of field conditions and needed maintenance or repair work. Most forms include sections for marker type (headstone, obelisk, etc.), construction materials, orientation, dimensions, soil type, and grave marker deterioration. There are a number of excellent examples of survey forms available for download, including the National Park Service Condition Survey Form at www.ncptt.nps.gov. However, because each cemetery is unique, it may be necessary to modify an existing form.

A tool kit for the condition assessment may include binoculars, digital camera, magnifying glass, measuring tape, clipboard, carpenter's rule, level, magnet, and flashlight. For large monuments, a ladder or aerial lift may be required. Photographs of each marker, including overall shots and close-up details, are an essential part of the documentation process. Photo logs are helpful for



Figure 15b. Photographs are used to document the condition of the grave marker as part of a condition assessment. Photo: Fran Gale.

recording the date, direction, and photographer. Digital photographs should be captured in a standardized size and format (.tif, .jpg, .raw).

Defining conditions can be challenging, especially for cemetery staff and volunteers who are new to the process. There are a number of illustrated glossaries that can assist with determining accurate terminology for describing conditions. The ICOMOS Illustrated Glossary on Stone Deterioration Patterns <http://www.international.icomos.org/> and the NACE International Resource Center Corrosion 101 <http://nace.org/> are excellent resources.

Where deterioration is apparent, the assessment should address questions such as:

- What are the physical characteristics of the defects? Has deterioration obscured ornamental work or made the inscription difficult to read?
- What is the extent of the affected area? Are all areas of the marker affected by deterioration or is there a pattern?
- Do the conditions appear to be stable or getting worse.
- Are the defects affecting other materials or impacting the safety of visitors?
- Is deterioration contributing to loss or theft?
- Is further investigation required?

Maintenance

The old axiom that an ounce of prevention is worth a pound of cure certainly applies to the preservation of historic cemeteries. Maintenance is essential to the long-term preservation of historic grave markers. The principal components of a maintenance program include regular inspections, cyclical and prioritized maintenance work, and annual reports and budgeting. An important first step is the development of a support team, including staff, conservators, engineers, skilled masons, and other professionals. In most cases, the cemetery manager should initiate this process.

The cemetery manager can use the information from the condition assessment report to develop a maintenance plan with a list of cyclical maintenance work. Many tasks can be carried out by in-house staff. For example, maintenance cleaning of metal and stonework can often be accomplished by rinsing with a garden hose. Applications of wax coatings can be used to protect bronze elements. Trained staff can undertake these tasks. Teaching graffiti removal techniques to cemetery staff may also be necessary if vandalism is an on-going problem. Staff should have access to written procedures



Figure 16. A professional mason works to insert a new piece of stone. Often referred to as a “dutchman”, this repair technique requires replacing the deteriorated stone section with a new finished piece of the same size and material. Photo: Jason Church.

that include lists of appropriate materials and forms for recording the work completed.

Some work is best done by specialists (Fig. 16). For example, unless there is a trained mason on staff, replacing deteriorated or missing mortar will require a skilled masonry contractor. Services of a conservator or trained cemetery specialist should be used for removing severe soiling and staining from grave markers and for carrying out adhesive repair work such as selectively replacing a piece of stone when a marker is damaged by mechanical equipment. Care should be taken to clearly define the scope of work when hiring a contractor. It is useful to reference guidelines and preservation standards, such as those provided by the Secretary of the Interior or the American Institute for Conservation, whenever possible.

Treatments

In historic cemeteries, preservation treatments are used to preserve grave markers and protect them from future deterioration. Tasks such as cleaning, where appropriate, painting, or lime washing may be undertaken both as an initial treatment and on a cyclical basis as part of the maintenance program for the site. Other treatments, including repointing, patching and filling, and resetting, should be undertaken on an as-needed basis.

It is important to note that the Secretary of the Interior’s Standards for Treatment of Historic Properties provide concepts and guidelines for maintaining, repairing, and replacing historic materials. The Standards promote best practices that will help to protect grave markers in historic cemeteries and other irreplaceable cultural resources. If replacement is required, the new material should match the old in composition, design, color, and texture. With chemical and physical treatments, the Standards recommend using the gentlest means possible.

Cleaning

Cleaning is carried out to remove soiling, staining, and contamination from grave markers (Fig. 17). Cleaning improves the visual appearance of the marker and sometimes reveals existing problems such as erosion and cracks. For various protective treatments, cleaning may be a necessary step in surface preparation.

Although cleaning often is desirable and beneficial, the use of improper materials and techniques can cause great damage; when cleaning historic grave markers is undertaken, one should keep in mind the principle, "first do no harm."

To avoid a heavy build-up of soiling that might require aggressive cleaning procedures, regularly scheduled cleaning should be carried out by cemetery staff. The frequency of cleaning depends on a number of factors, including climate, location and vegetation. Before cleaning, an on-site inspection should be conducted to identify monument materials, including those not designated for cleaning since they may inadvertently come in contact with cleaning products and could be harmed. Temporary protective measure may be needed to safeguard nearby grave markers. Identifying the types of soiling present, including pollutants and contaminants, is important in deciding what cleaning procedures to use.

For some monuments, existing conditions may preclude cleaning. Even gentle cleaning may not be recommended for conditions such as severe erosion, advanced deterioration, or fragile areas. Additionally, open joints, unstable repairs, and large cracks may require alternate cleaning procedures.

General maintenance may involve low-pressure water washing. In most cases, surface soiling can be removed with a garden hose using municipal water or domestic



Figure 17. Volunteers can undertake cleaning of grave markers once they have received initial training. Cleaning methods may include wetting the stone, using a mild chemical cleaner, gently agitating the surface with a soft bristle brush, and thoroughly rinsing the marker with clean water. Photo: Jason Church.

Selecting A Conservator or Preservation Professional

A conservator or preservation professional can provide valuable assistance in preserving historic cemeteries by documenting and surveying cemetery conditions, assisting with work plans and prioritizing work, and recommending specific maintenance and repair procedures. More commonly, they recommend more specialized preservation treatments for historic markers and carry out the actual work.

Specialized skills are required for undertaking certain treatments on historic grave markers or where markers are highly significant or are in more advanced states of disrepair. When contracting for grave marker conservation, it is important to interview conservators who have worked in cemeteries. They should be experienced with the historic materials and nature of the conditions where the work is to be undertaken. Prior to selecting a conservator, details about their previous work and training should be obtained and confirmed. Most conservators will provide sample reports and photographs of previous work.

The American Institute for Conservation of Historic and Artistic Works (AIC) offers information about selecting a conservator and what to expect once you have contracted with a conservator. Searching the "Find a Conservator" database provides a list of local and regional AIC members who have attained Professional Associate or Fellow status in the organization. More information can be found on the AIC website at <http://www.conservation-us.org/>

A conservator will inspect grave markers before designing appropriate treatments and submit a written plan for their proposed conservation work that includes materials to be used, a cost estimate, and a schedule for the project. As part of the contract, the conservator should be required to submit a written completion report that clearly describes their treatment of the marker/s and includes maintenance and care recommendations.

water supply from a well. To avoid risks due to freezing, air temperature above 40° F is recommended for the time of treatment and subsequent 24 hours. To help remove stubborn soiling and dirt, soft, natural bristle scrub brushes are best. Avoid metal bristle brushes or firm nylon brushes and wrap metal elements with masking tape to avoid scratching grave markers.

Soaking and/or spraying water in a fine mist are effective methods to remove natural growth. Water also has a "swelling action" for some soiling, making it easier to remove with gentle scrubbing. With cyclic spraying, a fine mist of water is directed at the targeted area for a short time (e.g., 20 minutes or less), followed by a short "off" period. This on/off process is repeated several times. Because high-pressure water can abrade the surface, this treatment is not recommended for masonry monuments.

For stains that are not water soluble or where organic solvents are ineffective, it is sometimes necessary to use chemical cleaning. Chemical cleaners include acids, alkalis, detergents and organic solvents. Each has advantages and disadvantages. Acids dissolve the interface between the stain and substrate while alkalis allow for longer dwell periods but must be neutralized. Some detergents are near-neutral in pH (neither acidic nor alkaline) and easier to rinse.

Before selecting or using a chemical cleaning agent, the manufacturer's Safety Data Sheet (SDS), available with the product and online, should be reviewed. The SDS provides information about the product's composition, including identified hazards, proper handling and storage, disposal, and required personal protective equipment. Once a chemical cleaning product has been selected, the manufacturer's instructions should be followed. Before undertaking large-scale cleaning, it is always advisable to undertake small-scale tests (approximately 6" x 6" areas in discrete locations), and then waiting several days before assessing the results.

