OCONEE HILL CEMETERY ASSESSMENT, ATHENS-CLARKE COUNTY, GEORGIA

Chicora Research Contribution 557

OCONEE HILL CEMETERY ASSESSMENT, ATHENS-CLARKE COUNTY, GEORGIA

Research Contribution 557

Michael Trinkley
Debi Hacker

Funded by the Georgia Department of Natural Resources, Historic Preservation Fund Grant and The Friends of Oconee Hill Cemetery
Administered by the Unified Government of Athens-Clarke County, Georgia

Chicora Foundation, Inc.
PO Box 8664 ▪ 861 Arbutus Drive
Columbia, SC 29202-8664
803/787-6910
www.chicora.org

February 2014

The paper in this book meets the guidelines for permanence and durability of the Committee on Production Guidelines for Book Longevity of the Council on Library Resources.∞

“I don't embrace excuses. I embrace solutions.”
— Jon Taffer

MANAGEMENT SUMMARY

This study was funded by the Georgia Department of Natural Resources trough a Historic Preservation Fund Certified Local Government Predevelopment Grant and The Friends of Oconee Hill Cemetery. The project was administered by the Unified Government of Athens-Clarke County, Georgia and the field investigations were conducted from November 18 through 21, 2013. Report production followed immediately afterwards.

The study examines Athens' second oldest burial ground, used by the area's citizens, black and white, rich and poor, beginning with its founding in 1856. While the Cemetery holds about 110 acres, only 39 acres in 22 sections are actively used for burials. The remainder of the acreage consists of undeveloped woodlands. The Cemetery is situated on both sides of the North Oconee River on the southeast side of Athens in central Clarke County. Ownership of the Cemetery is unclear. The Unified Government does not wish to expend funds on the Cemetery (although it has funded a local African American cemetery), but the Trustees have historically obtained permission from the local government for any significant action.

A cemetery assessment is designed to help the cemetery caregivers to think about long-range preservation in a structured way, to better understand what is significant and why, and how it should be managed in order to preserve its historical significance and ensure the cemetery's preservation for future generations. Issues of access, roads, security, landscape maintenance, and monuments are examined. Current conditions are detailed and recommendations are offered.

In the case of Oconee Hill Cemetery limited funds and poor management have crippled the cemetery. Funds have been limited by the Cemetery's adoption of mandatory perpetual care requirements very late in its history, increasing competition from more business-oriented cemeteries in the community, and the local government's unwillingness to help ensure the preservation of this resource. Poor management is the result of a governance system that was flawed from its beginning and failed to insist on operating the cemetery as a business. It has been further crippled by a focus on finding excuses rather than solutions. As a result, over its 150 years of operation there has been significant deferred maintenance of roads, erosion problems, buildings, monuments, and grounds. This deferred maintenance has further crippled the cemetery's ability to compete in the marketplace and has put off on future generations exceptional preservation costs.

There is another critical flaw in operations – the faulty belief by the Trustees that they bear no responsibility for monuments, walls, or fences, in each case shifting that responsibility to plot owners.

It is reasonable to expect, even demand, that extant families with still active plots in the newest sections of the Cemetery take responsibility for the maintenance of their monuments, coping, and other lot features. Of course, this presupposes that actions or inactions by the Trustees have not contributed to the failures and deteriorations of the plots. For example, if the problems were caused by a falling tree that was clearly unhealthy or even dead, then the Trustees are clearly responsible. If the problem is caused by the Trustees and their staff failing to adequately specify and inspect monument foundations, then the Trustees are clearly responsible. If the problem is caused by the Trustees and their staff failing to operate equipment safely and properly, causing damage to monuments, then the Trustees are clearly responsible. In addition, we have found no evidence that the Trustees are, in fact, demanding that lot owners repair faulty benches, for example.

There are, however, many plots where families can no longer be located or may not even exist. What then? Is it reasonable to ignore these plots and monuments, allowing them to deteriorate, causing hazards and liability for the Cemetery? Is it reasonable to allow portions of the Cemetery to appear abandoned and uncared for? Will such a policy encourage future families to purchase lots, or will they fear that their loved ones will receive this same sort of treatment in the future?

Ignoring deterioration, whether it represents failing walls, falling fences, or broken monuments, affects the entire Cemetery, making it a less attractive place and reducing the potential for future sales. Moreover, it ignores that the Trustees are stewards of the *entire* Cemetery, holding and maintaining it for future generations. Simply put, after years of ignoring problems and deferring preservation activities, the Trustees must take responsibility for the maintenance of the entire Cemetery.

It is similarly unreasonable for the Unified Government to continue its unwillingness to assist in the preservation of this *community* resource. In light of its support of an African American cemetery in the past, it is simply disingenuous to argue that the government doesn't wish to establish a precedent or that it fears every cemetery will request assistance. The ties between the City of Athens and Oconee Hill Cemetery are undeniable. Moreover, allowing a critical historic resource to deteriorate when public intervention could make a substantive difference is the height of governmental irresponsibility.

This assessment has identified five critical preservation issues at Oconee Hill Cemetery. If these are ignored, public confidence will be further eroded and it will become increasingly difficult to save Oconee Hill Cemetery.

The first issue, which should be no surprise, is a need for focused fund-raising, not only by the Friends organization, but by the Trustees themselves. The Trustees can no longer take a laissez-faire approach, but must begin taking an active role. While strengthening the perpetual care funds – what some call the cemetery's endowment – is certainly needed, the deferred maintenance needs today outweigh the need for endowment funds and fund-raising must focus on correcting nearly $2 million in critical cemetery needs. These are not luxuries, but rather critical repair, maintenance, infrastructure, and support costs that have been deferred, postponed, and ignored for perhaps 30 or more years.

The second issue, which should also be no surprise, is that the cemetery must begin being run as a business. It requires employee job descriptions, annual employee evaluations, policies on lot owners' use of flowers and other actions, clear and consistent visitor rules that protect the cemetery while making it a welcoming place, and clear requirements for outside contractors.

The third issue is that while a sexton may have been adequate in the 19th and perhaps even early 20th century, the job is no longer appropriate in the 21st century. The cemetery must split the roles of selling plots and landscape maintenance, hiring an office/sales manager and a landscape manager. The cemetery must also have a minimum staffing level of six landscape technicians – two crew leaders and four technicians. These jobs must be year-round and must be professional, trained individuals. These staff must also be provided with the tools to accomplish their jobs.

The fourth issue is the need to focus on the rehabilitation of the landscape, which has for years been largely ignored. As a result, there are a very large number of trees that have already been lost. An equally large number of trees are dead or in decline. Shrubs have been ignored to the point that they detract from the beauty of the landscape and are an eyesore. The turf is poorly managed.

The fifth issue is the need to ensure the maintenance of infrastructure items such as roads, walls, stairs, the bridge, and erosion control – all of which have been ignored for the past 50 years. The maintenance cost of each item only increases as it is ignored, until eventually the replacement cost is realized to be astronomical. It is much easier to maintain than to replace and the Trustees must begin taking responsibility for these issues.

So, what is to be done? The problems, of course, suggest their own solutions. First, the

parties involved must begin fund raising with a clear vision of what is critical in the cemetery. This fund raising must include the Trustees, the Friends, and the Unified Government. We discourage, in the strongest possible terms, fund raising or accepting funds for extraneous items. There are simply too many critical needs to allow distractions or diversions.

Second, the Trustees and Friends must cooperate on developing a series of rules, policies, and procedures. We identify these as *Organizational Needs* and include 56 specific recommendations.

Third, for the issues of staffing, landscape, and maintenance, we have separated the resulting recommendations into *first priority* items (68) that should be addressed during 2014. In our view, these represent the most significant items, having the greatest potential to affect safety. *Second priority* items are those that should be budgeted for over the next 2 to 3 years (2015-2016). They represent urgent issues that, if ignored, will result in both significant and noticeable deterioration of Oconee Hill Cemetery as a historic resource. Thirty-four such recommendations are offered. Finally, t*hird priority* items are those that may be postponed for 4 to 5 years (2017-2018), or alternatively, may require 3 to 5 years to see fruition. They are issues that can wait for appropriations to build up to allow action. We list 26 such items.

Readers will note that stone conservation items are largely Priority 3 needs. As much of an impact as they might make on the cemetery, there is no reason to undertake massive repairs until issues such as trees and mowing are dealt with. The Cemetery will see a significantly greater "bang for the buck" dealing with maintenance and infrastructure prior to stone conservation.

We acknowledge that the recommendations will be costly. Nevertheless, the Trustees have deferred responsibility and care for generations – it is now time to ensure that this early Athens cemetery is appropriately preserved for future generations.

TABLE OF CONTENTS

List of Figures vii

List of Tables xi

Introduction 1
- *The Project* 2
- *Why Preserve?* 3
- *Preservation or Restoration?* 4
- *Preservation Fundamentals* 5
- *A Brief History* 7
- *The Cemetery Location, Setting, and Context* 12
- *Factors Affecting Landscape Character* 19
- *Recommendations* 23

Administrative Issues 25
- *Ownership of the Cemetery* 25
- *Laws Protecting the Cemetery* 25
- *Public Perceptions* 28
- *The Oconee Hill Trustees* 30
- *The Friends* 36
- *Recommendations* 38

Roads and Pedestrian Issues 41
- *Vehicular Access and Circulation* 41
- *Pedestrian Access, Pathways, and Sidewalks* 47
- *Universal Access* 49
- *Recommendations* 53

Structure Issues 55
- *The Office Area* 55
- *The Second Maintenance Building* 62
- *The Receiving Tomb* 62
- *The Cemetery Bridge* 65
- *The Proposed Chapel* 67
- *Recommendations* 69

Cemetery Security 71
- *Vandalism* 71
- *Vandalism Records* 76
- *Theft* 76
- *Dealing with the Homeless* 78
- *Building Security* 79
- *Equipment Security* 79
- *Non-Owned Equipment* 80
- *Keys and Related Issues* 80
- *Recommendations* 81

Cemetery Fixtures and Furnishings 83
Mausoleums *83*
Other Amenities *84*
Recommendations *87*

Landscape Issues 89
Staffing *89*
Cemetery Soil *98*
Cemetery Trees *101*
Shrubs *114*
Turf *122*
Landscape Debris *137*
Other Landscape Issues *138*
The Erosion Problem *140*
Needed Equipment *142*
Recommendations *146*

Other Maintenance Issues 151
Signage *151*
Flowers and Other Grave Decorations *156*
Trash *158*
Lost and Orphan Stones *158*
Drainage *159*
Grave Opening and Closing Issues *162*
Setting Monuments *166*
Interaction with Outside Contractors *168*
Plot Curbs or Coping *169*
Recommendations *171*

Cemetery Records 173
Paper-Based Records *173*
Records Held By Trustees *174*
Digital Archives *174*
Photographic Collections *175*
Recommendations *175*

Conservation Issues 177
Standards for Conservation Work *177*
The Responsibility of the Trustees *178*
Past Conservation Efforts *178*
General Types of Stone Damage *179*
Walls *192*
Fences *200*
Unusual Monuments *204*
Recommendations *204*

Priorities and Funding 207
Recommended Priorities *207*

Sources Cited 227

LIST OF FIGURES

Figure

1. View of the topography and monuments typical of the earliest section 1
2. General location of Oconee Hill Cemetery in Athens-Clarke County, Georgia 2
3. The original 17 acres of Oconee Hill Cemetery 8
4. Portion of the 1874 *Map of the City of Athens* 9
5. Oconee Hill Cemetery in the early twentieth century 10
6. Entrances to Oconee Hill Cemetery over time 11
7. Aerial photograph of Oconee Hill Cemetery 13
8. Sanford Stadium from the front of the Sexton's Cottage 14
9. Bike paths and bus stops in the vicinity of Oconee Hill Cemetery 14
10. Portion of the Athens East USGS topographic map showing Oconee Hill Cemetery 15
11. Sections at Oconee Hill Cemetery 16
12. Census tracts in the vicinity of Oconee Hill Cemetery 17
13. One of the apartment complexes in Census Tract 302 18
14. Soils identified on Oconee Hill Cemetery 19
15. FEMA flood map for Oconee Hill Cemetery 20
16. Palmer Drought Severity Index for Georgia 21
17. Plant Hardiness Zones in the vicinity of Athens-Clarke County 21
18. pH of rainfall in the vicinity of Oconee Hill Cemetery 22
19. Posted rules at Oconee Hill Cemetery 27
20. Revenue sources for the Oconee Hill Cemetery Trustees 31
21. Cemetery expenses in 2006 and 2011 32
22. Revenue sources for the Friends in 2011 and 2006 37
23. Expenses for the Friends in 2011 and 2006 38
24. Entrance into the Cemetery from East Campus Road 41
25. Entrance area once in the Cemetery 42
26. Example of a removable bollard 43
27. Roads and assessment locations 44
28. Typical road conditions at Oconee Hill Cemetery 45
29. Example of grass growing over and into the asphalt roadway 47
30. Steep pathway in East Hill 48
31. Asphalt pathway in East Hill 48
32. Informal or social trail 49
33. Specifications for one brand of grass reinforcement system 50
34. Detail drawings for ADAAG compliant stairs 51
35. Stair and handrail problems 52
36. Example of a component, build on-site stair rail that is ADA compliant 53
37. Aerial image of the office area showing the various features and structures 55
38. Front façade of the Sexton's Cottage 56
39. Storage under the Sexton's Cottage 57
40. Oblique view of the Sexton's Office 58
41. Heavily overgrown grape arbor 58
42. Animal pen 59
43. Oblique view of the maintenance building 60
44. Storage of gasoline in the Maintenance Building 60
45. The Well House 61
46. Trash cans off the parking lot in front of the Sexton's Cottage 62

