

OTHER MAINTENANCE ISSUES

Signage

At the present time none of the cemeteries have particularly effective signage. In general, it is best to develop and maintain a consistent signage theme, not only between cemeteries, but also from one city operated historic property to another. This does not seem to be the case.

Signage at the cemeteries is typically hidden and poorly formulated. The only



Figure 54. The most prominently displayed signage at each city cemetery warns against concealed or displayed weapons. This detracts from the cemetery landscape and certainly degrades the experience of the visit.

consistent theme between the three properties is a prominently posted sign at each, warning that concealed or displayed weapons is a violation of North Carolina and Raleigh law (Figure 54). This does not provide effective promotion of the properties. An effort should be made to reduce the impact of this negative signage on visitors, perhaps by incorporating its message with other regulations (discussed below).

From a cemetery preservation perspective signage is of four basic types: identification, regulatory, informational, and interpretative. They are generally recommended in this same priority.

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

Regulatory signage specifies laws, regulations, or expected standards of behavior. We recommend that the city develop signage dealing with, minimally, these issues (perhaps with some modifications of language as might be needed):

- ❖ Many of the stones in this cemetery are very old and may be easily damaged. Consequently, absolutely no gravestone rubbings will be allowed.
- ❖ The stones and monuments in this cemetery are fragile. Please refrain from leaning, sitting, or climbing on any monument or mausoleum. All children must be escorted by an adult.
- ❖ Absolutely no alcoholic beverages, fireworks, or fire arms are allowed in

the cemetery. Proper conduct is expected at all times.

- ❖ No pets are allowed in the cemetery.
- ❖ Flowers will be removed by the staff 10 days after holidays or when the arrangements become wilted and unsightly.
- ❖ No plantings are allowed within the cemetery and the City will enforce its right to remove any plantings deemed inappropriate, diseased, or damaging the cemetery.
- ❖ For additional information concerning maintenance issues, please contact the City of Raleigh Parks and Recreation Department, Cemeteries Division at _____. In case of emergency contact _____.

The last two types of signage are informational (for example, directional signs) and interpretative (information on historic people buried in the cemetery).

City Cemetery

The only identification signage is the one plaque at the East Street entrance (Figure 55). This sign is scratched and has been stained by paint - these reflect the overall worn appearance of the cemetery itself. While the sign announces the presence of "many of Raleigh's earliest citizens," it is silent regarding the enslaved African Americans buried there. The other three entrances have no identification.

We recommend that the signage, which dates from 1978, be revitalized by at least briefly mentioning the presence of African American burials and that it be posted at each of the four entrances.

There is absolutely no regulatory signage (other than the no weapons sign) and

this is a significant mistake. Regulatory signage should be clearly posted at each entrance, perhaps just within the cemetery.

The interpretative signage at the cemetery consists of a massive granite marker and map, present at only the main entrance. The map appears long ago forgotten, sharing space with an eroding bank and a poorly tended box wood. The map is barely legible because of soiling. It is also impossible, without a readily accessible pamphlet or walking tour brochure, to relate this list of 40 individuals (one of whom is not even listed on the map) to the actual property.

However, even if the map could be easily read it would likely attract little interest and would certainly tell no compelling story. It is filled with the names of dead individuals with no indication of why any modern visitor should care. Who was Silas Burns, or Thomas Meredith, or Josiah Ogden Watson? And why should a visitor from Asheville, or Seattle, care? Simply listing names is not appropriate interpretation and provides visitors with no reason to stop, look, or be impressed.

This signage should be replaced with either numbers at graves keyed to a readily available walking tour pamphlet or with graveside signage that tells a story, perhaps also illustrating the individual in life, his or her Raleigh house, or some artifact of their life to add interest and variety. There must be a compelling story.

Two common types of stand alone signage are fiberglass and porcelain. Fiberglass signage is relatively resistant to vandalism. Paint can be removed easily prior to cross linking, light scratches can be buffed out, although deeper gouges and carving require sign replacement. The resin must be chosen for UV resistance to prevent the sign from yellowing. Good quality signs also print the graphics on an

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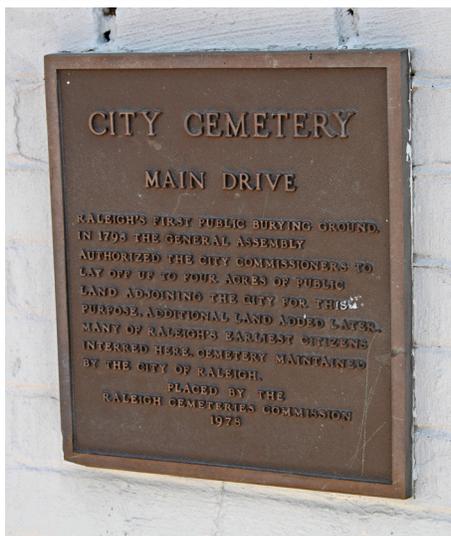


Figure 55. Existing City Cemetery signage. None provide a compelling story or enhance the cemetery visit. All should be replaced or expanded upon.

opaque carrier that will become saturated with resin and integral to the signage. Porcelain signs are among the most durable sign material, resisting graffiti and scratching. Good quality signs are also highly impact resistant.

The marker erected at the African American section is so discrete that it can be easily overlooked. It fails to provide any information concerning the life or death of Raleigh's free persons of color or African American slaves. In fact, it is ambiguous even in stating that the plot is the grave yard for black residents. This is another area that requires more complete interpretation, helping the public understand, for example, the nature of African American burials.

No directional signage is present at City Cemetery, nor is it needed.

O'Rorke Cemetery

The only identification signage at this



Figure 56. The only signage at the O'Rorke Cemetery fails to adequately identify the cemetery as both consecrated ground and extensively used by Wake County's paupers.

cemetery is laid vertically to one side of the double gate entrance off Pender Street (Figure 56). It is inconspicuous and probably unseen by

the majority of people who might happen on this cemetery. The pedestrian gate at Lane Street offers no identification.