Chemical cleaning is used to remove metallic stains and other contaminants such as old coatings and graffiti. For severe staining, poultice cleaning is useful as it extends contact time with the cleaner. A poultice is a mixture of clay or other inert material, such as paper pulp, and a cleaning agent. The mixture is applied to the surface and allowed an extended dwell period. The chemical cleaner dissolves the stain and the clay draws the stain out to the surface. When using a poultice, it should be applied just beyond the stained area and covered with polyethylene. The best practice is to leave the treatment on the surface for 24 hours and then remove the polyethylene cover and allow the poultice to continue drying. Once the poultice is dry, the mixture is then collected and the surface is thoroughly rinsed. For some stubborn stains, the application may need to be repeated.

Chemical cleaning also may be required if biological growth (algae, fungi and lichen) is severe. A study conducted by the National Park Service provides guidelines for cleaning government-issued marble headstones and recommends biocidal cleaners that contain quaternary ammonium compounds. Like all cleaning methods, chemical cleaning can accelerate deterioration. Adverse effects include efflorescence, stains, and etching.

Graffiti Removal

Markers with graffiti tend to be targets for further vandalism (Fig. 18). Timely removal helps deter future vandalism and improves the marker's appearance.

If the graffiti is water soluble, it can be removed using water and a soft cloth or towel. Rinsing the cloth frequently helps to avoid smearing graffiti on unaffected areas. If the graffiti is not water soluble, organic solvents or commercial graffiti removal products suitable for the grave marker material are recommended. Products should be tested prior to use. General cleaning of the entire marker is a good follow-up for a more even appearance. For deep-seated graffiti, poultice cleaning (previously described) may be required to extract staining materials.



Figure 18. Graffiti is carefully removed using a low-pressure dry-ice misting instrument. Photo: Jason Church.

Repointing

Missing and deteriorated mortar in old cemetery grave markers is a common condition, and the mortar should be replaced to prevent water intrusion and potential damage (Fig. 19). Several questions should be considered when selecting materials for repointing.



Figure 19. Masonry markers like this box tomb may require the repointing of mortar joints. It is important to use a mortar that is softer than the historic brick. In this case a conservator uses a lime putty-based mortar to repoint. Photo: Jason Church.

Most importantly, what is the masonry substrate that requires repointing? What mortar mix is suitable for the historic masonry? How quickly will mortar need to cure? Soft mortars contain traditional lime putty or modern hydrated lime. Harder mortars contain natural or Portland cement. If necessary, mortars can be tinted with alkali-stable pigments to match historic mortar colors. The selection of the mortar to be used is critically important to the success of the project. An inappropriate mortar can result in unattractive work and accelerate the deterioration of the historic grave marker. Always avoid the use of bathtub caulk and silicone sealants for repointing mortar joints.

Prior to repointing, any loose and deteriorated mortar needs to be removed from the joint, preferably using hand tools. Following joint preparation, the mortar materials (lime, cement, and sand) are mixed, and then water added to form a stiff paste. The repointing mortar is applied using a tuck pointing trowel, typically with a narrow 1/8"- 1/2" flat blade. Mortar is compacted into the joint, and then excess mortar is removed and the original joint profile replicated. Good repointing requires skill. Generally, a mason or person with masonry training should repoint mortar joints.

Resetting

Resetting is recommended for grave markers when their foundations are unstable or out of plumb (Figs. 20a through 20c). This often complex activity involves lifting the grave marker, leveling its foundation, and returning the marker to its original upright position. Workers can be injured and the grave marker damaged if resetting is not carried out properly and safely.

Inexperienced staff or volunteers should not attempt resetting without training from a conservator, engineer, or other preservation professional. When dealing with fragile or significant grave markers, or those with large

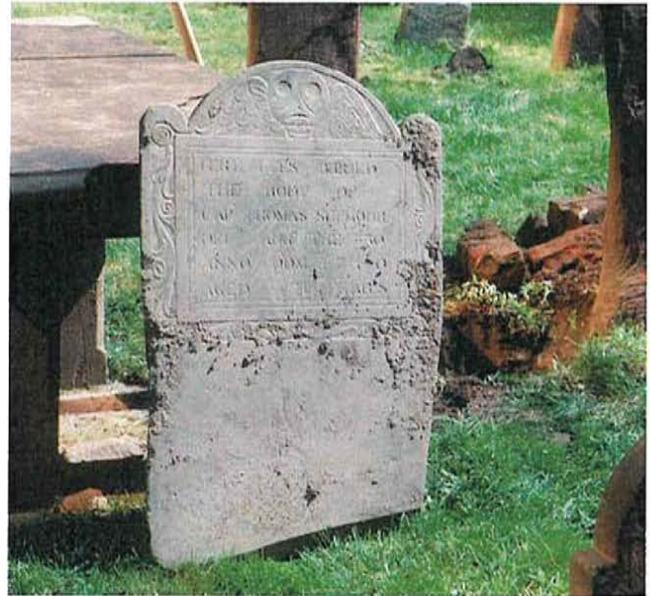


Figure 20a. This slate grave marker in the Ancient Burying Ground in Hartford, CT, is a ground-support stone. Resetting requires digging a hole that will hold the base of the stone and then compacting the soil at the bottom of the hole by hand. Photo: Fran Gale.



Figure 20b. To facilitate drainage, crushed stone, gravel, and sharp sand line the hole and are hand-tamped around the stone after placement. Photo: Fran Gale.



Figure 20c. The reset ground-supported grave marker should be level and plumb. Photo: Fran Gale.

Safety

Encouraging the public to visit and explore public burial grounds and cemeteries increases awareness of the value of these sacred sites. If visitation is promoted, owners and property managers must be responsible for ensuring that their sites are safe for staff and visitors. This responsibility includes monitoring the condition of grave markers.

Historic cemeteries can be hazardous workplaces for staff members, consultants, contractors, and volunteers. Awareness of potential hazards in a historic cemetery and careful planning are essential to avoiding injury. Maintain an appropriate first aid kit on site for minor injuries and have an emergency plan in place that includes contact information for medical assistance.

Creating a safe work environment in historic cemeteries requires appropriate planning for each project, starting with personal protective equipment. Suitable clothing and personal protective equipment should be fundamental safety requirements. Supportive shoes such as steel toe work boots or sturdy lace-up shoes help protect ankles and feet from injury, just as good work gloves help protect hands from cuts, scrapes, and splinters. Whether using a chipper, drill and other power tools or equipment, safety glasses or goggles are essential. A back brace often is recommended for heavier lifting tasks. Do not work alone or, if you must, tell someone where you are and when you expect to return.

During hot weather, heat stress is a present risk. Besides knowing the signs of heat stress, preventive measures should be taken by each worker:

- Wear light, loose-fitting, breathable clothing and a broad-brimmed hat.
- Use sunscreen, reapplying as needed.
- Take frequent breaks in the shade.
- Make sure fresh water is available and drink to stay hydrated.
- Eat small meals before and during work.
- Avoid caffeine, alcohol, and large amounts of sugar.

Trip and falling hazards include uneven ground, holes, open graves, toppled grave markers, fallen tree limbs, and other debris (Fig. C). Sitting, climbing, or standing on a grave marker should be avoided since the additional weight may cause



Figure C. Gophers and other burrowing animals produce uneven ground and holes that are trip and falling hazards to visitors and staff of historic cemeteries. Photo: Jason Church.

deteriorated and structurally unstable monuments to break or collapse with serious injury potentially occurring to the worker and damage to the marker. To help prevent injuries that can result from unstable grave markers, it is important to routinely identify and flag severely damaged and unstable grave markers for corrective work and to rope off any marker considered to be in immediate danger of collapse. Prior to beginning work, the immediate area around the job site should be rechecked for safety hazards.

Snakes, wasps, and burrowing animals inhabit historic cemeteries (Fig. D). Snakes sun on warm stones and hide in holes and ledges, so it is important to be able to identify local venomous snakes. An appropriate venomous snake management plan should be in place, and



Figure D. Yellow jackets that are nesting below the projecting molding of this grave marker pose a hazard to visitors and staff because, if disturbed, they will vigorously defend their nest. Yellow jacket, paper wasp and hornet nests should be removed from grave markers by trained staff or specialists. Photo: Jason Church.

all workers should be familiar with it. Workers and volunteers should be instructed as to safety measures to be taken in regards to snakes, including proper clothing where there is an identified risk.