47. Maintenance building located in the new cemetery section 62
48. Holding vault 63
49. Holding vault 64
50. Bridge and approach from the north side 65
51. Bridge concerns 66
52. Three examples of VA NCA Committal Service Shelters 68
53. Fence damage, including fallen trees, overgrown fences, and collapse, that requires repair 73
54. Example of a vandalism report recommended by Chicora 77
55. Example of a gate protected with stainless steel cabling 78
56. Silicone caulk that has failed on the Glenn Mausoleum in West Hill 83
57. The Smith Mausoleum in Section F-2 84
58. The Hunter Mausoleum in East Hill 84
59. The Taylor/Lucas Mausoleum in East Hill 85
60. Bench and urn problems in the cemetery 86
61. Brief landscape maintenance report 93
62. Independent evaluation of landscape form 94
63. Soil sample results 99-100
64. Small, unhealthy trees 103
65. Examples of dead or hazard trees 106
66. Examples of stumps throughout the cemetery 107
67. Stump grinding problems 108
68. Tree pruning issues 110
69. Examples of trees that require pruning 111
70. Trees with dense growth of ivy 112
71. Tree debris in the Cemetery 113
72. Example of a tree that has significantly damaged a stone wall 114
73. Examples of improperly pruned shrubs 117
74. Examples of shrubs being overtaken by weedy plants 118
75. Examples of shrubs that should be removed 119
76. Damage to stones resulting from inappropriate mowing techniques 123
77. Damage to stones resulting from inappropriate mowing techniques 124
78. Proper mowing height is not optional 125
79. Grass found on monuments throughout the cemetery 126
80. Other turf problems observed at Oconee Hill Cemetery 127
81. Other turf problems observed at Oconee Hill Cemetery 128
82. Maintenance calendars for centipede and Bermuda grass 129
83. Water plan for Oconee Hill Cemetery 132
84. Examples of fire ants across the Cemetery 134
85. Trash, leaves, and limbs dumped at the edge of the Cemetery 135
86. Dump area at Oconee Hill Cemetery 136
87. Two of the stones identified in the dump area 137
88. The current mulching operations are ineffective 138
89. Graveled plot covered with weeds 139
90. Erosion issues at Oconee Hill Cemetery 141
91. Cross section of the Everloc retaining wall system 142
92. Current and proposed identification signage 151
93. Recommended front and rear gate regulatory signage 152
94. Recommended informational signage for the front entrance 153
95. Informational signage that provides directions and more modern section information 154
96. Historic marker that should be placed outside the cemetery gates 155
97. Inappropriate cemetery signage 155
98. Flower concerns at Oconee Hill Cemetery 157
99. Example of grave decorations 158
100. Examples of trash observed in Oconee Hill Cemetery 159

101. Orphan and lost stones 160
102. Monument Fragment and Removal Record 161
103. Cemetery surface drain problems 162
104. Cemetery below grade drain problems 163
105. Preparation for cremains 164
106. Problems with grave opening and closing 165
107. Proper setting of a monument 166
108. Monument set in 2013 showing virtually no concrete foundation 167
109. Plot curb issues in the Cemetery 170
110. Examples of incorrect and poor repair practices 181
111. Tilted monuments 182
112. Displaced or sunken monuments 183
113. Cradle grave problems 184
114. Examples of loose or fallen monuments 186
115. Examples of broken monuments 188
116. Examples of damage caused by ferrous pins 189
117. Cleaning issues at Oconee Hill Cemetery 191
118. Variation in wall designs 194
119. Examples of walls requiring repair or replacement 197
120. Three examples of retaining wall designs 199
121. North Slope fence 200
122. Fence types and common problems 202
123. Damage and improper resetting to the Cemetery's sole zinc monument 204

LIST OF TABLES

Table

1. Secretary of Interior's Standards for Preservation 6
2. Acreage of cemetery sections 17
3. Comparison of Lot Prices 34
4. Road Condition Assessment 46
5. Condition of Stairs 51
6. Plot Amenities by Section 85
7. Recommended Liming for Turf Areas 101
8. Comparison of Historically Appropriate Trees 102
9. Tree Issues by Section 105
10. Certified Arborists Working in the Athens Area 115
11. Dominant Shrubs and Plantings by Section 116
12. Oconee Hill Cemetery Records Photocopied and Scanned 173
13. Monument Problems in Oconee Hill Cemetery 180
14. Comparison of Different Cleaning Techniques 190
15. Condition of Walls at Oconee Hill Cemetery 193
16. Fences in Oconee Hill Cemetery 201
17. Prioritization of Recommendations 210-225

Introduction

Oconee Hill Cemetery is located in Athens, Georgia and was began in 1856 as the citizens recognized that the Old City Cemetery was filled and additional burials were prohibited (Marshall 2009:515; Trinkley and Hacker 2006:11). Situated on the banks of the North Oconee River, the topography varies from floodplain to steep hills. As the original section on the west side of the river was filled, additional land was acquired on the east side and this area continues to be used today.

It is identified as parcel number 172C3 C099 and listed as 81.8 acres, although the cemetery tract is typically referenced as 99 acres. We have calculated that there are about 38.8 acres in plots, about 0.5 acres used for administrative buildings, 2.4 acres open pasture, and 0.6 acre used as a dump.

Figure 1. View of topography and monuments typical of the earliest section of Oconee Hill Cemetery.

While there are reportedly over 8,000 interments at Oconee Hill, not all are marked. It is estimated that there are about 5,500 monuments pre-dating 1964.

The cemetery was placed on the National Register of Historic Places in May 2013 and is significant under Criteria A (association with events) and C (embodies distinctive characteristics). The burial monuments reflect funerary traditions from the mid-nineteenth century through the present day. Architectural styles such as Greek Revival, Gothic Revival, High Victorian Gothic, and Egyptian Revival are found in mausoleums, obelisks, headstones, and other markers. The landscape architecture is characteristic of the picturesque Rural Cemetery movement, popular in the mid to late nineteenth century. This style is recognized by meandering roads, integration of natural topography, ornamental plantings, and delineated family plots with fences, curbs, and ornate monuments.

The cemetery is also recognized in the area of community planning as it represents the city's effort to provide a public cemetery as an alternative to the crowded Old Athens Cemetery on Jackson Street. Oconee Hill is also significant in the areas of social history and African American heritage because it includes a segregated

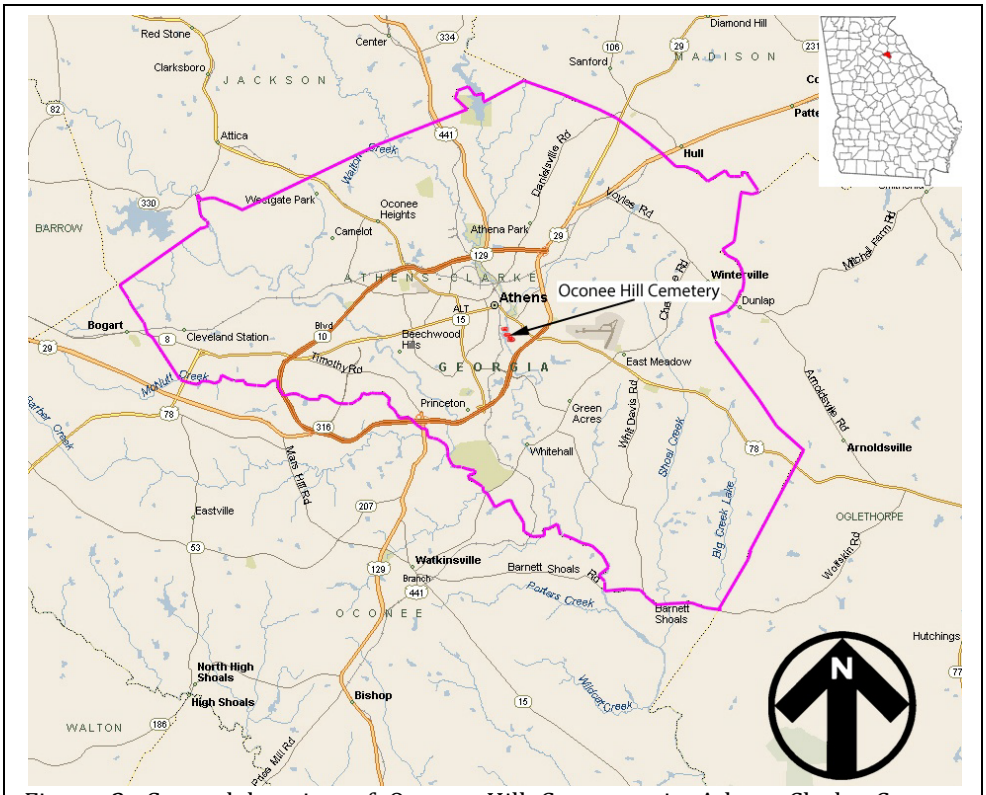


Figure 2. General location of Oconee Hill Cemetery in Athens-Clarke County, Georgia.

section for African American burials. There is a similar Jewish section in the cemetery that is associated with the city's Jewish community. Finally, the cemetery includes a Pratt through-truss bridge, one of the few remaining in Georgia.

The Project

Since at least 2011 the Friends of Oconee Hill Cemetery have considered the importance of having a preservation assessment of the cemetery conducted. Unfortunately, regardless of the project's importance and potential to improve long-term preservation planning, funding was not readily available. This year the Georgia Department of Natural Resources, Historic Preservation Division awarded the Friends of Oconee Hill a grant to allow an assessment to be conducted.

A scope of work for the project was issued on August 21, 2013 and Chicora provided a proposal for the work on August 26. An agreement to perform the work was signed on October 16, 2013.

The assessment was conducted from November 18 through 21, 2013 by the authors, Michael Trinkley and Debi Hacker. The work involved a three and one-half-day inspection of the cemetery. The work included not only a careful inspection of the overall cemetery condition, but also a series of meetings with representatives of the Friends of Oconee Hill, the Oconee Hill Trustees, the Athens-Clarke County government, as well as the cemetery sexton, Mr. Brian Adler.

This document may be viewed as a "comprehensive or master plan" in so far as it is a long-range plan that provides a policy framework to guide preservation planning decisions. We view long-range as ideally five years, believing that after that length of time progress should be evaluated and needs of the cemetery re-assessed. This document is not, however, a business, financial, or fundraising plan, although each of those topics impacts preservation and will be at least briefly examined.

This preservation plan incorporates issues of not only maintenance of the landscape, but also security, pedestrian and vehicular access, vandalism, and maintenance of the cemetery's hardscape. The assessment also includes a review

of critical conservation issues associated with monument, the receiving vault, plot fences, retaining walls, and coping.

The presence of a plan, however, does not guarantee improvement. This document is a "road-map" for preservation issues, but it is incumbent on the Trustees to not simply implement its recommendations, but to embrace them. This may be difficult; change is difficult and many of the recommendations focus on fundamental operational changes.

Yet failure to make substantive changes will have serious effects on the long-term quality of the landscape, the cemetery monuments, and the cemetery's community support.

Oconee Hill Cemetery is fortunate in that the group requesting this study is active, energized, and seriously interested in the long-term preservation of the property. The Friends of Oconee Hill Cemetery form the constituency that is critical for a property's preservation.

Why Preserve?

Preservationists may take the question "why preserve" for granted; yet it remains an important issue, especially in the current economic climate. It is useful to provide at least some brief discussion of why preservation of Athens's Oconee Hill Cemetery is a worthwhile – even critical – goal for the city and its citizens.

Cemeteries are different from all other types of historic sites. Most fundamentally they contain the physical remains of past generations and are considered sacred, consecrated ground. The right to a decent burial has long been recognized in common law. So, too, is the duty to continue a cemetery once begun. Thus a municipality or other organization, by opening a cemetery, creates a duty through its officials to execute the trust and maintain the cemetery for the benefit of the public.

Cemeteries are also artistic sites, such as a sculpture garden or outdoor museum, which contain a collection of three-dimensional artifacts. The monuments trace changes in both designs and social attitudes toward religious and moral views, death and eternity. They provide examples of the largely disappeared art of stone carving, illustrating numerous famous artisans. They are permanent collections, but must be considered finite and irreplaceable.

These collections are archives, having the same value and importance to the community as any archives. They are storehouses of genealogical information that often cannot be identified through any other means. They provide information concerning both the individual and collective pasts.

Sometimes it is thought that once a genealogical assemblage of the cemetery is collated and published, archival concerns have been fulfilled. This is incorrect. Few such compilations include detailed photographs and full transcriptions, including verses.