There seems little reason to be concerned with the 1979 name change, but it is important to understand that the O'Rorke name is not only modern, but is also likely to lead some to think of the cemetery as a family graveyard. It would have been far more historically appropriate to accept a name that combines the two uses of the graveyard, such as "Catholic/Pauper Cemetery."

This cemetery represents consecrated ground. The dedication of such cemeteries by the Bishop or his delegate includes both prayers and blessings with holy water. Traditional church law also required that a fence or barrier be placed around the cemetery, segregating it from unconsecrated ground. It was extremely important to Catholics that they be buried in consecrated ground and it seems fitting that this importance continue to be recognized and not lost in a family name.

At the same time, there can be no denying that the cemetery has been extensively used by the poor of all faiths. Even this, however, fulfills the Catholic (and Christian, Jewish, and Muslim) belief that all must be comforted from their suffering and a "proper" burial is one means to achieve this goal.

Thus, the current signage that is strangely quiet on the issue of both consecrated ground and burial of paupers, must be changed to better reflect the reality of this cemetery. In

addition, signage should be erected at both entrances to the cemetery.

Regulatory signage identified previously should also be placed at both entrances. If the city intends to provide interpretative signage at other cemeteries – as it has at City Cemetery – that policy should be implemented at all cemeteries.

At O’Rorke it would be appropriate to erect signage that includes a map showing the location of all known pauper burials on the property. There should be at least a list of those known to be buried in the Catholic section. It is important that the city not allow either group to be forgotten.

Mount Hope Cemetery

Signage at Mount Hope is even less satisfactory than for either of the other two city operated cemeteries. In fact, the only signage at Mount Hope (beyond the no weapons sign that is noticed upon entering the property) are the cast stones in the Fayetteville Street entrance and a small brass plaque. The other two entrances are not marked (although the office entrance does have an “office” sign posted on the building).

Identification and regulatory signage should be posted at each entrance. At the main entrance these additional signs should in no way obscure or detract from the beautiful entrance columns and gate. We suggest that the signage, at this entrance, be erected just within the property.

As we have commented for O’Rorke Cemetery, if the city intends to erect informational signage as it has at City Cemetery,

then this practice should be extended to all cemeteries. Certainly Mount Hope has an extraordinary history that is equally worthy of being told.

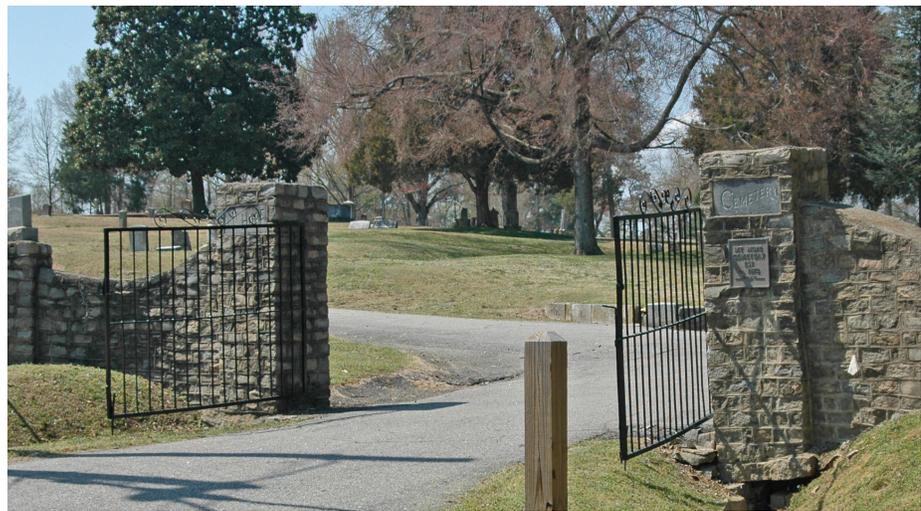


Figure 57. Sparse signage at Mount Hope Cemetery.

It would also be helpful to have maps that show the drives within the cemetery. These could be keyed to the graves of interesting people. One such story is that of the W.H. Matthews vault or mausoleum, although there are certainly many others.

Other Signage and Brochures

Both City Cemetery and Mount Hope are located on the Capital City Trail. At Mount Hope the small, discrete brown sign is almost hidden by an adjacent power pole (Figure 58). In addition, the sign is placed so high that it is doubtful that many visitors even know it is present.

We have been provided with two brochures for the Capital City Trail. One is 12 page brochure with a small fold-out map providing brief descriptions and locations for 88 sites. It was apparently developed ca. 1983. The second is a more recent and very large fold out listing 111 sites. An on-line search reveals no listings for “Capital City Trail” on the first several pages. When it is modified to reflect



Figure 58. Example of the small brown Raleigh Capital City Trail almost hidden at Mount Hope Cemetery.

Raleigh, a number of sites come up. The most prominent recount the trail as a historical project is given by the Women's Club of Raleigh. Both brochures, however, are no longer in print.

The Capital City Trail also competes with the Raleigh Heritage Trail (which promotes only nine sites, none of them cemeteries). The Capital City Trail brochure is reportedly available from the Convention Bureau, but it was not available at any of the hotels or restaurants that we visited while doing work in Raleigh.

The 2007 *Downtown Raleigh Wayfinding Analysis & Recommendations* study by Corbin

Design explains that the Capital City Trail signs "are out of date and not maintained" – a conclusion that we, too, realized. The Corbin Design study goes on to note that ,

Overall, the variety of different sizes, colors and applications of signage in the historic districts serves as a barrier to a cohesive visitor experience. It is difficult to understand how all the historical elements relate to one another to form a complete story.

This, too, is clear in our discussion of the cemetery signage.

There is a brochure for City Cemetery ("A Walking Tour of City Cemetery," dated 2004) although it is difficult to find. While we were told that it was available on the Olivia Raney Local History Library website, we were unable to find the brochure. Nor could it be found using a Google search.