The imported red fire ant is an invasive pest, prevalent in the southern United States. They attack en masse, resulting in painful bites that can be potentially life threatening to people with allergic reactions. It is important to be able to identify the presence of red imported fire ants; be informed as to safety measures to take when working in areas known to be infested with them; and take steps to control them as necessary. A rescue medicine is available for those with serious allergic reactions.

Paper wasps, yellow jackets, and hornets are another concern, building nests around and on ledges and lips of box tombs, mausoleums, and other grave markers. They are very territorial around their nests and will vigorously defend them. There are non-toxic sprays that can be used in and around the work area. Nests should be safely removed.

Burrowing animals like armadillos, groundhogs, gophers, and moles disrupt the ground with their digging and tunnels and can create tripping hazards or undermine grave markers. Prairie dogs have been known to dig up bones and destroy gravesites. Sinkholes created by these animals can also be perfect places for other creatures like snakes to inhabit.

Proper work practices and lifting techniques need to be used whenever lifting or resetting grave markers. Many markers are surprisingly heavy. For example, a common upright marble headstone measuring 42" long, 13" wide, and 4" deep weighs over 200 pounds. Volunteers and workers should work in pairs, be able bodied, and have training in safe



Figure E1. The simple wooden clamp system allows two people to safely lift a marble grave marker. Photo: Sarah Jackson.



Figure E2. The clamp system is constructed from off-the-shelf wooden boards. Photo: Sarah Jackson.

lifting techniques. Lift equipment and ergonomically correct tools should be routinely used to lift heavy markers (for most people this includes markers that weight more than 50 pounds). For smaller grave markers, a simple wooden clamp system can be constructed for a two-person lift (Figs. E1 and E2).

stacked bases, a specialist should be contracted for resetting.

It is important to check state and local regulations to make sure that digging around the grave marker is authorized before starting any resetting effort. Also, grave markers should be documented and cleaned before resetting. It is also a good time to measure and record the overall size of the marker and note any stone carver's marks or inscription of the company that made the marker. The company name is often found on buried portions of the base and revealed during the resetting process.

Typical materials required for resetting include a hoist, shovels, plumb lines, levels, tamping devices, wooden

stakes, and boards. To improve drainage, sand and small gravel or small stones are commonly used when resetting.

Prior to resetting, it is important to establish the type of base. Most grave markers have one of three main base types: (1) ground supported, (2) slotted base, or (3) stacked base. Similar tasks are undertaken for each base type.

Ground-supported stones are a common type of historic grave marker. This type includes the traditional New England slate and brownstone markers and government-issued marble headstones. The primary goal with any ground-supported marker is to have it level and plumb. To reset the marker, a few inches or more of soil is

first removed from around the stone. This is usually sufficient to enable a stone marker to be straightened. The enlarged hole is then filled and compacted around the marker.

If a grave marker has fallen over and has been covered with soil or turf, it must first be inspected for attached concrete or other anchoring system. If this system is still attached, the grave marker may break during lifting. After removing the stone, it can be cleaned and then temporarily set on wood supports.

The hole left from removal of the marker will need to be enlarged to hold the base of the stone. Soil at the bottom of the hole should be compacted by hand, not with a power tamper. In most cemeteries, crushed stone or sharp pea-size gravel mixed with angular sand can be used to line the hole and then hand-tamped around the stone after it is placed in the hole. The gravel helps facilitate drainage and keeps the stone from settling. A bubble level can be used to ensure that the stone is plumb. Markers should not be set in concrete.

The second type of monument base is the slotted base where the upright element is secured to the base using mortise-and-tenon style construction. The upright element in the slotted base may be leaning or loose. In any case, the upright element should be removed from the base, the base leveled, then the element returned to the base. It is important to keep in mind the depth that the base was intended to be set into the ground. This may be indicated by the style of the base or the observed soil-line staining. Many bases were intended to sit flush on grade while some were set a few inches below ground.

Prior to resetting, the upright element should be disengaged from the base and carefully set aside. In most cases, the base will need to be removed to properly prepare the hole before resetting the grave marker. After doing so, four to six inches of soil should be removed from the hole and the soil then tamped by hand to make a proper bed or foundation. The foundation area can be filled with crushed stone or sharp pea-sized gravel and sand, checking to make sure that the base is plumb and level as resetting proceeds. Clean the headstone prior to resetting. Old mortar, concrete or epoxy should be removed from the slot and the bottom of the upright element using a hammer and small chisel. Once the stone elements are cleaned and the base is level and plumb, the next step is placing the upright element into the slot. A lime mortar can be used to fill any gaps in the slot. This prevents water intrusion that may cause marker movement related to freeze-thaw cycles.

A third common base type is the stacked base. This style includes at least one element placed on a base or a series of bases of varying sizes. Resetting a stacked-base grave marker usually requires special skills and lifting equipment. Depending upon the complexity of the marker, a conservator, experienced masonry contractor,

or preservation professional with engineering skills is usually needed.

The sections of a stacked-base grave marker often are pinned together for support. If deteriorated, the pins should be replaced. Using a hammer and chisel, a conservator or person experienced in working with historic grave markers should remove any corroded iron, copper, or bronze pins, as well as the old mortar or adhesive adhered to each section. Replacement pins should be stainless steel all-thread, and sized slightly shorter and smaller than the existing hole. The replacement pins then can be set with epoxy, lime mortar, or packed in lead. Once the pins are in place, the sections of the stacked base can be individually reset using traditional or contemporary materials. These include lead, shims, mortars, and setting compounds. Finally, each gap or seam between sections should be pointed with a setting compound or appropriate mortar to prevent water intrusion.

Filling and Patching

Hairline masonry cracks may be the result of natural weathering and require no immediate treatment except to be photographed and recorded. However, larger cracks often merit further attention. Repairing masonry cracks involves several steps and typically a skilled hand (Fig. 21). The repair begins with the removal of loose material and cleaning. Materials that are used for crack repair include grouts for small cracks and epoxy for large cracks affecting the structural integrity of the monument. Gravity or pressure injection is used to apply grout or epoxy. Crack repair can be messy, so careful planning and experience are helpful. If the crack is active, a change in size of the crack will be noted over time. Active cracks require further investigation to ascertain the cause of the changes, such as differential settlement, and to correct, if possible, the cause prior to repairing the crack.



Figure 21. Cracks in a stone marker should be filled to keep water and debris out and prevent the crack from becoming larger. A patching mortar is designed to be used, in this case, with historic marble. Photo: Mary Striegel.

Repairing masonry markers with severely damaged or missing pieces requires a skilled mason or conservator. The materials used for patching are similar to those used for repointing mortar joints. With patching, it is critical that the physical and mechanical properties of the patching material be appropriate for the masonry material. Work includes designing a durable patch compatible with the substrate. Proper curing is especially critical for large patches and often involves procedures to protect the patch from premature drying. Repairs to stucco-covered surface should be carried out by a skilled plasterer using a stucco mix that is compatible with the original material.

Repairing delaminated slate and brownstone grave markers also requires a skilled mason or conservator. With this condition, there are openings along bedding planes which expose the stone grave marker to moisture intrusion. Treatments are design to eliminate or reduce moisture intrusion that would accelerate deterioration. The selection of appropriate repair materials and procedures depends on the severity of the condition. Traditionally, delaminated slate or brownstone grave markers were “capped” with a strip of lead or other metal. Today, this repair technique is seldom used, in part because the drilling procedure used to attach the cap can be damaging, if the stone is brittle. Also, there are toxicity issues associated with the use of lead. An alternative approach is to fill the openings exposed by delamination with grout or patching material that is compatible with the stone. Adhesion of the repair material to the delaminated surfaces is particularly important.

The decision whether to use patching material or undertake a dutchman repair with matching material depends on the grave marker material, location of the damaged area, size, and other factors. A successfully executed dutchman usually results in a repair that has long durability and maintains a similar weathering pattern to the adjacent historic material. When working with stone grave markers, repairs using dutchman techniques are best done by a skilled stone craftsman.

Detached fragments should be collected, documented and stored in a suitable facility. Reattachment of these fragments should be undertaken by a conservator or mason. This work often requires pins to reinforce the joints and patching to compensate for losses.

Protective treatments

Protective treatments for metal, stone, and wood grave markers stabilize corrosion and protect the monument from rainwater, pollutants, and other contaminants. Treatments may vary not only due to material differences, but also to specific site conditions.