In addition, part of this archive is the archaeological and bioanthropological information the cemetery contains – even if the burials are never excavated. The graves and tombs can provide information on mortuary behavior, such as the coffins and hardware chosen by relatives. The human remains can provide information on diet, disease, and burial practices – information that is available from no other source.

Cemeteries are also scenic landscapes, similar to parks or open spaces, except they are much more. They are far more fragile and susceptible to damage and deterioration. As such they require distinctly different care.

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

Beyond these ties to the community's history and the ethical responsibility of caregivers, the preservation of our past also has clear economic benefits to a community. These serve to dispel the argument that while history may be important, there are more pressing needs. History can, in fact, generate the economic stimulus to help address the other needs of a community.

Taking just a few examples from the numerous studies available:

- Historic preservation activities generate more than $1.4 billion of economic activity in Texas each year.
- Rehabilitation of historic properties in Georgia during a five-year period created 7,550 jobs and $201 million in earnings.
- Each dollar of Maryland's historic preservation tax credit leverages $6.70 of economic activity within that State.
- In one year, direct and indirect expenditures by heritage tourists in Colorado reached $3.1 billion.
- A New York state study found that prices of houses in historic districts are higher than those of similar houses outside historic districts.
- A detailed Massachusetts study found that heritage tourism travelers spend "considerably more" than other travelers and that most come from out of state, further accentuating the economic contribution of heritage tourism. The study found that heritage tourists contributed an estimated $2.5 billion annually over the 1998 through 2000 period. Considering both direct and multiplier effects, Massachusetts received annually from heritage tourism 53,000 jobs; $1.2 billion in income; $1.8 billion in gross state product; $559 million in taxes (including $301 million in state-local taxes); and annual in-state wealth creation of about $1.5 billion.

Thus, we see a broad range of reasons why we should be concerned about the preservation of Oconee Hill Cemetery. We argue, in fact, that the significance of cemetery preservation is actually greater than the sum of its parts.

Preservation or Restoration?

Preservation 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 too often knows little of the Secretary of the Interior's Standards for Preservation and may 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 1989:245)

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 (Ruskin 1989:241).

In contrast, preservation (or conservation for that matter) can be defined as preventing or delaying loss, depletion, waste, or harm. Preservation seeks to limit natural deterioration.

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

Preservation Fundamentals

Preservation is not an especially difficult concept to grasp, although the key principles are not always clearly articulated. The fundamental concepts are well presented in the Secretary of the Interior's Standards for Preservation (see Table 1).

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

For example, all other factors being equal, a cemetery should be used as a cemetery. Until the caregivers are able to do what needs to be done, it is their responsibility to make certain that the site is preserved – it must not be allowed to suffer damage under their watch.

Caregivers must work diligently to understand – and retain – the historic character of the cemetery. In other words, they must look at the cemetery with a new vision and ask themselves, "what gives this cemetery its unique, historical character?" Whatever it is, those undertaking its care and preservation become the guardians responsible for making certain those elements are protected and enhanced (whether they are particularly appealing to the caregivers or not).

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

The Secretary of the Interior reminds those responsible for the resources that each and every cemetery has evolved and represents different styles and forms. Few, if any, cemeteries are "frozen in time." For example, Oconee Hill Cemetery, while originating in the late antebellum period, contains examples of a variety of later memorials, including late nineteenth and early twentieth century granite die on base monuments. The landscaping provides transitions from a Victorian Rural Cemetery picturesque landscape to an early twentieth century lawn-park.

It is the responsibility of care-givers to care for all of these modifications and not seek to create a "Disney-land" version of the cemetery, tearing out features that don't fit into their concept of what the cemetery "ought" to look like.

Likewise, caregivers are reminded that there will be designs, monuments, and other features that characterize the cemetery – and the caregivers are responsible for identifying these items and ensuring their preservation. Caregivers must be circumspect in any modifications, ensuring that they are not destroying what they seek to protect (a problem with virtually all "restoration" efforts).

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

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

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

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

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Before acting, those responsible for preservation are required as good and careful stewards to explore and evaluate the property, determining exactly what level of intervention – what level of conservation – what level of tree pruning – is actually necessary. And where it is necessary to introduce new materials – perhaps a pathway – into the cemetery, they must do their best to make certain these new elements are not only absolutely necessary, but also match the old elements in composition, design, color, and texture.

In other words, if the cemetery has soil pathways, they would be failing as good stewards if they allowed concrete pathways – especially if the only justification was because concrete was less expensive or easier to maintain.

Where conservation treatments are necessary, the Secretary of the Interior tells stewards that they must be the gentlest possible. However phrased – less is more – think smart, not strong – caregivers have an obligation to make certain that no harm comes to the resource while under their care. And again, one of the easiest ways to comply is to make certain that caregivers retain a conservator subscribing to the ethics and standards of the American Institute for Conservation.

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

These are especially critical issues for the Oconee Hill Cemetery. The cemetery has been

fighting gradual – and at times exponential – deterioration since at least the late nineteenth century. The most historically significant portion of the cemetery receives little preservation focus and is not on a routine maintenance plan. At least one reviewer comments that maintenance in the old section of the cemetery is "under-prioritized" (Abbott 2012:92). Many retaining walls are failing. Many monuments require either straightening or more extensive repair. Many trees require pruning or removal.

Attention to the Secretary of Interior Standards for Preservation is even more critical today since Oconee Hill has just this year been listed on the National Register of Historic Places. There is no longer an option for "business as usual." The Trustees and Friends must embrace these Standards and we recommend that a joint meeting be held during which the standards are fully explained to all members.

A Brief History

Historical details have been presented by Marshall (2009), the National Register nomination (Moffson 2013), and a recent publication by Duncan (2013). These sources should be cited for a more complete history.

With the decline and eventual closure of the Old Athens Cemetery on the University of Georgia campus (Trinkley and Hacker 2006) the citizens of Athens sought a new burial ground. A 17-acre parcel on a bluff above the west bank of the North Oconee River was purchased by the City from the Hopping Estate in March 1855.

An initial 3 acres were laid out by a Mr. McDowell, although University of Georgia math professor James Camak is given credit for the planned grid of family plots and the meandering roads that follow the hilly topography of the early section. Three classes of lots were established, selling for $10, $25, and $50. Provisions were also apparently made for a "colored" and pauper burying ground in 1857. Both were located on the low floodplain along Tanyard Creek.

In October 1856 the City created a self-perpetuating Board of Trustees for the cemetery. It is reported that the City transferred not only the property, but also full authority (Marshall 2009:468). The Georgia Assembly passed "An Act to Incorporate the Trustees of the Oconee Hill Cemetery and to Confirm the Title of Lots Therein" in 1860. The law conferred on the Trustees the "power to hold real and personal estate, and convey the same, and do all other acts necessary to carry out the purposes of the corporation." It also specified that "the title to the land transferred to said Trustees by the corporate authorities of Athens, be confirmed in said Trustees – and in all purchases of lots from them."

Whether the City provided a title to the originally purchased property is unclear. One researcher, Janine Duncan, notes that many early deed books – including the one that would record the earliest Oconee Hill transfers – were misplaced, lost, or destroyed during the Civil War. While some deeds are may be available at the UGA Hargrett Library Archives (MS 2194, Athens Town Council records, "Oconee Hill Papers: Reports, Horticultural Information & Miscellaneous") research of these files was beyond the scope of this work.

In any event, the Trustees consistently returned to the City to authorize their actions and even acquire additional land. Thus, regardless of the intent, it seems arguable that the Trustees simply managed day-to-day operations of the cemetery, while the City continued to direct major policy.

For example, in December 1860, the cemetery superintendent, Robert Chapple, corrected an article in the *Southern Watchman*, explaining that the cemetery was owned by City of Athens. Far more telling, in March 1882, the Trustees asked the City to declare the cemetery roads "public roads" in order that they could be maintained by the street force. This request was granted and in-so-far as we can determine, was never revoked.

In 1873 the Congregation Children of

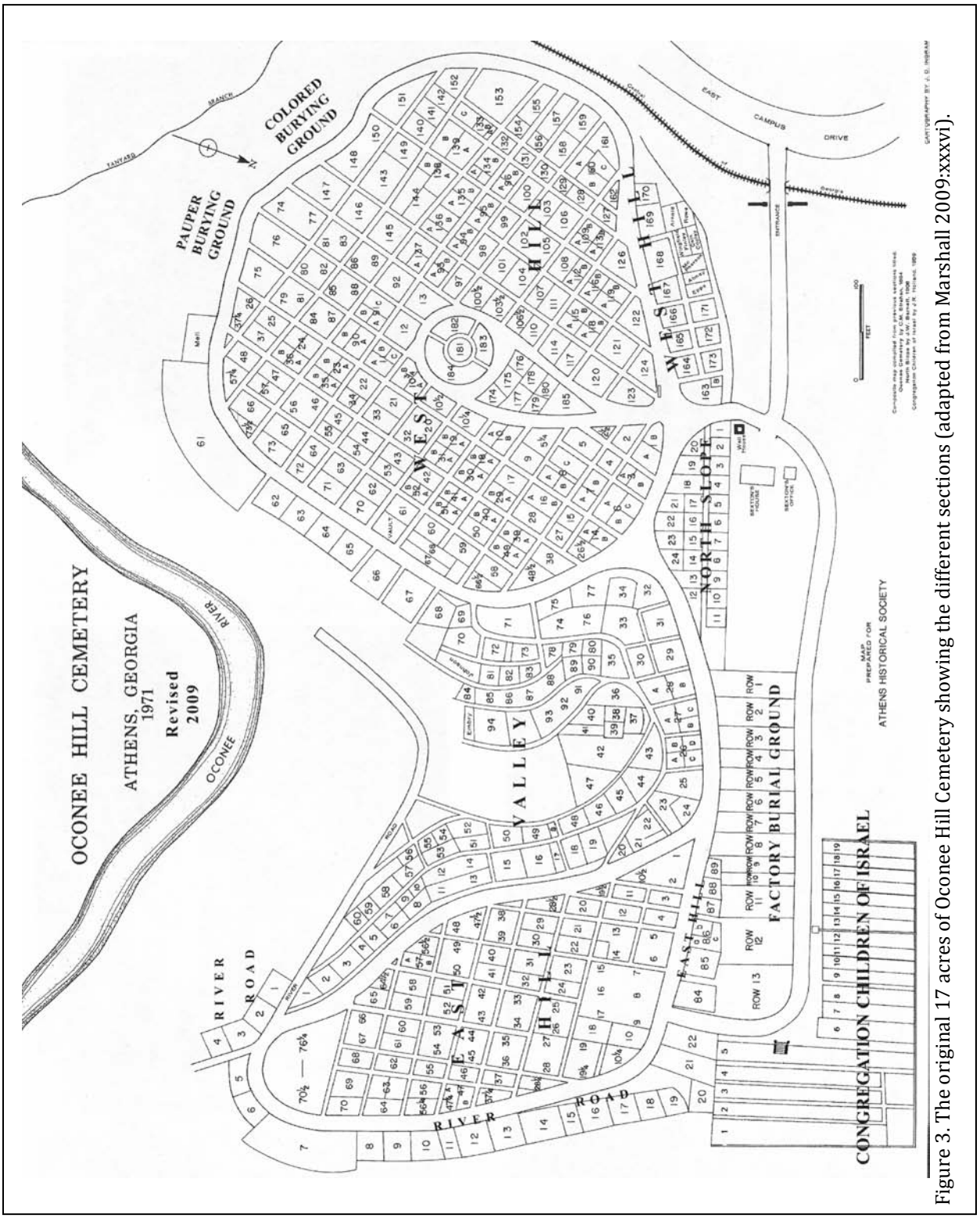


Figure 3. The original 17 acres of Oconee Hill Cemetery showing the different sections (adapted from Marshall 2009:xxxvi).

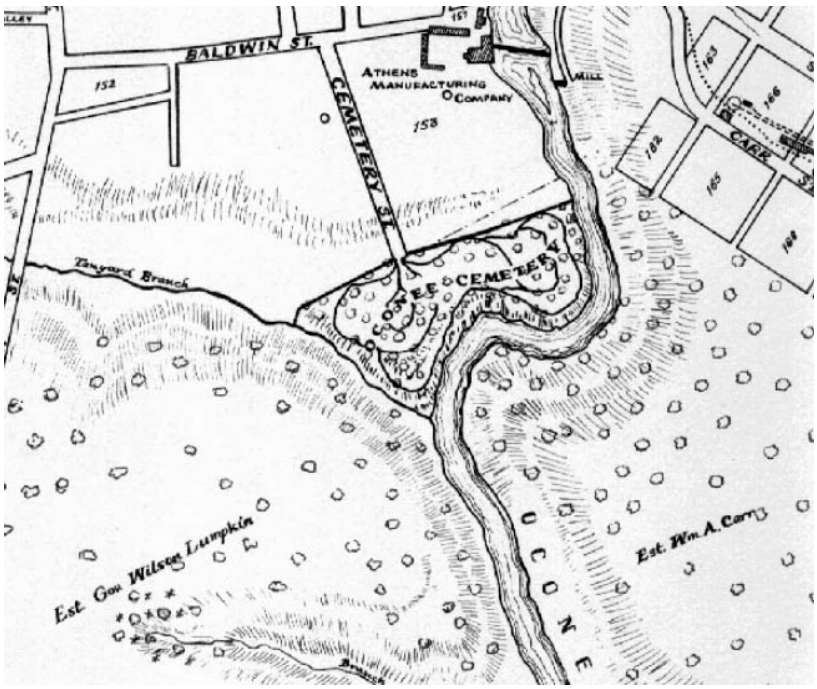


Figure 4. Portion of the 1874 *Map of the City of Athens* showing the original portion of Oconee Hill Cemetery. To the north is the Athens Manufacturing Company which created the Factory Burial Ground.