The brochure represents a considerable effort, but it is uneven. Some individuals are represented by lengthy biographical data, while others are noted only as, for example, a merchant. Few of the entries are woven into interesting stories that will hold the attention of an average person or encourage further exploration. Some entries provide tantalizing comments – such as the Peace plot with its "unique drainage system," but we are not fulfilled by an explanation of the system or its uniqueness.

This brochure, however, provides the nucleus of what could be an interesting walking guide. It could include information on the types of stone, Raleigh stone carvers, the types of monuments, Raleigh funerary customs, more interesting stories concerning the individuals (with explanations that make it obvious why we

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Figure 59. Floral problems at Mount Hope. At the top is a photo of artificial holiday flowers that have not been removed and are now deteriorated and unsightly. The middle photo shows dead plants left in the cemetery. At the bottom there is the new section showing the large numbers of flowers that must be moved to allow maintenance.

should care), and information on the landscape. It should provide a story, not a dry recitation of facts.

Flowers and Other Grave Decorations

Flower regulations in the still active cemetery, Mount Hope, are limited to a 1996 policy that “permanent flower vases shall be mounted to a headstone or buried at either end of a headstone. No permanent flower vases shall be buried in front of or behind a headstone.” This policy unfortunately did not prohibit temporary flower arrangements. As a result, most of the graves in the new section have a wide variety of primarily plastic floral arrangements simply bunched together and stuck into the ground (Figure 59).

Each arrangement must be picked up, the area mowed or trimmed, and the arrangement replaced. This dramatically increases the level of maintenance necessary. This can be ill-afforded since Mount Hope is operating in the red because of the city policy that graves cannot be priced higher than 70% of the average commercial rate.

In addition to the issue of flowers in the new section, when we visited Mount Hope in mid-March, we found numerous Christmas decorations still being displayed (Figure 59). This detracts from the dignity and beauty of the cemetery. Plastic flowers, if accidentally mowed, also create significant debris that will not decompose.

We recommend that the city adopt a flower policy that will

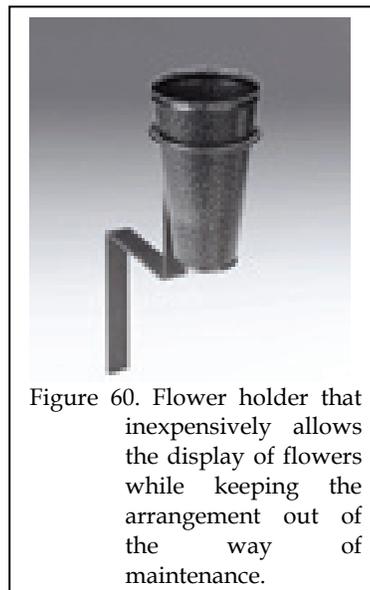


Figure 60. Flower holder that inexpensively allows the display of flowers while keeping the arrangement out of the way of maintenance.

minimize maintenance problems.

First, as previously recommended, we believe that all flowers or arrangements should be removed by the cemetery staff 10 days after holidays *or* when the arrangements become unsightly. This will allow staff to remove faded flowers, Christmas decorations after the



Figure 61. Stockpiled soil in this barren, compacted portion of the Backside Section at Mount Hope detracts from the cemetery.

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Figure 62. Screening problems at Mount Hope in the Durfey Section. The top photo shows what appear to be discarded monuments. The bottom photo shows lawn debris and soil.

holidays, and so forth.

Floral policies are common at cemeteries. National cemeteries have relatively constrained policies:

- ❖ Natural cut flowers may be used throughout the year and “will be removed when they become unsightly.”
- ❖ Artificial flowers may be used only from October 10 through March 15 (when cut flowers are often not widely available).
- ❖ Potted plants are allowed only from 10 days before and 10 days following Easter Sunday.
- ❖ Memorial decorations will be removed 7 days after the holiday.
- ❖ Christmas decorations are permitted only during the season and will be removed no later than January 10.

Looking at the policies of three North Carolina communities similar to Raleigh (Greensboro, Durham, and Winston Salem), all have detailed policies.

For example, Greensboro allows flowers to be placed only in vases that are integral to the monument (artificial flowers designed to be placed on top of the memorial are permitted), with only one vase allowed per monument. The city reserves the right to remove anything not in compliance or deemed “unsightly.” Wreaths on standards and seasonal arrangements are allowed on listed special days, but must be removed within 30 days of the holiday. All flowers must be removed when they become wilted or unsightly. All funeral arrangements must be removed within seven days (Rules and Regulations, XXXIII).

In Durham’s cemeteries, the cemetery manager has the authority to remove flowers and other items on graves (Section 7-24). Between March 1 and November 1, no more than one floral arrangement is allowed per grave, except for seven days following interment (Section 7-25). Between March 1 and November

1 all floral arrangements must be in a vase attached to the marker (Section 7-26). Outside of those dates the container must be of some durable material, with non-durable materials, such as glass and plastic prohibited (Section 7-33).

Winston Salem’s cemeteries allow only cut flowers in approved containers. Artificial arrangements are allowed at Christmas, but must be removed by February 1. Potted plants are allowed only for Easter and Christmas. During grass cutting season, flowers are removed after two weeks (Section 14-24).

Such regulations, however, are not confined to these larger cities. For example, the City of Hickory limits seasonal decorations from the middle of November to the first of January. They also prohibit other grave decorations. The Burlington Code allows flowers to remain on a grave for only 5 days after the burial and also allows the Superintendent to remove artificial flowers when “deteriorated as to color and appearance.” Lumberton allows fresh flowers to remain for only 5 days, while artificial flowers “that are faded shall be removed” and disposed of the Superintendent.

Second, we recommend that the cemetery establish a regulation that all floral displays in the new section must be placed in vases integral to the stone or that a vase mounted vase holder be used (Figure 60). These choices provide a wide range of cost options for families while still ensuring that the maintenance staff can perform their duties. These are available from a variety of monument companies for about \$20 retail or could be ordered by the city and sold directly (see www.thompsonmonuments.com/flower_holder_s.html).