Wax coatings are often used for bronze markers (Fig. 22). Wax provides a protective barrier against moisture, soiling, and graffiti. There are several steps in the wax application process. Where there is little corrosion, gentle cleaning of the marker is undertaken prior to applying the wax coating. Apply a thin layer of wax to the marker using a stencil brush or chip brush. Mineral spirits can be added to the wax to facilitate



Figure 22. A protective coating must be maintained on metal elements. Wax or lacquer coatings help preserve the bronze patina and slow corrosion. Conservators apply a microcrystalline wax to this bust at St. Mark's Church in-the-Bowery, New York, NY. Photo: John Scott.

brush application. A soft, clean cloth is used to remove excess wax and buff the surface. A second coat of wax is sometimes needed.

In most climates, iron objects require coatings to protect them from corrosion. Clear coatings are sometimes used to protect wrought iron objects. A corrosion inhibitive primer and topcoat are used for cast iron and steel objects. Direct-to-Metal (DTM) coatings combine the two. Because of their durability, acrylic enamels, urethane, and fluoropolymer coatings are preferred. Proper surface preparation is important, including the removal of surface soiling, flaking paint, and loose rust. This can be accomplished with compressed air, wire brushing, solvent rinsing, or other cleaning method. Next the surface is cleaned with a damp cloth, repeatedly rinsing the cloth as needed. While the surface needs to be thoroughly dried before painting, it is important to repaint as soon as possible since even overnight condensation deposits are not desirable.

Another approach for iron objects is using a rust converter to stabilize corrosion that involves less surface preparation. Commercially available rust converters contain tannin or phosphoric acid and react with rust to form more stable iron compounds. The surface must be painted following surface preparation with the rust converter.

Limewash is a traditional coating that brightens stucco-covered grave markers (Fig. 23). Like paint coatings, it needs to be periodically applied. Limewash is prepared with lime putty or hydrated lime and water. Curing begins following application. The lime putty or hydrated lime reacts with carbon dioxide in the air in a process called carbonation. This reaction eventually forms calcium carbonate, a stable hard coating. Limewash is a “green” coating with no volatile organic compound content and is “breathable,” i.e., it allows for water vapor transmission. Although commonly white, limewash can be colored or tinted with alkali-stable pigments such as iron oxide.



Figure 23. Limewash is a breathable coating sometimes used to protect the surface of the grave marker and provide a decorative finish. Limewash is applied by brush in five to eight thin coats (with each coat about the consistency of skim milk). The surface is allowed to slowly dry between coats. Sometimes the surface is covered by damp burlap to slow the drying process. Photo: Sarah Jackson.

Before applying the limewash, the masonry surfaces should be inspected for coating residues that need to be removed and any required repair work undertaken. Stucco-covered surfaces should be repaired and allowed to fully cure before applying limewash. If the original color has been determined, the renewal coating can be formulated to match. In preparing the wash, enough water is added to lime putty or hydrated lime to produce slurry with the consistency of skim milk. A mixture of four parts water and one part lime usually works well. A Zahn or Ford cup can be found at a hardware store and used to measure the thickness of the limewash and ensure consistency with each batch. Although many traditional recipes include additives, a simple mixture of lime and water performs best. Using a power drill with a paddle attachment to stir the limewash will help ensure that the lime particles are fully suspended in the

mixture. Any pigment for coloration is added during the final mixing.

The surface must be cleaned of old coating residues, soiling, and other contaminants. After dampening the surface, the limewash is applied in 5-8 thin coats, allowing each coat to dry between applications. Limewash is translucent immediately after application and then becomes opaque when dry.

Proper curing of limewash is critical to its durability. To prevent premature drying, the treated surface may need to be covered with damp burlap. Limewash must not be applied when frost or freeze conditions are predicted or in temperatures above 90° F. Ideally, limewash should be applied during spring or fall when temperatures are around 70° F, avoiding direct sunlight where possible.

Clear water repellents and consolidation treatments are sometimes considered for severely deteriorated grave markers, including unpainted wood markers and masonry. For wood markers, epoxy consolidants are used to patch and repair. For masonry materials, it is important to remember that they are porous, and water vapor and liquid water can travel through their internal network. Protective treatments must allow for water vapor transmission to prevent trapping moisture inside the marker. Although a wide variety of water repellents have been employed on masonry (wax, acrylic, epoxy resins, etc.), silane and siloxane treatments have been the most successful. These organosilicon compounds are “breathable,” penetrate below the surface, and form chemical bonds with silicate minerals.

When erosion is severe, consolidation treatments (e.g., ethyl silicate) have been used to replace mineral binders lost to weathering (Fig. 24). Because these treatments are not reversible, laboratory and on-site testing are essential. Application by a conservator or other experienced preservation professional is advised.

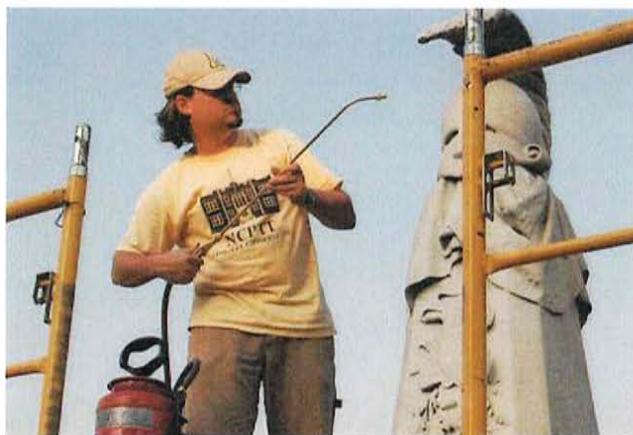


Figure 24. A severely deteriorating monument or grave marker can be treated with a stone consolidant. The treatment is usually applied using a spray system. The consolidant soaks into the stone and replaces mineral binders that hold the stone together. On-site and laboratory testing and evaluation are performed prior to using this non-reversible type of treatment. Photo: Lucas Flickinger.

Conclusion

Maintenance is the key to extending the life of historic cemetery grave markers. From ensuring that markers are not damaged by mowing equipment and excessive lawn watering, to proper cleaning and resetting, good cemetery maintenance is the key to extending the life of grave markers. Whether rescuing a long-neglected small cemetery using volunteers or operating a large active cemetery with paid staff, the cemetery's documentation, maintenance and treatment plans should include periodic inspections. Only appropriate repair materials and techniques that do not damage historic markers should be used and records should be kept on specific repair materials used on individual grave markers. A well-maintained cemetery provides an attractive setting that can be appreciated by visitors, serves as a deterrent to vandalism, and provides a respectful place for the dead. A community history recorded in stone, wood and metal markers, cemeteries are an important part of our heritage, and are deserving of preservation efforts (Fig. 25).



Figure 25. Involving the community in activities helps to develop an appreciation for the cemetery and serves to deter vandalism. Events may include children through school or scouting organizations and can help teach across the curriculum. Photo: Debbie Dietrich Smith.

Additional Reading

Stragstad, Lynette. *A Graveyard Preservation Primer*. Altamira Press; Second Edition (August 28, 2013)

Jackson, Sarah Marie, Tye Botting and Mary Striegel, "Durability of Traditional and Modified Limewashes," *APT Bulletin*, Vol. 38, No. 2/3, 2007.

Matero, Frank G. and Judy Peters. "Survey Methodology for the Preservation of Historic Burial Grounds and Cemeteries." In *APT Bulletin*, Vol. 34, No. 2/3 (2003), pp. 37-45.

Grissom, Carol A. and Ronald S. Harvey. "The Conservation of American War Memorials Made of Zinc." In *Journal of the American Institute for Conservation*. Vol. 42, No. 1, Architecture Issue (Spring, 2003), pp. 21-38

National Park Service publications, NCPTT:

Best Practice Recommendations for Cleaning Government-Issued Headstones. Mary F. Striegel, 2011.

Wooden Artifacts in Cemeteries: A Reference Manual. Ronald W. Anthony and Kimberly Dugan. 2007

Identification of Unmarked Graves. Rinita A. Dalan, Steven L. DeVore and Earl Clay. 2008

National Park Service publications, Technical Preservation Services:

A Glossary of Historic Masonry Deterioration Problems and Preservation Treatments. Anne E. Grimmer. 1984, reprinted.

Keeping It Clean. Anne E. Grimmer. 1988.

Preservation Brief 1: Cleaning and Water-Repellent Treatments for Historic Masonry Buildings. Robert C. Mack, FAIA, and Anne E. Grimmer. 2000.