Israel purchased land from the Athens Manufacturing Company adjacent to Oconee Hill. This established a section for Jewish burials, although the Jewish ground is owned and managed by the Congregation.

Already established by this time was the Factory Burial Ground (Marshall 2009:419). Created by the Athens Manufacturing Company for the burial of its employees, it continued in use even after the company declared bankruptcy in 1904 and reopened in a new location under a new name (Moffson 2013:9).

In 1888 when the Macon and Covington Railroad sought to come through the cemetery, the Trustees presented the agreement to the City Council for ratification and signing by the Mayor.

Between 1889 and 1904 portions of the African American burial grounds were "lost;" first to the construction of the Covington and Macon Railroad just mentioned and later to the construction of a sewer line by the City in 1904 (Moffson 2013:10).

The caretaker role of the Trustees was confirmed by one of the members, Judge Howell Cobb, in 1897, when he explained that the City purchased the cemetery and while it was in the hands of the Trustees, it was really owned by the City (Abbott 2012:42).

By 1897 Oconee Hill was nearly out of plots and the Trustees requested that the City acquire additional land on the east side of the river to allow for expansion. Marshall (2009:470) notes that 81.8 acres were purchased from Thomas Bailey and the deed was made to the Trustees (Clark County Register of Deeds, DB QQ, pg. 548). Abbott (2012:42-43) assumes that this means the City denied the request by the Trustees to acquire the property. This seems plausible, yet an *Athens Daily Banner* opinion piece in 1904 argues that the cemetery should be taken over by the City with lots sold at reasonable prices,

> The city only paid fifteen hundred dollars for the new portion of the cemetery and there is no reason why the sale of lots should be at such figures as would bring to the city any great income on the investment. The city should not charge its people heavily for lots its cemetery (*Athens Daily Banner*, February 11, 2904, pg. 2)

Without more definitive research it is not possible to determine who paid for the new section at Oconee Hill. We know, however, that to reach the new cemetery section a steel thru-truss

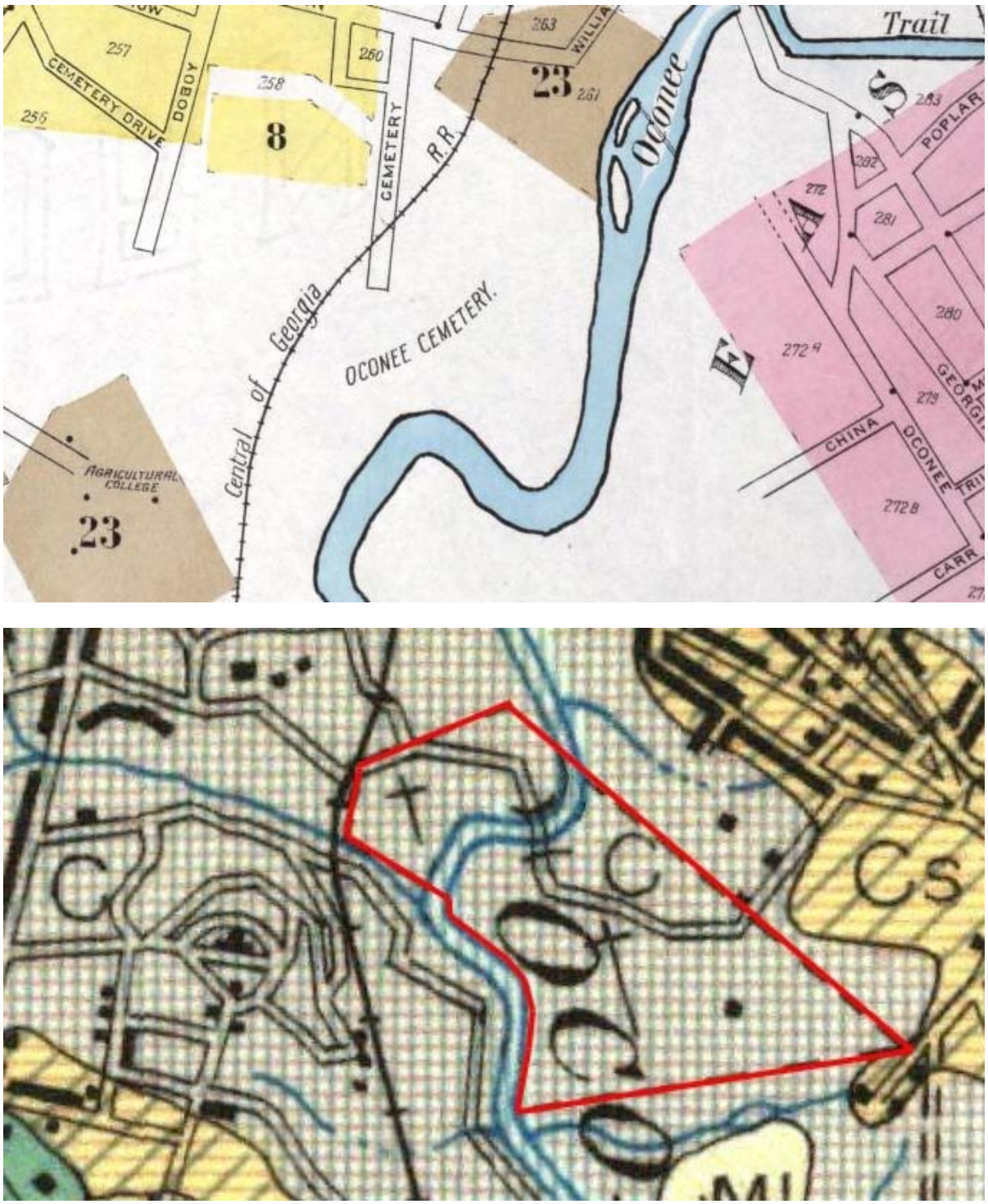


Figure 5. Oconee Hill Cemetery in the early twentieth century. At the top is the 1918 Sanborn map of the area. Below is the 1927 Soil Survey of Clarke County showing the cemetery expansion.

bridge was constructed, with the City providing the bulk of the funds. Lots on the east side were also laid out by the City Engineer, J.W. Barnett.

In 1904 the Georgia Assembly amended the 1860 law establishing the Board, by making the mayor of Athens an *ex officio* member, "with all of the rights and powers of the other members."

In March 1906 the City began allocating $300 a year for maintenance of the cemetery instead of the "two hands" that they had previously assigned to the cemetery. Nevertheless, in late April 1906 the City was still assigning its "street force" to cemetery clean-up duty.

It does not appear that anyone has determined when the City ceased its $300 a year appropriation or the reason for its termination.

On October 31, 1914 a report on the cemetery's vegetation and maintenance by Dr. T.H. McHatton, a horticulture profession at the State College of Agriculture was published by the *Athens Banner*. He recommended to the Trustees a broad program of plantings and refurbishment. While some recommendations, such as the removal of fences, are inappropriate from a preservation perspective, other ideas remain viable, including the need to thin vegetation. Perhaps the most telling comment concerned the need for additional staff,

> What the property needs at this time is keeping up. . . . The most crying need of the Cemetery, at this time, is labor; it is impossible for the small force now attached to the property to do more than keep the weeds out of the most used roads ("Ideal Plans are Suggested to Oconee Cemetery Trustees," *Athens Banner*, October 31, 1914, pg. 5).

In 1915, the General Assembly again amended the 1860 law creating the Board of Trustees, this time providing them the authority to establish a perpetual care fund. This law was immediately challenged and in an August 6, 1915 opinion, the Georgia Attorney General stated that the General Assembly had no power to either create private corporations or to amend or renew their charters under the state constitution (Walker 1917:48-50). Apparently the issues were resolved since the law was in effect by 1917.

While Cemetery Street was disrupted by

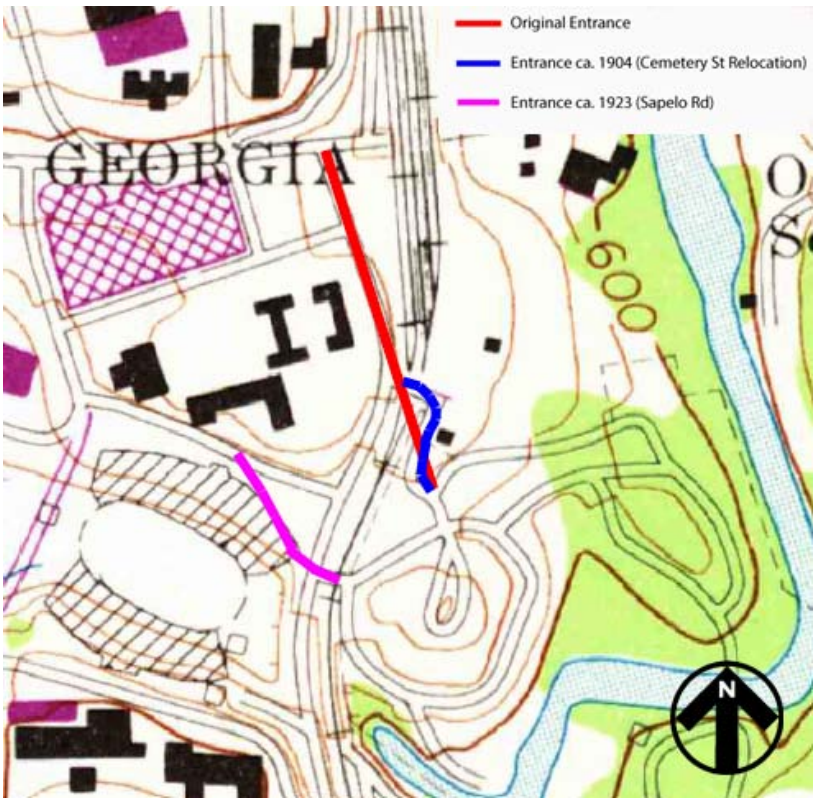


Figure 6. Entrances to Oconee Hill Cemetery over time.

the construction of the Macon and Covington Railroad, the cut was spanned by a wood bridge that was retained into the late 1960s. It was eventually abandoned and a new road was cut from East Campus Drive, entering the cemetery at the same spot as Cemetery Street. Columns and iron fence were erected in 1907, but have since been replaced with a granite entrance. The original columns were moved to within the cemetery, on the entrance road to West Hill.

The appeal to the City was renewed in a 1946 publication in which the Trustees remark that while they are "legally independent of the municipal authorities" they nevertheless felt that "City Council should make liberal regular appropriations for maintaining the cemetery," specifically "for aid in the maintenance of roads, walkways and the every-demanding bridge." In fact, the bridge, even in 1940 was considered "inadequate" and was being maintained only with "great trouble and expense" (Anonymous 1946:3,5).

By 1983 maintenance costs had soared and the Board of Trustees appealed to the City to assume maintenance operations. Presumably the request was not granted. Unfortunately, the more recent history of Oconee Hill Cemetery has focused on various public relations events and social history (Marshall 2009:512-514). Consequently there is little information on the cemetery's management or the corporate history of Board of Trustees.

We recommend that an effort be made to research this corporate history. Doing so may assist in determining if the Trustees were provided with deeds for the cemetery, when the City ceased funding maintenance, the discussions surrounding the 1983 request that the City assume maintenance of the grounds, and similar issues.

The Cemetery Location, Setting, and Context

Oconee Hill Cemetery, once at the southern edge of Athens (see, for example, Figures 4 and 5) is today surrounded by development. To the north is Stone Mill Run apartment complex. The eastern boundary includes a small run of the North Oconee River, as well as the Stadium Village Condominiums, Housing Authority apartments at the end of Carr Street, and additional apartments on Appleby Drive. To the south are several large undeveloped tracts bordering the US 29/129 loop. To the west is the North Oconee River. On the opposite bank the property is owned by the University of Georgia.

There is considerable vegetative screening along the east and south sides, sheltering the cemetery from the development that has encircled it (Figure 6). On the west the North Oconee River provides an effective buffer that helps maintain the rural character of the cemetery. The only significant visual intrusion is the Sanford Stadium, the home of the Georgia Bulldogs. This stadium, opened in 1929, has had multiple expansion projects including one in 2003 and another in 2004. As a result, the stadium seats nearly 93,000, making it the fifth largest on-campus stadium in the country. Only 1,500 feet to the west, it towers over the historic entrance of Oconee Hill Cemetery dominating the landscape (Figure 8).