Screening Issues

There are several locations at Mount Hope that detract from the dignity and beauty of the cemetery. One is in what is known as the

Backside Section where apparently no graves are located. The city is storing soil in this area, which is compacted, barren, and eroding into the street (Figure 61). There is another area being used for stockpiling mulch in the Durfey Section and we recommend that the materials be removed from the Backside section. This area should then be sodded and made presentable to the public. It could be a pleasant green area with a little care.

If there are factors that preclude moving the stockpiled soil, then this area should be screened from public view using appropriate vegetation or fencing.

A second area of concern is the dirt road leading into the Durfey Section. Along this road are several damaged monuments (Figure 62). This gives the appearance that the graves have been destroyed or are in the roadway. Either is inappropriate and the situation should be rectified.

This road leads to a disposal area used for the dumping of leaves and other debris, including soil. This area is open to the public and presents a very poor view of the cemetery and its practices. The area should be screened and the road closed to public traffic.

The final issue involves the location of the office at Mount Hope adjacent to what is called the New Part. The very industrial nature of the building, coupled with the storage and maintenance of heavy equipment in the yard, detracts from the dignity of the cemetery – an issue which has been previously discussed.

It would have been far better for this office to have been moved off the cemetery property or at least to a more discrete location. Since this was not done, the alternative is to more effectively screen the building. This may be accomplished by plantings. An ideal planting for the full sun present would be either a climbing rose or Confederate Jessamine

(*Trachelospermum jasminoides*) – an aggressive vine with a very sweet smelling white flower.

Trash

All three cemeteries were examined for evidence of trash. The problems were worst at City Cemetery and O'Rorke – the two properties which appear to receive the least attention by the Parks and Recreation staff.

At City Cemetery we saw a variety of trash problems, including trash disposed of in the center of boxwoods, trash tossed in urns, and trash left in the open. We believe that at least some of the problems are likely caused by vagrants. At O'Rorke Cemetery we observed several alcohol containers in the cemetery (Figure 63).

These problems are the result of several factors, the most significant being that the cemeteries are inadequately staffed and the available staff is stretched too thin to provide the level of care necessary. Additional staff means more on-the-ground time at each cemetery and this has a variety of positive benefits to the preservation of the resources. Regardless, it is critical that all trash be quickly identified and removed.

We found no trash containers at Mount Hope or O'Rorke Cemetery. The latter likely needs no containers since public use is very limited. Mount Hope, however, should be provided with containers to encourage families to properly dispose of flower arrangements.

At City Cemetery we found containers – brown 55 gallon drums with “trash” on their sides in white paint. These are an eyesore and should be immediately replaced.

For both Mount Hope and City Cemetery there are a variety of vandal resistant trash containers that would more effectively blend in with the surroundings. It is not necessary to purchase “historic replicas” since



Figure 63. Trash problems at the city's cemeteries. The top photo shows trash hidden in City Cemetery. The middle photo shows one of several alcohol containers at O'Rorke Cemetery. The bottom photo shows the unsightly trash containers being used in the City Cemetery.

they would likely appear as out of place as the current drums at City Cemetery. For example, there are a variety of cast concrete receptacles that would perform well in these settings.

Widening of Fayetteville Road

Toward the end of this assessment we were informed of the details surrounding the widening of Fayetteville Road in the vicinity of Mount Hope Cemetery.

While the road will remain two-lanes (a plan for a third turning lane was dropped), the city will be increasing right of way to allow the construction of curbs and gutters, with the addition of a 6-foot sidewalk adjacent to the curb on the west side of the road, adjacent to Mount Hope.

This increase in right of way will necessitate the taking of cemetery property and the construction of a 7-foot high retaining wall that the city intends to “tie into” the existing historic fabric of the entrance (Figure 22). In addition, utility lines will be relocated; although at present where they will be placed is not known.

While a previous study (Seibel and Turco 2004) determined that this taking will not affect burials and that the cemetery is eligible for inclusion on the National Register of Historic Places, it does not comment on the affect the undertaking will have on the cemetery landscape. We understand that the NC State Historic Preservation Office has approved this plan.

In spite of the compliance approval, required because of the involvement of federal funds, this undertaking is poorly conceived and of questionable appropriateness. It will have an adverse effect on the landscape of the cemetery, presenting a visual intrusion and significant modification of the original open design. It will also have long-term ramifications concerning security since it will no longer be possible to see

into the cemetery once the 7-foot retaining wall is erected. We doubt that the material the retaining wall is made from will mitigate the adverse effect.

It is worth noting that had this been an undertaking by the Federal Highway Administration, Section 4(f) of the DOT Act of 1966 stipulates that agencies within the DOT cannot approve the use of land from a significant publicly owned public park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless there is no feasible and prudent alternative to the use of land. We doubt that “no feasible and prudent alternative” was available in the case of this product.

It is through the gradual chipping away of integrity, such as this, that sites can lose those elements and characteristics that make them eligible for inclusion on the National Register. We note that this is not the first time that the cemetery has been affected by road widenings. Cemeteries, lacking constituencies, are often chosen as the source of acreage for projects over other alternatives that may pose a more significant political obstacle.

Recommendations

The Parks and Recreation Department should develop regulatory signage for use at all of its cemeteries. This signage should minimally deal with proper care of the monuments, prohibiting rubbings and warning visitors of their fragile condition; it should prohibit certain behaviors and actions, such as use of alcoholic beverages; it should established simple guidelines for plantings, as well as the placement and removal of floral and grave decorations; and it should include contact and emergency information.

City Cemetery requires identification signage at all four entrances. All four entrances should also have regulatory signage. The interpretative signage is antiquated and fails to

engage the visitor. Consequently, it requires extensive rehabilitation.

O'Rorke Cemetery requires identification signage at both of its entrances. Regulatory signage, as well, should be located at both entrances. There is currently no interpretative signage and this should be corrected by installation of signage that tells the story of both the Catholic Cemetery and the Pauper Cemetery.