Preservation Brief 2: Repointing Mortar Joints in Historic Masonry Buildings. Robert C. Mack, FAIA, and John P. Speweik. 1998.

Preservation Brief 15: Preservation of Historic Concrete. Paul Gaudette and Deborah Slaton. 2007.

Preservation Brief 22: The Preservation and Repair of Historic Stucco. Anne Grimmer. 1990.

Preservation Brief 38: Removing Graffiti from Historic Masonry. Martin E. Weaver. 1995.

Preservation Brief 42: The Maintenance, Repair and Replacement of Historic Cast Stone. Richard Pieper. 2001.

Preservation Tech Note 1: Conserving Outdoor Bronze Sculpture. Dennis Montagna. 1989.

National Park Service, National Register Bulletins:

Guidelines for Evaluating and Registering Cemeteries and Burial Places. Elisabeth Walton Potter and Beth M. Boland. 1992.

National Park Service publications, Museum Management Program:

Conserve O Gram, 10/4 Caring for Outdoor Bronze Plaques, Part I: Documentation and Inspection. 2005

Conserve O Gram, 10/5 Caring for Outdoor Bronze Plaques, Part II: Cleaning and Waxing. 2005.

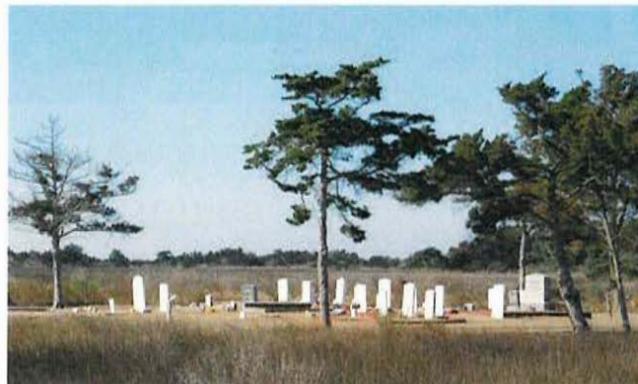
About the Authors

Dr. Mary Striegel directs the Material Conservation Program at the National Park Service's National Center for Technology and Training (NCPTT) in Natchitoches, Louisiana. Frances Gale is the former Training Chief (NCPTT) and currently is a Senior Lecturer and Director of the Architectural Conservation Laboratory, University of Texas at Austin. Jason Church is a Materials Conservator with NCPTT. Debbie Dietrich-Smith is the Chief, Historic Landscape Program, NCPTT.

Acknowledgements

The authors wish to thank Francis Miller, Conservator, ConserArt LLC; Mark Wolfe, Executive Director and Jennifer McWilliams, Cemetery Preservation Program Coordinator, Texas Historical Commission; Gus Fraser, Vice President of Preservation and Facilities, Mount Auburn Cemetery; Sara Amy Leach, Senior Historian and Jennifer Perunko, Historian, National Cemetery Administration, Department of Veterans Affairs; and Jenny Parker Technical Preservation Services, National Park Service for their insightful comments in reviewing the brief. Thanks also go to Kirk Cordell, Executive Director, NCPTT, and Brian Goeken, Chief, Technical Preservation Services. Charles Fisher, Technical Preservation Services provided invaluable assistance in the editing and preparation of this brief.

This publication has been prepared pursuant to the National Historic Preservation Act, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic



Whether large or small, well maintained or neglected, historic cemeteries are an important part of our cultural landscape. This historic cemetery at Cape Lookout National Seashore, NC, provides a record of the families who lived in Portsmouth Village during the 19th and early 20th centuries. Photo: Fran Gale.

properties. Additional information offered by Technical Preservation Services is available on our website at www.nps.gov/tps. Further information on the programs and resources of the National Center for Preservation Technology and Training can be found at www.ncptt.nps.gov. Comments about this publication should be made to: Technical Preservation Services, National Park Service, 1849 C Street NW, Washington, DC 20240.

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Third Taxing District

2 Second Street
East Norwalk, CT 06855

Tel: (203) 866-9271
Fax: (203) 866-9856

Memorandum

To: TTD Commissioners

From: **Kevin Barber – General Manager**

Date: October 31, 2018

Subject: Walk Bridge Project Update

On June 28, 2018, TTD received via email the Walk Bridge 60% Plans and Specifications from the State of CT. On June 29, 2018, the email was sent to the Commission explaining that we received the plans and were currently in the process of reviewing the plans. The email contained a link to the plans that were provided, which consisted of over 3,000 pages of specifications and plans. Due to the size of the plans, they are not being included in this update.

On July 31, 2018, TTD participated in a utility coordination meeting with the Walk Bridge project team to review TTD’s questions and/or concerns regarding the 60% design submission. Attached please find the agenda and the minutes from this meeting. Due to a scheduling conflict with a CMEEC Risk Management Committee meeting, I was unable to attend. Mike Adams and I discussed the issues concerning TTD prior to this meeting.

A second utility coordination meeting has been scheduled for Monday, November 5, 2018, I will verbally provide an update of this meeting at the Monday Commission meeting.

Overall, the work on the Walk Bridge projects is what I would characterize as utility relocation work as opposed to utility redesign. All work is currently to relocate our distribution system to allow for the rebuilding of the East Ave, Osborne Ave and Fort Point St railroad bridges. None of the work, as currently presently to TTD, represents a fundamental change to our current operation. Any change, i.e., request to underground our distribution system, would be brought before the Commission.

I would be happy to address any questions that you have at Monday’s meeting.

District Commissioners

David L. Brown	203-984-1129	Chairman	Kevin Barber	203-866-9271	General Manager
Debra Goldstein	203-252-7214	Commissioner	Ron Scofield	203-866-9271	Assistant General Manager
Pamela Parkington	203-858-4261	Commissioner	Johnnie Weldon	203-216-2652	Treasurer

Kevin Barber

From: WalkBridge@pbid.com
Sent: Thursday, June 28, 2018 4:35 PM
To: trent@lynntools.com; john.hanifin@ct.gov; Mohamed.Mohamed-Attia@wsp.com; cbrown@hntb.com; Joseph.DAgostino@wsp.com; ldigovanni@hntb.com; eric.feldblum@ct.gov; Lindsay.Foster@wsp.com; david.gruttadauria@ct.gov; Elizabeth.Hall@wsp.com; john.hanifin@ct.gov; Trevor.Knowles@WSP.com; Jeffrey.Portal@ct.gov; serraor@pbworld.com; rennie.zwolinski@wsp.com; Mike Adams; Kevin Barber; joec@crisino.com; JSmith@ttd.gov
Cc: WalkBridgePrecon@portal.pbid.com
Subject: Walk Bridge Preconstruction: 01-01-18 Walk Bridge 60% for Teleport Communications America
Attachments: Transmittal_1930.pdf

Project:	Walk Bridge Preconstruction
Project No:	0301-0176/0180/0181
Transmittal:	1930
Date:	6/28/2018
Reference:	01-01-18 Walk Bridge 60% for Teleport Communications America
From:	John Hanifin (john.hanifin@ct.gov) Connecticut Department of Transportation
To:	Trent Atkinson (trent@lynntools.com) Teleport Communications Group
Sent By:	Lindsay Foster (Lindsay.Foster@wsp.com) WSP USA
Remarks:	We are pleased to submit for your review and comment the 60% Plans and Project Specifications for the following Projects Walk Bridge Replacement Project (SPN 0301-0176) Fort Point Street Bridge Replacement Project (SPN 0301-0189) Osborn Avenue Bridge Rehabilitation Project (SPN 0301-0188) East Avenue Bridge Replacement Project (SPN 0301-0187) East Avenue Roadway Improvements Project (SPN 0102-0297) Retaining Wall 427 (SPN 0301-0190) Also attached for your information and use are the following Notice to Contractor (NTC: NTC-Protection of Existing Utilities NTC-Relocation of Existing Utilities Please Provide your comments by Friday, August 17th, 2018. Copies of the files can be downloaded by clicking the links provided in the email.
File Download Links:	301-176_60%_Special Provisions.pdf NTC-Protection of Existing Utilities.pdf NTC-Relocation of Existing Utilities.pdf Walk Bridge Program 60% Volumes 1 & 2.pdf Walk Bridge Program 60% Volumes 3-8.pdf
<small>Note: File attachments are included when total attachment size is under 5MB. For attachments totaling greater than 5MB please use the links above to download and view the files. If you are unable to download the files or have questions, please contact the sender.</small>	
<small>Please do not respond directly to this email. The email address WalkBridge@pbid.com does not accept responses.</small>	
NOTICE: This communication and any attachments ("this message") may contain confidential information for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on this message is strictly prohibited. If you have received this message in error, or you are not an authorized recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.	