Traffic from the apartments and houses to the east of the cemetery is primarily directed to the north and east on US 78 (Oak Street) into Athens or to the Athens loop (US 29/129). Traffic counts on Cedar Street, Baldwin Street, and River Road to the east are all over 1,000 vehicles a day and these arteries are likely at or above volume. During special events, such as football games, the roads around the cemetery are largely impassible. While the cemetery is closed to public visitation on these game days, there is an area at the entrance to the cemetery which the Trustees lease for tailgating. This lease provides a significant revenue flow to the cemetery.

Efforts to address the traffic problems include a bus system and a variety of bike routes. There are a number of bus stops on Oak Street to the northeast and Williams Street to the north. None, however, are in close proximity to Oconee

Figure 7. Aerial photograph of Oconee Hill Cemetery and the immediate vicinity. Surrounding parcels are shown in yellow.

Figure 8. Sanford Stadium from the front of the Sexton's Cottage at Oconee Hill Cemetery, looking east-northeast.

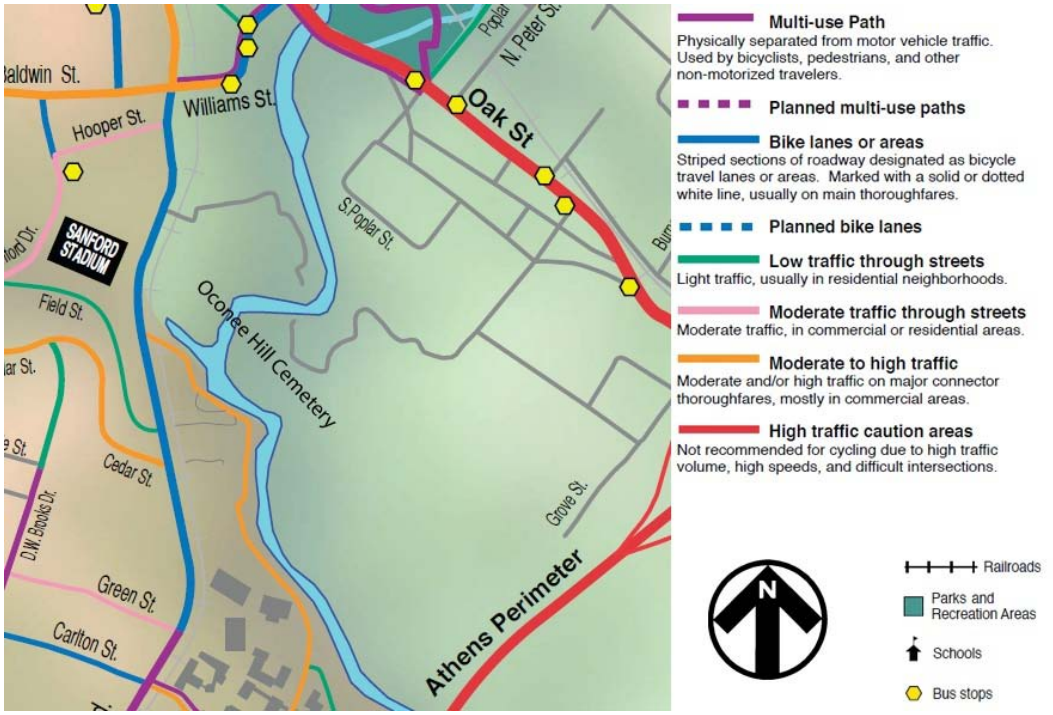


Figure 9. Bike paths and bus stops in the vicinity of Oconee Hill Cemetery.

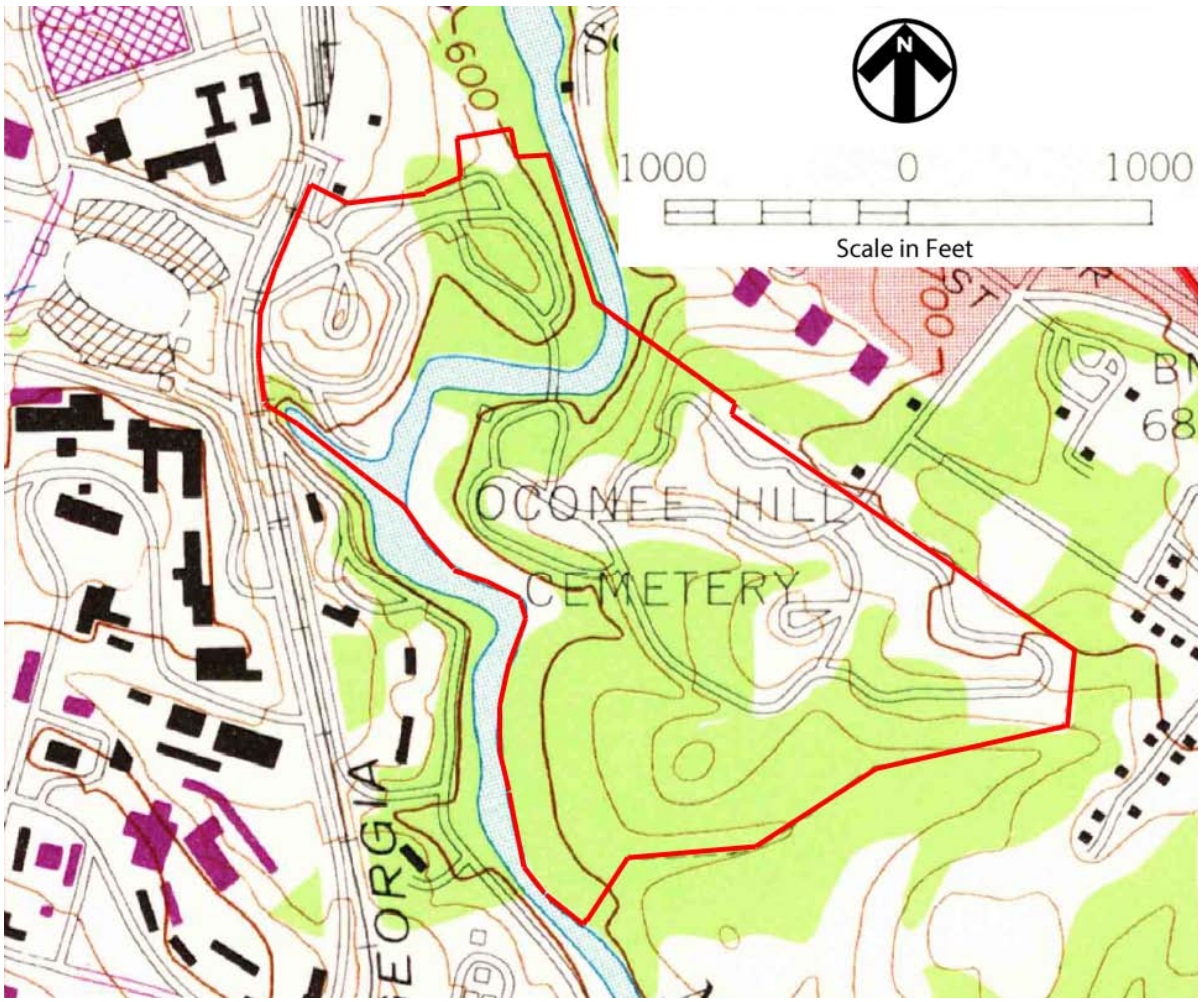


Figure 10. Portion of the Athens East USGS topographic map showing the vicinity of Oconee Hill Cemetery.

Hill Cemetery (Figure 9).

East Campus Road has a bike lane; River Road does not and it can have significant traffic, especially in commercial areas.

The main entrance (and only open entrance) is off East Campus Road, immediately east of the railroad grade crossing. A second entrance, to the new section of the cemetery, exists at the end of Carr Street. There is also a pedestrian gate into the new section, but it, too, has been locked closed.

Athens is situated in the Georgia Piedmont and the topography, as might be imagined, is rolling. The original or old section consists of two hills, to the east and west, about 625 feet apart. There is an intervening saddle, called the Valley section. To the north of this area is the North Slope (see Figure 3). What is known as West Hill has an elevation of 680 feet above mean sea level (AMSL). The East Hill is lower, with an elevation of only 620 feet AMSL (Figure 10).

The new section of the cemetery ranges in elevations from about 600 feet AMSL along the river to about 700 feet AMSL at the northeastern property boundary.

In spite of the nearby stadium, apartment houses, university buildings, and heavy traffic, the cemetery maintains a distinct rural character thanks to extensive vegetative buffering and the river. The spatial arrangement of the old cemetery is dominated by the gridded layout, square plots, abundant ironwork, and winding roads. The new section is substantially less rolling and family plots become less common, and less distinct, from north to south.

The setting and environment are consistent with the rural character. Views tend to be limited by the buffering vegetation except on West Hill, where it is possible to obtain a more encompassing view of the cemetery. Vegetation is pine and mixed hardwoods along the eastern cemetery edge. Mesic species dominate the floodplain. In the old cemetery the trees tend to be older and hardwoods are more common, including magnolia and cedars. Throughout there are more recent plantings. Shrubbery is far more common in the older section than in new portion.

Mount Auburn, the earliest Rural Cemetery, defined the movement. Lots were of a sufficient size for the burial of several generations and lot owners began developing the lots, setting elaborate family memorials and planting extensively. Within 20 years similar picturesque cemeteries had been developed throughout the eastern United States. Spring Grove was established in Cincinnati, Ohio in 1844; Richmond, Virginia established Hollywood by 1847; and Atlanta opened Oakland in 1850 (Sloane 1991).

As noted by the National Register Registration Form, the old section is characterized by its winding roads, excellent examples of funerary sculpture, abundant three-dimensional markers, Victorian iconography, extensive iron fences, carefully defined family plots, and retaining walls.

The cemetery is in most respects an excellent example of the Rural Cemetery movement, although there are notable differences. For example, at most rural cemeteries the lot owners were the cemetery's proprietors and were empowered to elect the board members and be involved in the management of the organization.

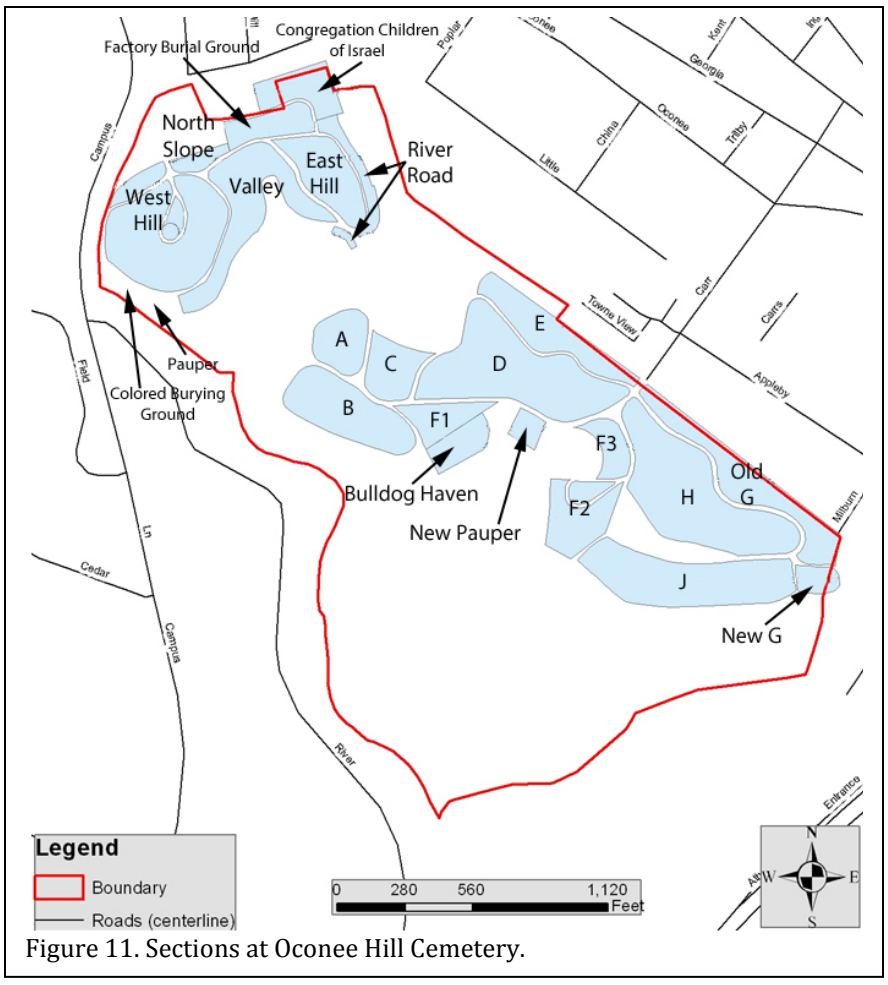


Figure 11. Sections at Oconee Hill Cemetery.

This was not the case at Oconee Hill, where a self-perpetuating board constantly sought the concurrence of the City Council.

Andrew J. Downing began to question the appropriateness of rural cemeteries by the 1840s. His horticultural and architectural writings made him a recognized expert on the American domestic landscape. While he encouraged the transformation of graveyards from sad and desolate places to a garden of consolation, he objected to how many lot owners used the cemetery as place to exhibit their power and wealth. He was especially aggrieved by iron fences and encouraged their removal from cemeteries (today these fences, where they survive, are of exceptional historical importance).