Mount Hope Cemetery also has inadequate identification signage. New signage should be erected at all three entrances. Signage at the main entrance, however, should not obscure or overwhelm the entrance gates, which are both beautiful and historic. Regulatory signage is also required. The cemetery has no interpretative signage and the compelling story of Raleigh's African American cemetery should be told.

The existing Capital City Trail signage is antiquated, obscured, and fails to reasonably engage visitors. It competes against other tours that are better publicized. It also provides little promotion for the two cemeteries (O'Rorke is not listed). The Wayfinding Study recommends all Capital City Trail Signage be removed - we concur in this recommendation.

There is only one brochure and it is limited to City Cemetery. The brochure is difficult to find (it is out of print) and is not particularly engaging. It requires considerable revision and should include more information on the cemetery landscape, stone carvers, funerary customs, and reasons that a visitor should be interested in the individuals buried in the cemetery. It is also critical that Parks and Recreation develop brochures for the O'Rorke and Mount Hope Cemeteries.

The city should establish flower regulations for its cemeteries that maintain the dignity of the cemetery and allow reasonable maintenance. We recommend that all floral displays be either in a vase integrated into the flush marker or use a flower holder. Either will

allow more appropriate maintenance. Seasonal displays should not be allowed to remain three months after the holiday; plants should not remain on graves once they have died. The city should limit flowers on graves to a maximum of 10 days.

Mount Hope Cemetery exhibits several areas that require screening from the general public. These include the spoil pile at the edge of the Backside Section. This particular area is also compacted with little vegetation. The spoil should be removed and this area sodded to enhance the appearance of the cemetery. There is another spoil and debris area at the edge of the Durfey Section. This should be closed to public access. There are stones seemingly dumped at the edge of the road - this presents a poor impression to the public and is disrespectful. The stones should be replaced or put into storage until their locations can be determined. The current office and maintenance building presents a harsh view to families using the New Section. These facilities should never have been allowed to be in such close proximity to the graves. Today it is critical that the area be screened to soften the view.

There is evidence of maintenance vehicles operating off-road in both Mount Hope and O'Rorke. This is hazardous to the historic fabric and disrespectful to the graves and families. It should cease immediately. Where necessary, the city should either employ small vehicles less likely to do damage or use mud boards to protect graves.

There are no trash containers at either O'Rorke or Mount Hope. Minimally we recommend the addition of trash containers at several roadside locations in Mount Hope. It may be unnecessary to put containers at O'Rorke.

At City Cemetery the trash containers, 55 gallon drums, detract from the dignity and beauty of this historic property. They should be replaced with more fitting containers that better blend in with the property.

We encourage the city, even at this very late stage of planning, to re-evaluate the taking of property from Mount Hope Cemetery for the widening of Fayetteville Road. While approved by the NC State Historic Preservation Office it is our opinion that the taking will diminish the property's integrity.

CONSERVATION ISSUES

What is Conservation?

Conservation is *not* restoration. Restoration means, very simply, making something “like new.” Restoration implies dramatic changes of the historic fabric, including the elimination of fabric that does not “fit” the current “restoration plan.” Restoration is inherently destructive of patina and what makes a property historic in the first place. The “restorer” of a property will know nothing of the Secretary of the Interior’s Standards for Preservation and care even less.

One of the most important early writings was that of nineteenth century art critic and observer John Ruskin. In *The Seven Lamps of Architecture* published in 1849 and in particular, “The Lamp of Memory,” Ruskin introduces us to the issue of trusteeship where he explains,

it is again no question of expediency or feeling whether we shall preserve the buildings of past times or not. We have no right whatever to touch them. They are not ours. They belong partly to those who built them, and partly to all the generations of mankind who are to follow us.

Ruskin also crisply stated the difference between restoration and repair, noting that “restoration” means,

the most total destruction which a building can suffer: a destruction out of which no remnants can be gathered: a destruction accompanied with false description of the thing destroyed.

In contrast conservation can be defined as preservation from loss, depletion, waste, or harm. Conservation seeks to limit natural deterioration.

Conservation will respect the historic fabric, examine the variety of options available, and select those that pose the least potential threat to the property. Conservation will ensure complete documentation, whether it is of cleaning, painting, or repair. Conservation will ensure that the work done today does not affect our ability to treat the object tomorrow.

Standard for Conservation Work

As Ruskin stated, The City of Raleigh is the steward of these cemeteries, holding what belonged to past generations in trust for future generations. As such the city bears a great responsibility for ensuring that no harm comes to the properties during their watch.

One way to ensure the long-term preservation of these properties is to ensure that all work meets or exceeds the Secretary of the Interior’s Standards for Preservation, discussed on pages 3-4 of this study.

Another critical requirement is that the city ensure that any work performed in the cemetery – whether it involves the repair of iron work, the cleaning of a stone, or the reconstruction of a heavily damage monument, is conducted by a trained conservator who subscribes to the Standards of Practice and Code of Ethics of the American Institute for Conservation of Historic and Artistic Works (AIC).

These Standards cover such issues as:

- ❖ Do no harm.

- ❖ Respect the original fabric and retain as much as possible – don't replace it needlessly.
- ❖ Choose the gentlest and least invasive methods possible.
- ❖ Is the treatment reversible? Is retreatment possible?
- ❖ Don't use a chemical without understanding its affect on the object and future treatments.
- ❖ Don't falsify the object by using designs or materials that imply the artifact is older than it is.
- ❖ Replication and repairs should be identified as modern so that future researchers are not misled.
- ❖ Use methods and materials that do not impede future investigation.
- ❖ Document all conservation activities – and ensure that documentation is available.
- ❖ Use preventative methods whenever possible – be proactive, not reactive.

The AIC Code of Conduct also requires a professional conservator provide clients with a written, detailed treatment proposal prior to undertaking any repairs; once repairs or treatments are completed, the conservator must provide the client with a written, detailed treatment report that specifies precisely what was done and the materials used. The conservator must ensure the suitability of materials and materials – judging and evaluating the multitude of possible treatment options to arrive at the best recommendation for a particular object.