Connecticut Department of Transportation**TRANSMITTAL**424 Chapel St
New Haven , CT 06511**No.01930****Project No. 0301-0176/0180/0181**
Walk Bridge Preconstruction

TO: Teleport Communications Group
1575 Route 376
Watkins Glen, NY 12590**DATE:** 06/28/2018
REF: 01-01-18 Walk Bridge 60% for
Teleport Communications America**ATTN:** Trent Atkinson**PRIORITY:** Normal
SUBMITTED FOR: Review and Comment

Package#	Submittal#	Rev.#	Description	Status
01-01-18	01-01-18-001	1	Walk Bridge 60% - Plans	Open
01-01-18	01-01-18-002	1	Walk Bridge 60% - Specifications	

Remarks: We are pleased to submit for your review and comment the 60% Plans and Project Specifications for the following Projects
Walk Bridge Replacement Project (SPN 0301-0176)

Fort Point Street Bridge Replacement Project (SPN 0301-0189)

Osborn Avenue Bridge Rehabilitation
Project (SPN 0301-0188)

East Avenue Bridge Replacement Project (SPN 0301-0187)

East Avenue Roadway Improvements Project (SPN 0102-0297)

Retaining Wall 427 (SPN 0301-0190)

Also attached for your information and use are the following Notice to Contractor (NTC):

NTC-Protection of Existing Utilities

NTC-Relocation of Existing Utilities

Please Provide your comments by Friday, August 17th, 2018.

Copies of the files can be downloaded by clicking the links provided in the email.

Signed:

John Hanifin**Distribution:**Connecticut Department of Transportation - Eric Feldblum
Connecticut Department of Transportation - David Gruttadauria
Connecticut Department of Transportation - John Hanifin
Connecticut Department of Transportation - Jeffrey Portal
HNTB - Christian Brown

Connecticut Department of Transportation

424 Chapel St

New Haven , CT 06511

TRANSMITTAL**No.01930****Project No. 0301-0176/0180/0181****Walk Bridge Preconstruction**

HNTB - Lauren DiGiovanni

Third Taxing District - Mike Adams

Third Taxing District - Kevin Barber

Third Taxing District - Joseph Cristino

Third Taxing District - James Smith

WSP USA - Mohamed Attia

WSP USA - Joseph D'Agostino

WSP USA - Lindsay Foster

WSP USA - Elizabeth Hall

WSP USA - Trevor Knowles

WSP USA - Roxanne Serrao

WSP USA - Rennie Zwolinski

<p>CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>Walk Bridge Preconstruction</p> <p>0301-0176/0180/0181</p>
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AGENDA

Walk Bridge Utility Coordination with TTD Meeting - 001

July 31, 2018

Item No.	Action Items:	BIC	Due	Status
Introductions				
001.01				New Item
Walk Bridge 60% Plans and Specifications Review				
001.02	Walk Bridge Replacement			New Item
001.03	Fort Point Street Railroad Bridge Replacement			New Item
001.04	Osborne Avenue Railroad Bridge Replacement			New Item
001.05	East Avenue Railroad Bridge Replacement			New Item
Walk Program Advanced Utility Relocation Project				
001.06	East Avenue			New Item
001.07	Osborne Avenue			New Item
	<ul style="list-style-type: none"> • Aerial Facility Relocation 			
001.08	Fort Point Street			New Item
	<ul style="list-style-type: none"> • Aerial Facilities Relocation 			
Cost Estimates				
001.09	PE Agreement			New Item
001.10	Initiating Construction Agreements			New Item
Next Steps				
001.11				New Item

Item No.	Action Items:	BIC	Due	Status
Open Discussion				
001.12				New Item

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Walk Bridge Preconstruction

0301-0176/0180/0181

REPORT OF MEETING

Walk Bridge Utility Coordination with TTD Meeting - 001

July 31, 2018

IN ATTENDANCE

DiCesare, Arthur	A. DiCesare Associates, P.C.
Baldovin, Ed	Cianbro Middlesex J.V.
Gruttadauria, David	Connecticut Department of Transportation
Wallace, Craig	Connecticut Department of Transportation
Wild, Nicholas	HNTB
Adams, Mike	Third Taxing District
Cristino, Joe	Third Taxing District
Knowles, Trevor	WSP USA

Item No.	Business Items / Action Items:	BIC	Due Date	Status
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Introductions

001.01	The purpose of the meeting is to discuss Third Taxing District Electric's (TTD) questions concerning the June 18th, 60% Walk Bridge Design Submission. Additionally, discussion concerning the relocation of Aerial Facilities at Osborne Avenue and Fort Point Street.			Closed
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Walk Bridge 60% Plans and Specifications Review

001.02	Walk Bridge Replacement			Closed
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TTD expressed no concerns with the 60% plans for the Walk Bridge Replacement Project

001.03	Fort Point Street Railroad Bridge Replacement			Closed
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TTD expressed no concerns with the 60% plans for the Fort Point Street Railroad Bridge Replacement Project.

001.04	Osborne Avenue Railroad Bridge Replacement			Closed
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TTD expressed no concerns with the 60% plans for the Osborne Avenue Railroad Bridge Replacement Project.

001.05	East Avenue Railroad Bridge Replacement			New Item
---------------	---	--	--	-----------------

In the June 18th submission, TTD noticed that poles SNET 4225 and TTD 864 were being removed. It was confirmed in the meeting by the Program Staff that the poles were not being removed but were being relocated to accommodate the widening of East Avenue and the replacement of the bridge.

Item No.	Action Items:	BIC	Due	Status
	TTD explained SNET Pole 4226 would also have to move to account for the relocation of SNET Pole 4225.			
	If East Avenue is widened to Myrtle Street, TTD's manholes will be in the wheel path of the road and need to be updated. The current manholes are brick and not rated to HS20.			
	<ul style="list-style-type: none"> WSP to provide digital "draft" copy of the Advanced Utility Relocations at East Avenue to TTD. 	Knowles, Trevor	08/24/18	Not Started

Walk Program Advanced Utility Relocation Project

001.06	East Avenue			New Item
	<p>It was noted that the survey and the test pits didn't correctly locate TTD's facilities at the intersection of Fort Point Street and East Avenue. The 4160 Volt line was not located in Test Pit 11. Which test pit no. for the 4160 Volt line? The 27k volt lines were not found in Test Pit 10.</p> <p>TTD proposed sending pictures from inside the vault and conducting a tone test to properly locate the utilities. The utilities will be located and then marked. CTDOT to then get horizontal data to properly update the Program Base mapping for use in the Utility Design</p> <p>There will need to be a spot for 2 Transformers in the Northwest Parking Lot of East Avenue. One for the Elevator building and another for the Node House as part of Project Number 300-202.</p> <p>TTD asked for stub from the Ductbank near SNET Pole 4225 for future work to the North along East Avenue.</p>			
	<ul style="list-style-type: none"> Coordination of TTD and CTDOT to survey and locate TTD Facilities at the intersection of Fort Point Street and East Avenue. 	Knowles, Trevor	08/24/18	Not Started

001.07	Osborne Avenue			Closed
	<p>TTD Pole 304, located north of the bridge, will need to be relocated to remove and install the Osborne Avenue Railroad Bridge Superstructure.</p> <p>Electric Service for 37 Osborne Avenue (and any required service for the bridge) will need to be relocated underground from South of SNET Pole 2689 and the Railroad Bridge. A handhole on the west side of the road will be required to split the service for the house and the bridge.</p> <p>TTD pole 597 south of the bridge will also be removed to remove and install the Osborne Avenue Railroad Bridge Superstructure. The Illumination will need to be relocated from TTD Pole 597 to SNET Pole 6582.</p>			

001.08	Fort Point Street			Closed
	<p>New Pole not shown on the Program Base Mapping – TTD Pole 2711A. The Pole is located just South of Pole 2711 on South Smith Street.</p> <p>TTD has asked for a couple conduits or space for future conduit in the new Fort Point Street.</p> <p>Illumination will need to be maintained along Fort Point Street and Baum Property.</p>			

Cost Estimates

001.09	PE Agreement			Closed
001.10	Initiating Construction Agreements			Closed

Next Steps

Item No.	Action Items:	BIC	Due	Status
001.11	Bridge Illumination is currently operated by TTD at Fort Point Street, Osborne Avenue, and East Avenue. The illumination usually gets vandalized and the fixture are difficult to replace. There is question about who will take ownership of the bridge illumination once the three bridges are replaced. If TTD is going to operated and maintain the Bridge Illumination, they would require extra fixtures for replacement. Additionally, any fixtures would need to be resistant to further vandalism.			Closed

Open Discussion

001.12 Closed

We believe this Report of Meeting accurately reflects what transpired at this meeting. Unless notified in writing to the contrary, within ten (10) days after receipt, we will assume that all in attendance concur with the accuracy of this transcript.