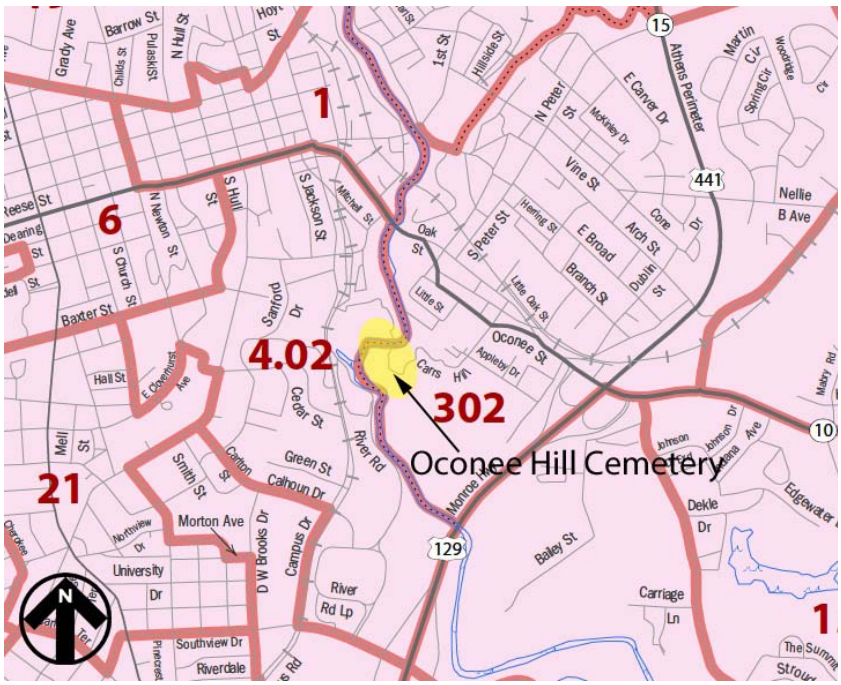


Figure 12. Census tracts in the vicinity of Oconee Hill Cemetery.

Table 2.
Acreage of Cemetery Sections

West Hill	5.00
East Hill	1.63
Valley	1.95
River Road	0.75
North Slope	0.33
Factory	0.86
Colored Section	0.75
Old Pauper	0.80
Section A	1.10
Section B	2.29
Section C	0.98
Section D	4.66
Section E	1.67
Section F-1	0.88
Section F-2	1.65
Section F-3	0.75
Section Old G	2.15
Section New G	0.81
Section H	4.72
Section J	3.85
Bulldog Haven	0.78
New Pauper	0.40

The excesses and ostentations of the rural cemetery brought about a reaction spearheaded by Adolph Strauch, a landscape gardener who worked at Spring Grove. He developed what has been called the landscape-lawn plan and eventually the lawn park cemetery. At Spring Grove fences were banned, as were large markers. Instead unassuming small markers were required, creating a more simple pastoral landscape.

We see this at Oconee Hill's new section, where the topography encouraged a more pastoral approach and monuments, dominated by granite, became smaller. Again, however, Oconee Hill is not a perfect example. Most cemeteries were using annual-care fees, bequests, and perpetual-care payments by the end of the 1870s. This was not begun at Oconee Hill for another 30 years.

Figure 11 shows the current designations for the different sections in Oconee Hill Cemetery (see also Figure 3). While we have not identified the opening dates for each section, in general the

new cemetery proceeded from the northwest to the southeast, with Section C opening in 1900, Section D in 1910, Section E in 1924, through the opening of Section J in 1988. Table 2 provides the approximate acreage for each section.

The Oconee Hill Cemetery is split between two census tracts – 4.02 on the west side and 302 on the east (Figure 12). The value in examining these areas is that they surround the cemetery and can affect it in terms of community support.

The populations of the two tracts are very different. Tract 4.02 contains nearly twice the population (7,090 compared to 4,251) and its residents are predominately white (75.5%), while those living in Census Tract 302 are predominately African American (66.1%). In comparison, whites compose about 62% of Athens' population.

Figure 13. One of the apartment complexes in Census Tract 302 outside the rear gates of Oconee Hill Cemetery.

The median age in Tract 4.02 is just under 20 years old. The residents are well educated, with a fifth holding a master's, doctorate, or professional degree and over a third holding an undergraduate degree. The average family size is 2, although just over two-fifths of the residents live alone. The majority is unmarried (95% of the males and 99% of the females). The median household income is $10,625. Nearly half of all families in Tract 4.02 live below the poverty level. Nearly all of the housing units in the tract are occupied by renters and only 3.26% are owner occupied.

Tract 4.02 clearly represents a young, white student population living in rental units with low outside-of-school income.

On the east side of the river, in Tract 302, the median age is 28 years. Educational attainment is reduced, with less than 3% having a master's, doctorate, or professional degree and only 9% holding a bachelor's degree. Families are larger, with an average of three and over a fifth of both males and females are currently married. The median household income is $21,094. While well above the income of residents to west, the median household income for all of Athens-Clark County is $33,806. A quarter of the families in this tract live below the poverty level. Although over half of the housing units are rentals, owner-occupied houses account for nearly a third of the housing units.

It appears that Tract 302 represents a predominately African American community with somewhat more stability and representing a slightly older population. Although the occupants have a somewhat higher income, this is because fewer are student and even these higher earnings are still below the poverty level for a quarter of the workers.

Thus, the cemetery is surrounded on one side by a transient student population and on the other side by a relatively poor African American community.

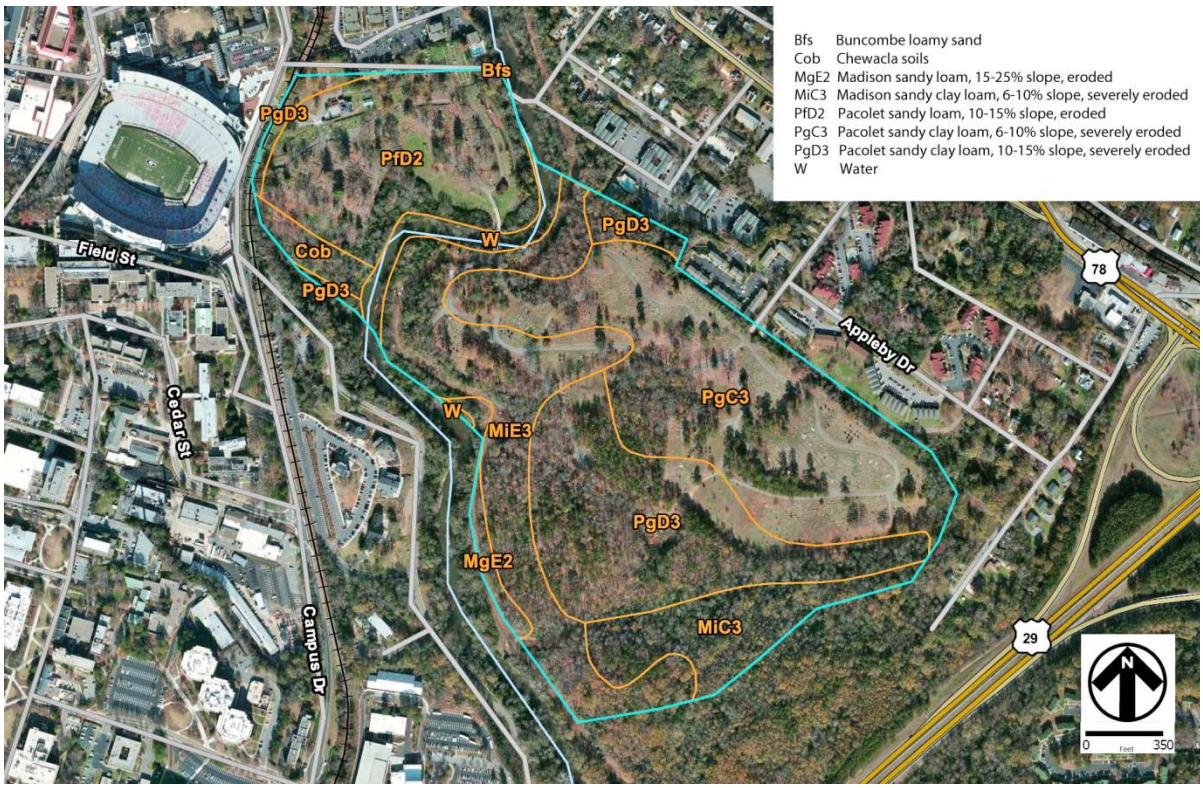


Figure 14. Soils identified on Oconee Hill Cemetery.

The 2011 index crime rate per 100,000 people in Athens was 4,852. This is significantly above the average Georgia County, where the index crime rate is 3,957 per 100,000. The current rate for property crime is 4,161 per 100,000, nearly twice the national average, and slightly higher than the Georgia rate of 4,088.

Policing at Oconee Hill is made more complex since the cemetery is split between two zones. The east side of the cemetery is in Zone 11, while the west side is in Zone 9.

The most recent count of the homeless population for Athens-Clark County is 2009 when a total of 454 individuals were identified. Nearly three-quarters claim Athens as their origin of homelessness. Of the 454 homeless, 27% are identified as chronically homeless, a third are identified as severely mentally ill, and nearly half (47%) exhibit chronic substance abuse.

Thus, while Oconee Hill is a fine example of the Rural Cemetery movement with subsequent expansion as a lawn park, it faces a variety of uniquely twentieth century issues, including homelessness, higher crime rates, and a transient population with little connection to the property's history.

Factors Affecting the Landscape Character

Athens is situated in the Georgia Piedmont, an area more rolling and hilly than the Blue Ridge in the furthest northern and northwestern reaches of the state. Most of the rocks of the Piedmont are gneiss and schist, with some marble and quartzite. Rivers and creeks form a well-defined drainage pattern flowing primarily southeastward. Clark County is part of the physiographic province known as the Winder Slope – a gently rolling area that is dissected by the headwaters of numerous streams with fairly deep and narrow stream valleys.

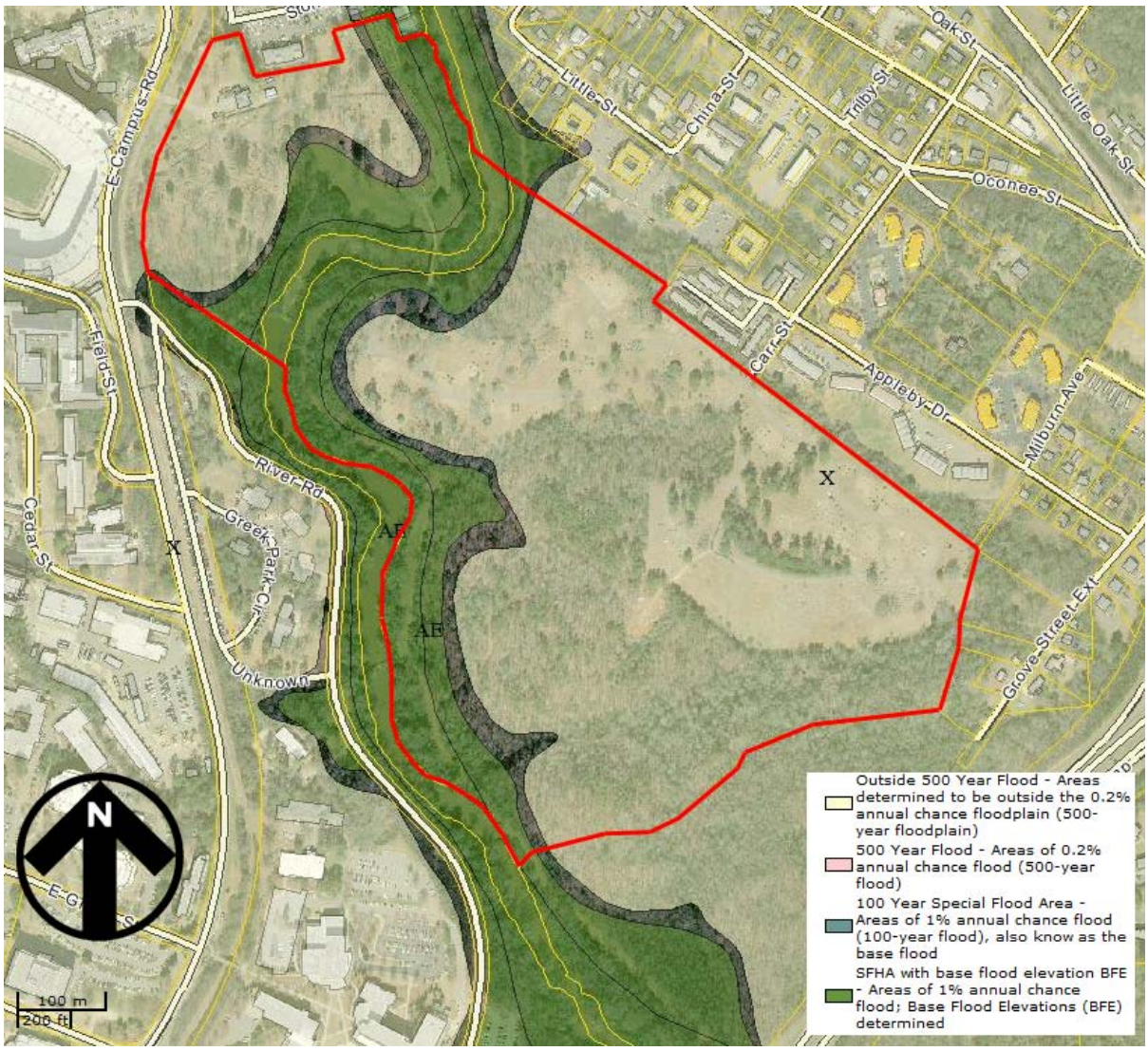


Figure 15. FEMA flood map for Oconee Hill Cemetery.