General Types of Stone Damage

Although a stone-by-stone assessment was not included in this assessment, it is possible to provide some general observations concerning the types of problems faced by the city's three cemeteries.

There are many examples (likely hundreds) of broken stones. Many of these

stones should receive a high priority for conservation treatments since the stones are either a hazard to the public (endangering visitors) or a hazard to themselves (if they fall there will be additional, significant damage that will dramatically increase the cost of repair). The identification of these stones and development of treatment proposals by a professional conservator should be a very high priority. It is only with the development of detailed treatment proposals and cost estimates that a reasonable budget for this conservation work can be determined. Given the deterioration of the historic fabric, we recommend this work be conducted over the next 2 to 3 years.

In most cases gravestones are fragile and their repair is delicate work. There are many commercial products on the market, used by many commercial stone companies, which are totally inappropriate for historic stone.

Appropriate conservation treatment will usually involve drilling and pinning, carefully aligning the two fragments. Threaded 316 stainless steel rod (or occasionally nylon) and epoxy adhesives formulated for the specific stone are used in this type of repair. Diameters and lengths of pins vary with the individual application, depending on the nature of the break, the thickness of the stone, its condition, and its expected post-repair treatment.

Sometimes pins are not used in a misguided or misinformed effort to save time and money. Instead the pieces are simply joined using a continuous bead of epoxy or some other adhesive. Experience indicates that for a long-lasting repair, particularly in structural applications, use of pins is usually necessary. Moreover, most adhesives are far stronger than the stone itself, meaning that failure of the repair is likely to cause additional damage to the stone.

At times mechanical repairs also involve dismantling intact elements and ensuring that a sound foundation is present. Foundation work may involve filling in depressions, establishing a



Figure 64. Examples of broken stones. Top row is from City Cemetery, middle row from Mount Hope, and bottom row from O'Rorke Cemetery.



Figure 65. Examples of other stone problems. Top row illustrates loose fragments susceptible to additional damage or theft; middle row illustrates stones with ferrous pins requiring replacement; the bottom row illustrates examples of spalling – on the left is sandstone with extensive loss, on the right is marble with vegetation growing in the crack causing additional damage.



Figure 66. Examples of other stone problems. The top row illustrates two box tombs with significant damage. The middle row and lower left examples show leaning stones that, if not corrected, will result in additional damage. The lower right photo illustrates inappropriate resetting using rocks to level a die on a sunken base.



Figure 67. Examples of other conservation issues. Top left shows a tab in socket stone requiring resetting. Top right shows a concrete monument with extensive damage from the corrosion of internal ferrous reinforcement. Middle left illustrates concrete coping that is broken and deteriorating. Middle right shows stone steps at City Cemetery that are unstable and hazardous to the public - these require immediate resetting. Lower left shows an urn broken from a pedestal tomb, but left precariously positioned on the top. At the lower right is a monument that has been acid cleaned, which is very damaging to the historic fabric.

concrete footing, or taking other measures to ensure that subsidence is minimized. Then the entire structure is repaired as it is reassembled.

There are also a number of loose stones or stone fragments. These, too, may pose a significant risk to the public, depending on the size and degree of instability of each stone. Some stones will require equipment to allow disassembly and correctly repair. Others are smaller and the treatment may involve drilling for the installation of stainless steel pins to help hold the stone in place. A few of the problems may be resolved using commercial setting compound.

Fragment storage protects fallen or broken stones from loss and damage. At present there appears to be no procedure to ensure that damaged stones are identified and cared for. We found bits and pieces of stones in different locations throughout the cemeteries. In many cases broken stones have been left lying where they fell. This may result in the loss of the monument or additional damage. It may cause loss of the grave, loss of the individual's memory, as well as loss of historic fabric.

Many of the stones were noted with ferrous pins. The results of their deterioration is also clearly evident. These should be given a high treatment priority since, left untreated, the corrosion will cause significant spalling, cracking, and breakage of the stones. In these cases it will be necessary to use diamond core drills to remove the ferrous pins. They will then need to be replaced with stainless steel pins.

After many such repairs it will be necessary to fill the voids with a natural cementitious composite stone material resembling the original as closely as possible in texture, color, porosity, and strength. This type of repair may be used to fill gaps or losses in marble and is often used to help slow scaling of bedded sandstone exposed to the elements.

Under no circumstances should latex or acrylic modified materials be used in composite stone repair. These additives may help the workability of the product, but they have the potential to cause long-term problems. Such products are not appropriately matched in terms of strength or vapor permeability.

More suitable materials are materials such as Jahn (distributed by Cathedral Stone) or the lime-based mortars of U.S. Heritage. These closely resemble the natural strength of the original stone, contain no synthetic polymers, exhibit good adhesion, and can be color matched if necessary.

All infill work should be conducted by a trained conservator. The Jahn products, in fact, require certification in their use through Cathedral Stone.

Sandstone monuments are relatively uncommon - only one being noted during this assessment. Unfortunately, it has been ignored for years and is spalling, likely the result of salt intake. As the liquid evaporates the salts crystallize and cause spalling or delamination. Treatment for this problem is complex - and costly. However, left untreated the stone will continue to deteriorate and be lost.

There are a number of failing box and table tombs. Some have failed and are simply piles. Others pose an imminent hazard to the public. Support of ledgers is often undermined, creating a significant potential that the ledger will be damaged - and this dramatically increases the cost of repair. Consequently, these ledgers should receive a relatively high priority for repair.

Many of the stones are seriously leaning. When this occurs to headstones, the tilt may be sufficient to precipitate a ground break, dramatically increasing the cost of repair. For other monuments the tilt may be sufficient to cause the monument to fail and, in the process, there may be additional damage. We also

observed monuments in the cemetery that had been improperly reset. In at least one case the monument was reset in a manner that poses an additional hazard to the public – and a liability to the city.