Submitted By: Trevor Knowles

Reviewed By: Craig Wallace

Cc: All in Attendance

- A. DiCesare Associates, P.C. - Kaufman, Jake
- Cianbro Middlesex J.V. - Ballas, Andrew
- Cianbro Middlesex J.V. - Watson, Brian
- Connecticut Department of Transportation - Hanifin, John
- Connecticut Department of Transportation - Piteo, Michael
- HNTB - Brown, Christian
- HNTB - DiGovanni, Lauren
- HNTB - Sanders, Todd
- Third Taxing District - Barber, Kevin
- WSP USA - Adams, Daniel
- WSP USA - Bird, Jeff
- WSP USA - Burkard, Katie
- WSP USA - D'Agostino, Joseph
- WSP USA - Wozniak, John

Connecticut Department of Transportation**TRANSMITTAL**424 Chapel St
New Haven , CT 06511**No.02163****Project No. 0301-0176/0180/0181**
Walk Bridge Preconstruction

TO: WSP USA
424 Chapel St
New Haven, CT 06511**DATE:** 09/25/2018
REF: Walk Bridge Project - East Ave. Test
Pits Reports June 2018**ATTN:** Joseph D'Agostino**PRIORITY:** Normal
SUBMITTED FOR: Your Use

Package#	Submittal#	Rev.#	Description	Status
01-06-11	01-06-11-008	1	Walk Bridge Project - East Ave. CMJV Test Pits June 2018	Submitted and Closed

Remarks: Attached for your information and use are field notes and an excel sheet summarizing test pit data for test pit activities performed on East Avenue in June, 2018. Pictures are enclosed within.

Copies of the files can be downloaded by clicking the links in this email.

Signed:

John Hanifin**Distribution:**

A. DiCesare Associates, P.C. - Arthur DiCesare
A. DiCesare Associates, P.C. - Julie Georges
AECOM - Lee Wolochuk
Cianbro Middlesex J.V. - Doug Dow
City of Norwalk - Nate Asare
City of Norwalk - Lisa Burns
City of Norwalk - Tom Little
City of Norwalk - Susan Prosi
City of Norwalk - Vanessa Valadares
Connecticut Department of Transportation - Stacey Epps
Connecticut Department of Transportation - Heather Falzano
Connecticut Department of Transportation - Eric Feldblum
Connecticut Department of Transportation - David Gruttadauria
Connecticut Department of Transportation - Vladislav Kaminsky
Connecticut Department of Transportation - Jeffrey Portal
Crown Castle Fibers - Eric Clark
Crown Castle Fibers - Terence Shea
Eversource Energy - Eric Anderson
Eversource Energy - Brett Factora
First District Water Department - Dominick DiGangi
First District Water Department - Michael Elliott
First District Water Department - Lauren Mappa

Connecticut Department of Transportation

424 Chapel St

New Haven , CT 06511

TRANSMITTAL

No.02163

Project No. 0301-0176/0180/0181

Walk Bridge Preconstruction

First District Water Department - Donald Ukers
Frontier Communications - Lynne Anastasio
Frontier Communications - Steve Doyle
Frontier Communications - John Main
Frontier Communications - Walter Modeen
Frontier Communications - Rob Recupero
Frontier Communications - Matthew Reilly
H.W. Lochner, Inc. - Steve Wexell
HNTB - Christian Brown
HNTB - Robin Covino
HNTB - Lauren DiGiovanni
HNTB - Todd Sanders
HNTB - Nicholas Wild
Louis Berger - Peter Bracket
Norwalk Water Pollution Control Authority - Christopher Cavaliere
Norwalk Water Pollution Control Authority - Ralph Kolb
On Point Construction Services - Jason Molten
Third Taxing District - Mike Adams
Third Taxing District - Kevin Barber
Third Taxing District - Joseph Cristino
WSP USA - John Bartoletti
WSP USA - Jeff Bird
WSP USA - Patrick Chen
WSP USA - Joseph D'Agostino
WSP USA - Lindsay Foster
WSP USA - Elizabeth Hall
WSP USA - Brianna Maljanian
WSP USA - Brian Morganti
WSP USA - Ed Rock

THIRD TAXING DISTRICT
PROJECT SUMMARY REPORT
FY 2018-2019

THIRD TAXING DISTRICT – PROJECT SUMMARY

UPDATED: OCTOBER 31, 2018

<u>#</u>	<u>PROJECT</u>	<u>STATUS</u>	<u>TIMELINE</u>	<u>COMMENTS/MONTHLY UPDATE</u>
1)	A-Base Meter Replacement Program	<ul style="list-style-type: none"> In progress – with Meter Department 	On-Going – until all A-Base meters have been replaced	<ul style="list-style-type: none"> Working with staff to understand the A-Base meter issue and develop a plan. October 2018 – One A-Base replacement during the month.
2)	Customer Service/ Management Training Program	<ul style="list-style-type: none"> Training throughout the year based on training opportunities and employee schedules. 	On-Going	<ul style="list-style-type: none"> K Barber attended APPA Annual Conference in June K Barber attended APPA Leadership Workshop
3)	Succession Planning Process	<ul style="list-style-type: none"> Complete with periodic review 	On-Going	
4)	Radio-Read Meter Upgrade	<ul style="list-style-type: none"> Approximately 93% of the system has been completed 	Multi-year program beginning in 2015. Will continue until completed	<ul style="list-style-type: none"> October 2018 – Installed 4 radio-read meters for a total of 3,532 to date or 93% of the system.
5)	Upgrade Fleet Vehicles	<ul style="list-style-type: none"> Purchasing/Leasing Vehicles in accordance with Five-Year fleet replacement schedule. 	On-Going	<ul style="list-style-type: none"> Line truck to be refurbished in FY 2018-19 Request for approval for purchased of Digger Derrick truck included in Oct 1 meeting Chevy Equinox Lease buy out complete
6)	I/T System Modifications	<ul style="list-style-type: none"> On-going to create greater efficiencies wherever possible 	Periodic updates as necessary	<ul style="list-style-type: none"> Upgrades to Microsoft Office and email systems completed in June

#	<u>PROJECT</u>	<u>STATUS</u>	<u>TIMELINE</u>	<u>COMMENTS/MONTHLY UPDATE</u>
7)	Conduct Cost of Service/Rate Study with Periodic Updates	<ul style="list-style-type: none"> • Initial rate study conducted in 2013 with results implemented in October 2014. • Update/"Tune-Up" completed in July 2016 • Cost of Service Study on security lighting began in June 2016 	<p>2018 Cost of Service Study - Late fall 2018 – early 2019</p>	<ul style="list-style-type: none"> • Street Lighting COS Study dated Sept. 29, 2016 has been located. Study is being reviewed by Staff to determine if it was completed. Will be forwarded to Commission. • Initial discussion held with UFS regarding cost of service study. • Reviewing proposal provided by UFS • UFS Proposal accepted and executed • Staff compiling data requested by UFS
8)	Strategic Planning Process	<ul style="list-style-type: none"> • To be presented to Commission at the Feb 1, 2016 meeting • Presented and Approved at the Feb 1, 2016 meeting • Initial sessions were conducted with the Staff and Commission on May 18 and 19 • Follow-up meetings have been scheduled with the Staff and Commission for Aug 16 and 17 • Meetings have been scheduled with the Commission and Staff on Sep 27 • Future meetings are being scheduled with Commission and Staff • A follow-up meeting has been scheduled with the Commission for Nov 15. 	<ul style="list-style-type: none"> • Begin in 1st Qtr 2016. • Work continues into 2017 as necessary • Strategic Planning process to begin again in late 2018 – early 2019 	<ul style="list-style-type: none"> • May 2017 – The following activities took place during the months April/May: <ul style="list-style-type: none"> • A special commission meeting was held on Apr 10th to work on the charter revision, by-laws and vision statements. Steve Vandermeer facilitated the meeting and additional progress as made in all these areas. It was agreed that the Commission continue to address the legal issues surrounding the charter changes and move forward once a definitive legal opinion was received • Commission has scheduled the August 20th Commission Meeting for Strategic Planning discussion. Meeting cancelled