The soils in the cemetery are identified as four series: Buncombe, Chewacla, Madison, and Pacolet (Figure 14).

The Buncombe soils, which are found on only a small area at the north edge of the parcel, are excessively drained and permeability is rapid. As a result, plants can suffer during periods of drought. The soil is found primarily in alluvium on first bottoms along the North Oconee River. The soils are frequently flooded. Surface soils are generally brown (7.5YR 4/4) loamy sands (Robertson 1968:8).

The Chewacla series consists of deep, somewhat poorly drained soils on first bottoms and account for less than 2% of the cemetery. The soils are generally too wet for good cultivation. They have a surface layer of dark reddish-brown (5YR 3/4) fine sandy loam. Below is a clay-loam (Robertson 1968:9-10).

The Madison series consists of deep, well drained upland soils and account for 28% of the

cemetery. All of these soils are either eroded or severely eroded because of the steep slopes on which they are found. The soils are formed from

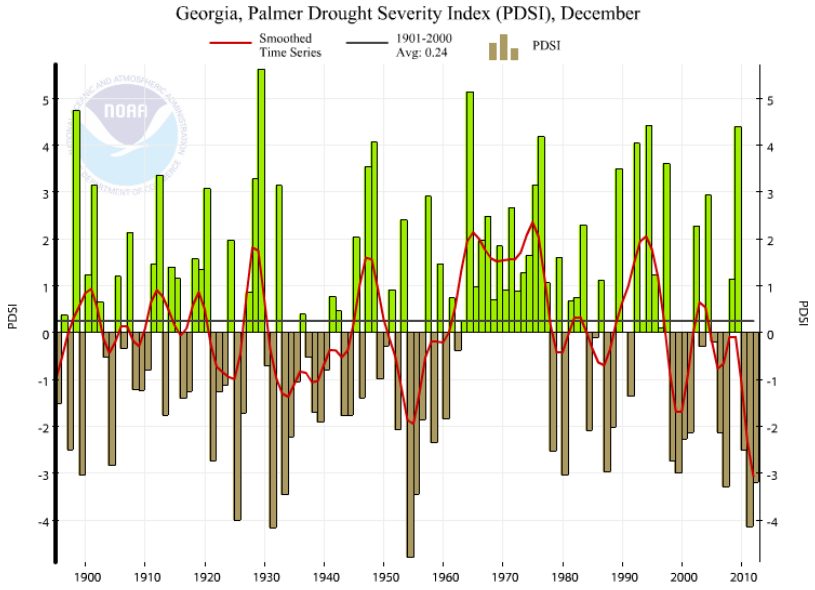


Figure 16. Palmer Drought Severity Index for Georgia.

micaceous quartz and mica schist, mixed in some places with gneiss. Subsoil where exposed is a red (2.5YR 4/8), micaceous sandy clay loam to clay (Robertson 1968:14-17).

The most abundant soil in the cemetery is the Pacolet series, accounting for 67% of the acreage. They are also well drained, sloping upland soils. They, however, were formed from a broad array of rocks, including schist, gneiss, and granite. Where eroded, the surface layers are a red (2.5YR 4/6) clay loam or clay (Robertson 1968:18-20).

As Figure 15 reveals, several areas of the cemetery are within the 100-year flood zone, including the entire Valley Section, plots on River Road, and portions of both the pauper and colored burying grounds. The 500-year flood would likely include at least some of the fringe plots on the south slope of West Hill.

Of equal importance, the flood would cut off access by way of the bridge across the North Oconee River, necessitating the use of the Carr Street entrance to the new section. It is also possible, depending on the nature of the flood event, that the bridge would sustain significant damage.

Athens is characterized by a temperate climate with mild winters and warm summers, at least by modern standards. Winter temperatures range from the low 30s to the mid-40s, while the summer temperatures are in the high 80s. During the fall, winter, and spring the weather is controlled largely by the west to east motion of fronts and air masses. Air exchanges are less frequent in the summer and maritime tropical air can persist in the region for relatively long periods – giving rise to very warm, humid days.

Typically abundant precipitation is distributed fairly evenly throughout the year, with

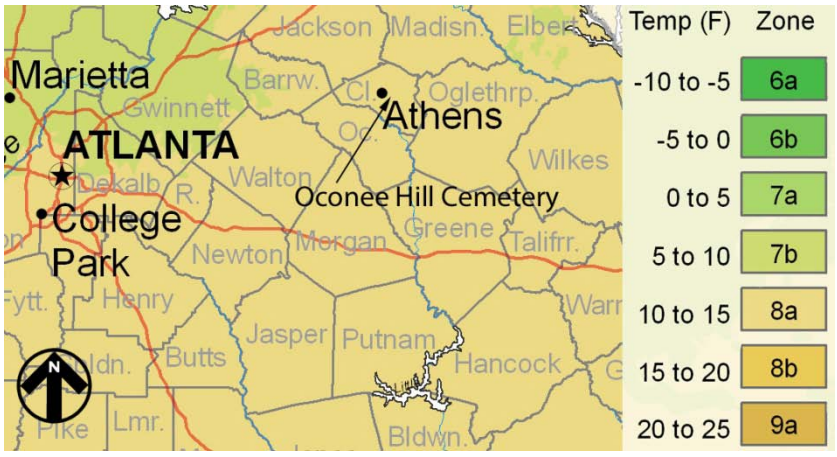


Figure 17. Plant Hardiness Zones in the vicinity of Athens-Clarke County.

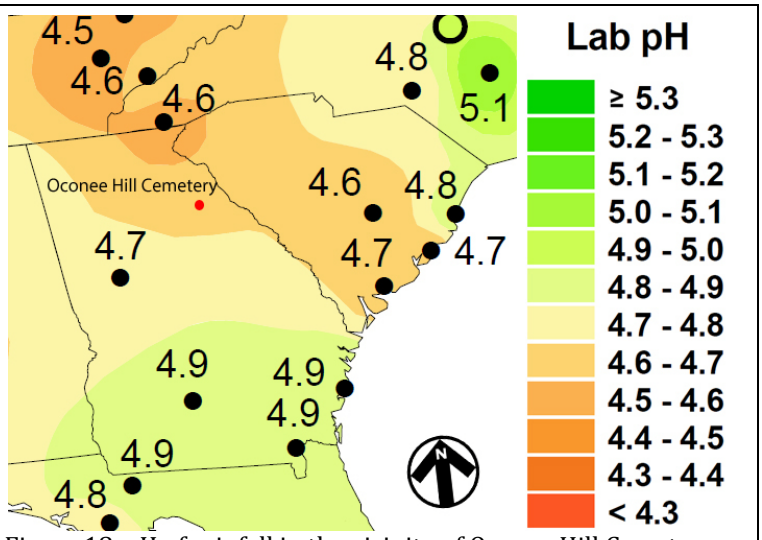


Figure 18. pH of rainfall in the vicinity of Oconee Hill Cemetery.

an average annual precipitation of about 50 inches. Figure 14, however, reveals that Georgia exhibits considerable potential for drought. On a finer scale, Athens-Clarke County is on the eastern edge of NOAA Climate Division 2, in very close proximity to Division 3. Both reveal the area may be coming out of a multi-year period of drought, although the recovery is young. Droughts can have a significant impact on plantings, even native tree species.

Another significant weather phenomenon is tornadoes. While Athens has not seen a tornado between 1950 and today, they have occurred in surrounding counties. Tornadoes are more frequent around both Atlanta and Macon.

The area has an average growing season of about 226 days, although this will vary by specific location, with low areas often evidencing late frosts. Figure 17 shows that all of Clarke County is situated in Plant Hardiness Zone 8a, where the minimum temperatures are expected to be between 10 and 15°F. Since this "new" planting zone map was released the zones have shifted even further northward, potentially placing the higher elevations of Oconee Hill Cemetery in Zone 8b.

This is also an area where hot climate grasses, such as centipede, bermuda, and zoysia are typically successful.

A factor not only affecting the landscape but also stone preservation is the level of pollutants. Based on monitoring in the region, the annual mean of NO_2 is 0.053 ppm and the annual mean of SO_2 is 0.011 ppm. These levels result in significant levels of acid rain and deterioration of marble and many sandstones. Figure 18 shows the impact of these pollutants on rainfall, with pH averages of about 4.6.

There are two sources of EPA regulated air pollution within 0.5 mile of the cemetery, both to the southwest and affiliated with the University of Georgia. Their location is significant since the prevailing winds in the summer are from the southwest, pushing any releases into the cemetery with relatively little dilution. Less mobile are three areas of hazardous waste and associated land contamination within a half mile of the cemetery.

This review reveals that the cemetery faces a variety of natural and man-made environmental factors, all of which have the potential to impact monuments, the cemetery hardscape (such as roads) and the cemetery vegetation. Long-term preservation involves balancing all of these concerns.

The only way for cemetery caregivers to deal with all of these potential events is to develop a detailed cemetery disaster plan. Just as museums, libraries, archives, and businesses must have plans to deal with floods, loss of electrical power, hurricanes, and weather events, cemeteries too must be ready to respond when there is a significant event – either weather-related or caused by humans.

Chicora Foundation has developed a detailed manual to assist cemeteries in disaster planning, but it is critical that Oconee Hill take the threat seriously and conduct the planning in order to respond in an effective and timely manner.

Recommendations

- A joint meeting between the Oconee Hill Trustees and the Friends of Oconee Hill should be devoted to a careful review of the Secretary of Interior Standards. The caregivers should focus on a fuller understanding of how daily operations affect the long-term preservation of the cemetery, making necessary adjustments to current policies and procedures.

- Historic research should focus on the corporate and legal history of the Trustees in order to better explore the relationship between the City and the Board.

- The cemetery should prepare a disaster plan to cover events such as flooding, tornadoes, loss of the bridge, and other events.

Administrative Issues

In this section we will examine a broad range of administrative issues that affect preservation efforts, including the laws protecting the cemetery, public perception, and the financial condition of the caregivers. It is important to realize that we are neither attorneys nor financial planners and the observations made here are intended to promote discussion and further exploration.

Ownership of the Cemetery

There appear to be mixed messages regarding the ownership of Oconee Hill Cemetery. For example, today Athens-Clarke County maintains that it has no authority or ownership, yet historically just the opposite was clearly the case. We have shown that both the City Council and the Mayor took very active parts in the operation and funding of the cemetery. The Mayor signed legal documents and the Council appropriated staff and funding to assist in the care of the property. The mayor was made an *ex officio* trustee, with all rights and powers in 1904 – an unusual move for an entity with no responsibility to the cemetery. The City even assumed responsibility for the roads in Oconee Hill Cemetery until the time the city and county became unified.

The Board of Trustees (Trustees) has historically been ambiguous, consistently returning to the City to fund the purchase additional lands and creation of a bridge. The Trustees did not sign the agreement with the railroad desiring to pass through the cemetery, the Mayor was the legal signatory.

The 1860 legislation confirmed ownership, but if that is the case, why was there historically so much vagueness in the relationship? The best characterization we have seen is that the Trustees assumed day-to-day management or operation of the cemetery. Management does not equate with ownership.

Abbott (2012:51) seems to be of the opinion that the Trustees own the cemetery in fee simple, although his candid interviews with Trustee members reveal that they seem either uncertain or ambivalent.

It reasonably appears that the Trustees began simply as caregivers, assuming responsibility for the operation of the public cemetery as a trust. For their part, the city had little interest in the management of a cemetery – and the responsibilities that come with such a task. It would be appropriate to resolve this issue, taking what steps may be necessary to obtain a binding – or at least authoritative – legal opinion. This has considerable impact on the long-term stability and preservation of Oconee Hill Cemetery.

Laws Protecting the Cemetery

There are only two municipal laws specifically related to Oconee Hill Cemetery.

Municipal Code Section 3-5-11 specifies that "no person shall disturb any grave or injure, mutilate or deface or remove any tomb, monument, shrubbery, railing, or other ornamental improvement . . . nor the fencing or enclosure . . . or use any of such cemeteries or burial grounds as a sink, privy or similar convenience." This provides general protection against vandalism or other malicious activities on the cemetery grounds.

The second law, Municipal Code Section

3-5-12, makes it illegal for any person to "discharge any gun, pistol or other firearm within the enclosure" of the cemetery.

The Athens-Clarke County Municipal Code also defines "any cemetery" as a public place (Section 3-16-2). Two additional code sections therefore apply.