Monuments should never be reset using concrete, but rather should be set in pea gravel. This approach allows the stone some movement should it be accidentally impacted by lawn maintenance activities. The pea gravel will also promote drainage away from the stone, helping the stone resist the uptake of soluble salts.

A few stones require resetting in their still extant sockets. This, too, is a fairly simple procedure that can be accomplished with little time or funds, but which will minimize the potential for additional damage to the stone.

In such cases resetting involves the use of a high lime mortar mix. In this and all other areas of treatment, the city should avoid the use of Portland cement. It is entirely too hard for the stones and may contain impurities that will damage the stone through long-term exposure. More appropriate is a 1:3 (or 1:2) mix of NHL 3.5 and sand. Epoxy and other adhesives should never be used since once set it is virtually impossible to remove the material. Even the use of commercial setting compounds used by the monument industry should be limited to use on granite markers produced within the last 50 years.

As this suggests, there are a number of critical stone-related problems at all three cemeteries. Each has old sections and each has regrettably seen much improper maintenance or deferred maintenance. Thus, the condition of the stones today is the result of 100 or more years of natural wear and/or neglect.

While repairs are critical, they should not be conducted without adequate assessment, preparation of appropriate treatment proposals, and efforts to implement the preventative recommendations contained throughout this

study. There is, for example, no benefit in expending treatment funds if issues such as vandalism and regulatory signage have not been addressed.

Cleaning of Monuments

A significant amount of damage may result from inappropriate cleaning techniques. The most common cleaning technique is the use of a bleach product – probably because bleach (either sodium hypochlorite or calcium hypochlorite) is widely available and inexpensive. It is, nevertheless, unacceptable for historic monuments.

Table 6 discusses problems with a variety of “common” stone cleaning processes widely used by commercial firms and the public. Providing this sort of information to families who have loved ones buried at the city cemeteries may help deter abusive cleaning.

Cleaning is largely an aesthetic issue at all three cemeteries – we saw few examples where soil or biologicals were actually causing damage to the monuments. Consequently, the city should embark on an educational program to discourage inappropriate cleaning – explaining not only the dangers of bleach and other commercial methods, but also pointing out that such activities diminish the historical value and ambience of the cemeteries. These cleaning methods remove not only soil, but also the patina of age – leaving monuments that no longer appear historic.

This educational program should point out that cleaning – even when done correctly – will gradually erode monuments, making them susceptible to more soiling and damage. Consequently, cleaning should be conducted no more frequently than perhaps once every 5 years.

The safest product for cleaning is simply low pressure (less than 90 psi) water and a soft bristle brush. When some other assistance is

Table 6.
Comparison of Different Cleaning Techniques

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

needed a product that has been found safe for most stones is D/2 Architectural Antimicrobial distributed by Cathedral Stone.

Brickwork and Repointing

Repairs should always begin with photographing the structure as it exists in order to completely document the original fabric and construction details. Only the unsound brickwork should be removed, stopping as soon as sound material is encountered. Repair should, as far as possible, use similar brick, mortar, joints, and tooling. Brick should match in size, hardness, texture, and color. Mortar should

match the original in color, texture, and most importantly, strength.¹

Historic bricks are often far softer than modern examples. The use of a modern hard cement mortar will cause extensive damage to this soft brick as one expands more rapidly than the other. Mortar should always be designed to deteriorate more quickly (it should be sacrificial, meaning the use of high lime mortars) than the brick since it can be readily replaced through pointing.

All repointing should minimally meet or exceed the specifications established by *Preservation Briefs 2: Repointing Mortar Joints in Historic Masonry Buildings*.

New mortar must conform to the following criteria: (1) it must match the historic mortar in color, texture, and tooling, (2) it must have greater vapor permeability and be softer than the masonry

¹ While historically appropriate mortars can be mixed, typically as a 1:3 ratio of either lime putty or NHL 2 or 3.5 with sand, recently prepackaged mixes have been marketed. These products may be superior when large jobs are undertaken, since they assure that the materials and mix are consistent. They are available from Virginia Lime Works (Mix-n-Go) and Cathedral Stone (Restomix).

units, and (3) it must be as vapor permeable and as soft as the original mortar.

To achieve these criteria it may be necessary to have a conservator conduct a mortar analysis. It is also inappropriate to specify a single mortar that is appropriate for all preservation work, especially at cemeteries such as City and Mount Hope where a variety of time periods and original mortars are present. However, in general, the mortar should be high in lime and low in compressive strength. A natural hydraulic lime (NHL) or air lime would generally be specified for such work. For example, an air lime or NHL 3.5 might be mixed at the ratio of 0:1:3 (or 0:1:2) for much repointing work at these properties. The sand selection would be especially critical since that additive would primarily determine the final color (and texture) of the mortar.

Existing joints would need to be raked out to a depth 2.5 times their width. Thus, a 3/8-inch joint would need to be raked out to a minimum depth of 15/16-inch (typically expressed as 1-inch). The repointing mortar, generally mixed somewhat dry to minimize shrinkage and reduce cleaning efforts, would be firmly packed in the thoroughly cleaned and moistened joint using lifts no deeper than 1¼-inches.

The specifications are more detailed than this brief overview, but this should serve to indicate the care required for a cemetery having the historical significance of the city cemeteries.

Concrete Repair

Concrete has been extensively used both as monuments and as coping in the twentieth century sections of Mount Hope. Much of this concrete is in failure, or has already failed.

One of the most common – and clearly obvious – problems is spalling, crumbling, and complete failure. Careful examination reveals that the concrete exhibits no structural strength

and crumbles. The mix also exhibits the use of very large quantities of substandard aggregate. The deterioration may be related to the sulfates present in the mix. These sulfates react with the concrete to form gypsum which expands in the concrete and causes bowing, buckling, crumbling, or scaling of the concrete surface. Alternatively, the aggregate may have been sufficiently porous to encourage frost spalling. Other concrete exhibits spalling that is probably related to its absorption of moisture and freeze-thaw action. Some damage may also relate to the failure to adequately compact the concrete and eliminate entrapped air (each 1% of entrapped air can reduce the strength of the concrete by 6%). This concrete is even more susceptible to frost action.