#	<u>PROJECT</u>	<u>STATUS</u>	<u>TIMELINE</u>	<u>COMMENTS/MONTHLY UPDATE</u>
9)	Public Relations/ Marketing Program	<ul style="list-style-type: none"> Greyskye is TTD's public relations / marketing firm 	On-going	<ul style="list-style-type: none"> Monthly meetings have been held with Greyskye to discuss the following: <ul style="list-style-type: none"> Upcomings Events Newsletter Website updates Press Releases
10)	Substation Upgrades and Improvements	<ul style="list-style-type: none"> Projects on-going in all substations to upgrade / maintain compliance with CONVEX / FERC requirements 	<p>T3 Transformer Replacement – Nov 2017 – Spring 2019</p>	<ul style="list-style-type: none"> T3 transformer replacement in progress, transformer has been ordered. Old T3 transformer has been taken out of service. Oil removed from transformer and properly disposed. Old transformer successfully removed on April 16th. Transformer manufacturer notified TTD on 4/30/18 of a manufacturing delay. TTD is working to develop an understanding of the delay and the effect on the project schedule. Witness testing scheduled for June 14-15, 2018. Witness test rescheduled for July 16-17, 2018 due to a factory delay. T3 Transformer passed the witness test. T3 Transformer delivered on July 31st T3 Transformer – Multi-Ratio CT failed test TTD in communication with ABB on resolution to the CT problem

#	<u>PROJECT</u>	<u>STATUS</u>	<u>TIMELINE</u>	<u>COMMENTS/MONTHLY UPDATE</u>
11)	18 Rowan Street Renovation	<ul style="list-style-type: none"> • Property Acquired, house demolished and lot repaved • Final step is to site a material storage facility on the site 	Summer of 2018	<ul style="list-style-type: none"> • Since May 2017, the CAM Application was submitted. • Met with Gill & Gill to review project and develop bid specs • Bid packages being developed and will be available in January. • Revised project schedule being developed. • Bids received from 4 companies. Price exceeded expectations. Value engineering recommendations were requested from the bidders. • Review of bids and valued engineering taking place. • Contractor selected and approved by Commission on March 5th • Contract is being reviewed by attorneys • Contract signed • Meeting with Contractor and Gil & Gil held on June 7th • Monthly status meetings planned • Project submittals being reviewed and approved by TTD and Gil & Gil •

#	<u>PROJECT</u>	<u>STATUS</u>	<u>TIMELINE</u>	<u>COMMENTS/MONTHLY UPDATE</u>
12)	<u>MISCELLANEOUS</u> <ul style="list-style-type: none"> • Norden Generators 	Periodic testing for “Black Start” backup to the Norden facility and run into the ISO LFR Market	On-going	<ul style="list-style-type: none"> • January 2017 - Nox stack testing was performed with State of CT – passed with no issues • November 2017 – Spot audit from CT DEEP – passed with no issues • Received revenue forecast update from CMEEC. Increase in revenues projected for the summer months (Jun – Sep) based on results of the summer LFR auction. • Received a Consent Order from CT DEEP regarding stack testing issue from 2013. Commission addressed the issue at the June 25th Commission meeting. • Consent order civil penalty has been paid and accepted by CT DEEP.

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	<ul style="list-style-type: none"> • Solar Projects 	<p>Potential projects discussed with residential and commercial customers</p>	<p>On-going</p>	<ul style="list-style-type: none"> • Staff continues to work with customers interested in pursuing solar projects in TTD’s service territory. • Commission approved a solar project for the East Norwalk Library. • Met with Library Board to explain the project. • Project expected to start within the next month. • RFP created and available for an “Interactive / Smart Battery / Onsite Power Storage System” for the library • Bids received for battery storage and are being reviewed. • Request for approval – Oct 1st meeting • Solar panels installed on library roof
	<ul style="list-style-type: none"> • Annual Financial Audit (FYE 6/30/18) 		<p>Expected completion date – Oct 15th of each year</p>	<ul style="list-style-type: none"> • Engagement letter executed with Hope and Hernandez • Audit proceeding as scheduled • Audit complete, report pending
	<ul style="list-style-type: none"> • Commercial Customer Visits 	<p>On-going as schedules permit</p>	<p>Throughout 2018</p>	<ul style="list-style-type: none"> • Met with owner of 25 Van Zant Street • Will schedule visits with customers throughout the coming year • Met with Dooney & Bourke

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	<ul style="list-style-type: none"> Economic Development Initiatives 	<p>On-going meetings with Elizabeth Stocker, the City of Norwalk’s Economic Development Director and Laoise King, City of Norwalk’s Chief of Staff</p>	<p>Throughout 2018</p>	<ul style="list-style-type: none"> GGP – not proceeding with second service to mall. Elizabeth Stocker, no longer with the city. Will determine the next appropriate steps.
<p>13)</p>	<p>State (CT DOT) Bridge Projects</p>	<p>Initial letter from CT DOT to TTD issued in March 2016. Regular updates have been received from CT DOT / Parsons Brinkerhoff as information is required</p>	<p>Apr 2019- Sep 2024</p>	<ul style="list-style-type: none"> May 2017 – Continued to work with CT DOT officials on the various bridge projects through attendance at scheduled meetings, etc. Several of these projects are reaching the 30% design/development phase, which triggers additional meetings and coordination efforts. Requested and received from the State of CT the current listing of properties that are being acquired for the projects. Requested updated list of properties being acquired from the State of CT following the redesign/change to the location of the Fort Point St RR Bridge. Received information from the State that no additional full acquisitions are occurring. Re-requested a list of properties from the State. Received and forwarded to the Commission the revised listing of properties affected by the state projects. Received the 60% project submissions from the State of CT. TTD reviewing the submissions and meeting with State to review.

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14)	LED Flood/Security Light Upgrade	On-going until completed	To be finalized in 2018	<ul style="list-style-type: none"> • 99% of the security lights have been upgraded to LED.
15)	Verizon Small Cell Antenna Project/Co-Location Equipment Attachments	<ul style="list-style-type: none"> • Verizon request to attach “Small Cell Antennas” on certain TTD poles. We anticipate they will attach to three to five poles in the system. • CMEEC Legal is developing a “Master Lease Agreement” on behalf of the MEU’s statewide outlining the terms and conditions for attachment 	In process – finalizing in the next 30-60 days	<ul style="list-style-type: none"> • May 2017 – Final comments have been received from all the Municipals on a draft of a Master Lease Agreement with Verizon. A “Lease Rate” is part of this agreement, similar to what we charge Cablevision for a pole attachment rate, and will result in some small incremental revenue to TTD on an annual basis (less than \$1,000/year) • Master Lease Agreement has been finalized by CMEEC Attorney and Verizon. Other MEUs have executed the agreement with Verizon • Verizon interested in attaching to multiple TTD poles • Attachment rate needs to be developed
16)	Commercial Lighting Retrofits	On-going	On-going	<ul style="list-style-type: none"> • Staff reviewing the forms used for the lighting projects, possible changes to be implemented. • Discussions with Dooney and Bourke on possible lighting retrofit project. • Lighting project completed at the Marvin

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17)	Library Roof Projects	On-going	Roof – end of fiscal year 2018	<ul style="list-style-type: none"> • Roof project – RFP developed and due by Thursday, April 13th. Recommendation to be presented to the Commission at the April 16th Commission Meeting • Contract being reviewed • Roof scheduled to be completed by June 23rd • Roof completed by contractor. • Working through change order requests from the contractor with Gil & Gil • Change order issues have been resolved with the contractor. This will require additional allocation of funds from the Commission. • Status of roof ventilation system to be determined
18)	Veteran’s Park Ice Rink		Fall – Winter months	<ul style="list-style-type: none"> • Staff to monitor status of rink installation • Rinks will not be returning to Vet’s Park • Letter sent to rinks owner to determine status of rinks
19)	Tree Trimming	On-going	<p>Tree trimming will typically occur during the winter months.</p> <p>Spot trimming will occur on an as needed basis during the spring, summer and fall.</p>	<ul style="list-style-type: none"> • Streets trimmed in current fiscal year: Emerson St, Myrtle St Ext, various other spot locations • Streets/areas planned for trimming: Roland St, Howard Ave, Triangle St, Winfield – Triangle to Duck, Strawberry @Winfield