In such cases the only remedy is to remove the concrete and replace it with an appropriate mixture.

There are basic procedures to be followed in concrete use, yet shortcuts are often taken that ultimately result in significantly compromised concrete. The durability of any concrete depends on the quality of the mix and workmanship involved in mixing, placing, compacting, and curing. For example, low permeability of finished concrete depends on the hydration of the cement to fill interstice voids that are initially filled with water. Keeping the newly cast concrete moist prevents the fresh concrete from drying too quickly and allows hydration to continue; this, in turn, promotes greater durability.

Concrete repair must be certain to match the historic material in finish, profile, and color. Aggregate should also match, assuming that the aggregate itself is not the cause of the deterioration. Concrete repair is typically well understood by most reputable contractors. It will consist of the removal of damaged sections to a minimum depth of 2-inches and that distance beyond the damage in all directions. The new surface will need to be roughened. It is often appropriate to install threaded fiberglass

dowels to tie the new section of concrete to the old. In addition, the concrete will be coated with a bonding agent, such as Nitobond Epoxy Gel 400C. Often air-entrained concrete is used and this is acceptable, especially in areas with significant freeze-thaw action.

In general concrete monuments do not contain ferrous reinforcements, although as seen in Figure 67 this is not always the case. Repair of non-reinforced monuments is typically no different than repair of soft stone. When reinforcements are present they are typically the source of the failure through iron jacking or the expansion of corrosion by-products. If there is reinforcement, it must be cleaned to bright metal and primed with zinc rich primer or it must be removed and replaced with fiberglass rod. This makes the repair of such monuments very difficult and costly.

Ironwork Conservation

Although ironwork has been mentioned previously in the section on Fixtures and Furnishings, we are briefly reviewing critical issues here.

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

The single best protection of ironwork is maintenance – and this revolves around painting. We have previously outlined specific steps and materials to use, focusing on minimal

cleaning, followed by two coats of a rust converter and a final top coat of a flat or semi-gloss alkyd paint.

Repair may include reattachment of elements. Ideally, repairs should be made in a manner consistent with original construction. For example, most newel posts were originally attached to a stone or masonry base using a threaded rod packed in lead. When this assembly is loose, the ideal approach is to replace the threaded rod with 316 stainless steel, and repack it using an epoxy filler (lead is rarely recommended both because of its health consequences and also because lead-iron contact promotes corrosion).

It may also be appropriate to use small stainless steel braces with stainless steel nuts and bolts to re-attach coping rails to posts. While welding is often expedient, this approach causes a radical change to the fence. Once welded, pieces are no longer able to move with expansion/contraction cycles, and this causes internal stresses that may lead to yet additional structural problems. Careful inspection of fences in good condition reveals that virtually all connections were “slip joints” – allowing the parts to expand and contract.

In addition, while wrought iron is easy to weld because of its low carbon content, cast iron contains up to 4% carbon and is difficult to weld. Welding on cast iron should be done only by firms specializing in this work and capable of preheating the elements.

When used, welds should be continuous and ground smooth, in order to eliminate any gaps or crevices. When finished, it should be difficult to distinguish the weld – the original metal should blend or flow directly into the reattached part.

Another problem observed at City and O’Rorke cemeteries is the burial of the bottom fence rail in soil. In such cases moisture is held

against the ironwork, promoting extensive corrosion.

When the fence is buried in the soil all that need be done is to resculpt the ground, lowering it below the bottom rail. This can not only resolve the corrosion problem, but can also promote better drainage away from the ironwork.

Much of the ironwork would also benefit from careful caulking of joints to prevent capillary uptake of moisture – which promotes corrosion in joints and other small crevices. An appropriate caulk is a premium-grade, high-performance, moisture-cured, single-component, polyurethane-based, non-sag elastomeric sealant (such as Sikaflex 1a). Silicone caulks should be avoided.

Another significant threat to the ironwork, however, is theft. City Cemetery is exceedingly fortunate to have a small but diverse collection of ironwork – and several of the fences have original gates. All are attractive to thieves and the city should take immediate action to harden these targets and discourage their theft.

Understanding Priorities

With limited funds it is often critical that organizations establish priorities for cemetery conservation/preservation projects, ensuring that the most critical issues are dealt with first.

First priorities are those we recommend undertaking during the current fiscal or calendar year. These are largely issues that have the potential to affect the public health and safety and consequently require immediate attention.

Planning issues may fall into this high priority category as well. Through appropriate planning costly mistakes can be avoided. Planning also presents the opportunity – as we hope is evident in this study – of developing a

preventative maintenance program that will help to ensure that appropriate actions are carried out on an on-going basis, limiting the need for future emergency treatments.

Second priorities are those which should be budgeted for over the next 2 to 3 years. They represent urgent issues that, if ignored, will result in both significant and noticeable deterioration of the Raleigh cemeteries. *Deferred maintenance is not only poor stewardship, but it is fiscally irresponsible. Simple repairs, delayed, turn into very expensive treatments.*

Third priorities are those that may be postponed for 3 to 5 years. They are issues that can wait for appropriations to build up to allow action. Because they are given this lower priority, however, they should not be dismissed as trivial or unimportant.

Recommendations

We recommend that a stone-by-stone assessment be conducted of the three city cemeteries. This will identify all monuments and fences in need of treatment, determine their priority for treatment, and provide costs for that work to be accomplished. This is a critical planning function.

All work in the cemetery should be conducted by trained conservators who subscribe to the Code of Ethics and Standards of Practice of the American Institute for Conservation of Historic and Artistic Works (AIC). This should be the minimum level of competency required by the city on all projects.

There are some treatments, such as resetting, creation of new sockets, cleaning, and some aspects of fence repair, that can be undertaken by volunteers with training and oversight.