One, Section 3-16-3, makes it unlawful "for any minor under the age of 18 years to loiter, stroll, or play in any public place unsupervised by his/her parent, legal guardian, or another adult over the age of 21 . . . between the hours of 11:00 p.m. on any day and 5:00 a.m. of the following day; provided, however, that on Fridays and Saturdays the evening curfew shall begin at 12:00 midnight rather than 11:00 p.m."

Another section, 3-17-3, makes it further unlawful for any minor to be in any public place without supervision "between the hours of 8:30 a.m. and 2:30 p.m. on any school day . . . ."

There are, of course, a broad range of additional laws that would possibly apply to the public spaces of Oconee Hill Cemetery. For example, Municipal Code Section 6-3-12, makes it "unlawful for any person to have in his or her possession any alcoholic beverages in any open container while on the public streets, sidewalks, alleyways or rights-of-way, in any public or semipublic parking facility including areas of ingress and egress, or on any outdoor public patio within Athens Clarke-County, Georgia."

Other ordinances that are applicable to appropriate cemetery conduct include disorderly conduct (Section 3-5-1), public intoxication (Section 3-5-4), setting fire to brush (Section 3-5-7), and trespass after notice (Section 3-5-30). The Trustees should seek legal clarification to determine if these laws apply to the cemetery grounds.

In addition, Athens-Clarke County has a Community Tree Management ordinance (Chapter 8-7). Clarification should be obtained regarding provisions that may apply to the cemetery. This may more readily be accomplished by consulting with the arborist, Barneycastle Forestry Services, Inc., retained by the Friends for a tree survey.

Extant Cemetery Regulations

Regulations, presumably promulgated by the Trustees, are posted both on the cemetery's current website (http://oconeehillcemetery.com/visit.php) and at the cemetery entrance. They are, however worded differently which may lead to confusion. For example, on-line rules prohibit visitation with pets, while at the cemetery the rule is posted as "no . . . unattended pets."

It is worthwhile to briefly examine each of these rules.

The statement, "please observe posted hours for visitation" is far less effective than setting permanent hours. The current phrase requires visitors to search for yet another posted notice – and there is no such posting on-line.

We understand that Oconee Hill routinely opens at 8:00 am and uses a 5:00 pm closing time in the winter and a 6:00 pm closing time in summer. Ideally, these specific hours should be posted – both on-line and in the cemetery regulation signage. These hours should correspond to the periods that staff are on-site.

The rule that "appropriate behavior and dress required" is again subjective, but it has historically been used and is generally effective.

The next rule that "Bicycles are allowed on paved roads only" is reasonable given the steep slopes, propensity for erosion, and rough terrain. It may, however, be appropriate to add, "Bicycles must yield to pedestrians and be aware of blind curves."

The prohibitions against rubbings, skateboarding, and cutting of plants or flowers are all reasonable and found at many cemeteries.

The issue of pets has already been pointed out as inconsistent. Even more

Figure 19. Posted rules at Oconee Hill Cemetery.

inconsistent is the explanation offered that the Sexton allows pets of family members visiting, but does not "like casual walkers with dogs." This creates a double standard that is sure to create ire and unpleasant public relations.

The problem with pets, specifically dogs, at cemeteries is that not all pet owners are responsible. Animals off leash can be frightening to some visitors. One of our staff has even been bitten by an off-leash dog at a cemetery. Even on-leash no one likes to see an animal defecate or urinate on a grave. Both can kill or damage shrubs and grass, and urine can stain stones. These problems are not mitigated by who owns the dog.

There are ample reasons to prohibit any pet from the cemetery. If pets are to be allowed it becomes critical that they remain on-leash, be curbed when relieving themselves, and that owners are required to pick up all waste. These provisions must be added to the regulatory signage if pets are to be allowed in the cemetery.

The rule that "photography allowed with the approval of the sexton" is very problematic. It has created considerable controversy, with the Sexton often being criticized for his unreasonable behavior while attempting to enforce the rule. Unfortunately there is no good, or easy, way to enforce a rule that is so contrary to cemetery policy elsewhere in the country. Chicora has conducted cemetery assessments from Montana, Oklahoma, and New Mexico to South Carolina, North Carolina, and Georgia, as well as from Maine to Florida. Nowhere else have we seen such a regulation.

We can see no valid reason to assume that monuments placed on open public lots possess any right of anonymity or privacy. Nor can we see how a right of ownership to an object placed in public view reasonably extends to protecting that object from photography by the public.

In fact, we have found multiple websites on-line that include photographs from all over the cemetery, ranging from Find-a-Grave to a professional photography site to Flicker. The Friends even spotlighted one of their members who has added thousands of photographs to Find-a-Grave. We have identified a video on-line made at the cemetery.

Efforts to stop photography are unreasonable and will only lead to further erosion of public support. The rule burdens the Sexton who is made "the bad guy" for attempting its enforcement and takes time away from truly important functions and duties. This rule should be immediately replaced with one that requires a permit only for commercial photography.

Similarly, the final rule prohibits tours, picnics, and outings without the approval of the Sexton. It is unreasonable to require a family that wishes to spread a blanket and have a picnic in a shady spot of the cemetery to acquire specific permission. While the intent may have been to control large groups and commercial tours, the language is vague and unreasonable. Moreover, it again burdens the Sexton, placing him or her in a position that can be criticized as arbitrary and capricious. It should be modified to clearly reflect a requirement for permitting only commercial or group activities.

Abbott has pointed out that those activities requiring permission of the Sexton are particularly vexing since the signage "suggests no course of action for visitors to follow if the sexton cannot be found, a situation which frequently occurs" (Abbott 2012:88).

The website contains a final rule that is also troubling. It specifies that "other rules are enforced at the discretion of the sexton." This should be immediately removed from the website since it is impossible to enforce rules that are not posted and the public may not be reasonably expected to be aware of. It also creates yet more work for the Sexton and engenders more public hostility. Abbott has observed the same problem.

Recommended New Regulations

There are several additional regulations that we routinely suggest at all cemeteries.

There should be a warning to the public regarding the condition of stones and appropriate treatment. This could be combined with the prohibition against rubbings and would help explain the rationale for the latter. Wording might be, "Many of the stones in this Cemetery are very old and may be easily damaged. Consequently, absolutely no gravestone rubbings will be allowed." Another along similar lines is, "Please refrain from leaning, sitting, or climbing on any monument or tomb. All children must be escorted by an adult."

As established by municipal code, it would be appropriate to remind the public, "Absolutely no alcoholic beverages, fireworks, or firearms are allowed in the Cemetery."

It is also appropriate to notify lot owners and visitors regarding your flower policy. A reasonable policy, adopted by many cemeteries is, "Flowers will be removed by the staff 10 days after holidays or when the arrangements become wilted and unsightly." This appears to incorporate some subjectivity, but it is the only approach that does not require staff to document when individual graves are decorated off-season.

It would also be appropriate to remind owners and visitors that, "No plantings are allowed within the Cemetery and the Sexton will enforce the cemetery's right to remove any plantings deemed inappropriate, diseased, or damaging to the Cemetery." This rule is consistent with the owner-specific rules on the reverse of the plot deed.

It is also appropriate to include a notice of who to contact, both for routine requests or information, as well as in the case of an emergency, "For additional information concerning maintenance issues, please contact the Sexton at _____. In case of emergency contact _____."

Public Perceptions

The quote, "perception is reality" is attributed to the cynicism of a modern politician, Lee Atwater. Nevertheless, it is to some degree true, especially with today's social media where a negative review can be published and spread around the world quickly and effectively. In addition, once stated, it becomes virtually impossible to eliminate.

The importance of this is related to the requirement that the caregivers of Oconee Hill Cemetery have as much public support as possible. The needs are so great that no one or no group can be intentionally written off in the efforts to engender support and preservation of

the Oconee Hill landscape and the cemetery's monuments. The cemetery must be relevant to all members of the public.

We often must gauge public support and perceptions using informal or even anecdotal observations. Fortunately, in this case the topic has been very well researched by Judson Abbott in his M.A. thesis, *Oconee Hill Cemetery: Envisioning a Living Landscape* (Abbott 2012). This section will not evaluate his methodology, except to say that it appears sound although sample sizes are small. It incorporates similar studies dating back to 2001 that have reached similar conclusions. A 2001 landscape management study stated, "The perception that Oconee Hill Cemetery is an isolated property that shuns visitors is not a healthy one" (Firth 2001). The situation apparently had further deteriorated by 2010 when another study found that only 40% were familiar with the cemetery, 35% thought it was closed to the public, and less than half found it a "welcoming place" (Andrews 2010). A 2011 study explained that public perceptions and access to the grounds were major barriers to the cemetery having a "successful future as part of the Athens community" (Reap 2011). Readers may refer to the original documents for additional information.

Fundamentally, Abbott asked what the public thought about the cemetery and how the cemetery might do better, while protecting the historic character – exactly the questions caregivers of Oconee Hill Cemetery should also be asking.

Who Visits the Cemetery?

It is more than a little surprising that Abbott found 41% of the Oconee Hill Cemetery visitors were between the age of 18 and 24 since often cemetery visitors are older. In addition, he found that nearly a third of the visitors over the age of 30 were out of town visitors. This suggests that much of the visitation may be from students.

Reasons for visitation are fairly typical. About a quarter of the respondents were visiting family graves, another quarter were using the cemetery for recreation, and a final quarter expressed genealogical or historic interests. An additional fifth of the respondents split their reason between recreation and historical interest. Most are not repeat visitors and we should point out that studies have found the typical period of grave visitation in America by family members is only seven years. The most stable visitation is by those using the cemetery for recreation.

Given previous discussions regarding traffic, bus routes, and bicycle routes, it comes as no surprise that 72% of the visitors arrive at Oconee Hill by automobile.

Visitor Observations

In response to the question concerning what visitors liked, primary answers focused on the cemetery's beautiful setting and its historical value. Other notable reasons included its peacefulness, and the cultural features present in the landscape, such as gravestones or fences.

When asked what could be improved, the responses typically involved maintenance issues, including maintenance deficiencies; inconsistent maintenance; the practice of piling vegetative debris, including flowers, at the edge of forested tracts; the need to improve paths; the need for additional parking; the need for more trees in the new section; and the practice of partially closing the gates prior to closing time and preventing entry.

Abbott noted that the majority of respondents report that Oconee Hill is a welcoming location, which he notes is a "dramatic turnaround from experiences that visitors reported in the press only a few years ago" (Abbott 2012:71).

During our review of on-line comments concerning the cemetery, we found that not everyone feels attitudes have changed. One individual responded, noting,

> We are a homeschool family, we visit cemeteries in any city we visit. We parked on campus and hiked a mile one way. After being

> in the cemetery for only a few minutes we were approached by a large red truck with a gruff sexton, he ask[ed] why we were there, what we were doing and no pics allowed. We hiked back to the car and paid him another visit. I do not take well to someone trying to intimidate me. I informed him that we have been to cemeteries all over the country, we know how to be respectful. I would suggest they try a different approach (http://www.athensworld.com/2006/07/oconee-hill-cemetery.html)

Abbott also believes that the passion for preservation is "clearly stronger" than the desire for more openness – a conclusion which is difficult to sustain given the sampling size (Abbott 2012:72). Nevertheless, it is encouraging that preservation is understood and supported by the visiting public.

PR Initiatives

Although Abbott's thesis is now a year old, we would hope that it has been carefully reviewed by both the Trustees and Friends in order to learn from the study and seek ways to become a more open and welcoming member of the Athens community.

In particular, Abbott offered several models that he felt would be worth consideration, including Atlanta's Oakland Cemetery and Davis Cemetery District in California. Of the two, clearly Oakland is a better match, although it does have city support, which Oconee Hill lacks.

We would also have added Spring Grove Cemetery in Cincinnati, Ohio (http://www.springgrove.org/). It was created in 1845, is a non-profit, and is also a landscaped rural cemetery. It, however, incorporates 733 acres, of which 450 acres are developed. The cemetery focuses on the business of providing cemetery services, including pre-need, but it has an exceptional community outreach program. The entire cemetery is an arboretum. Its website has a calendar of community events on the grounds, including tram tours, walking tours, twilight tours, monuments by moonlight tours, horticultural tours and talks, fall foliage tours, summer family nights, 5K runs and walks, open air concerts, grief to peace programs, remembrance walks, champion tree walking tours, plant identification tours, an Easter sunrise service, birding tours – the list is almost endless.

It seems that the Oconee Hill Cemetery Trustees are reluctant to take initiatives that are critical to the long-term health and survival of the cemetery. By using what seems to be a narrow definition of what is respectful, the cemetery is missing opportunities to create and reinforce relevance.

The Oconee Hill Trustees

The Oconee Hill Cemetery Trustees operate under EIN 58-6004647 as a 501(c)(3) non-profit and received their IRS tax exempt status in 1944.

As previously discussed, the Trustees were established in 1856 as a group of five men responsible for holding and managing Oconee Hill in trust as a public cemetery for the benefit of Athens. The subsequent 1860 legislative act created the board as a self-perpetuating entity. While the Trustees could have achieved this goal by establishing rules that elections for the positions be held at some set interval, they chose instead to establish a lifetime commitment with positions opening at death or occasionally upon resignation (the enabling legislation gives the Trustees the power to "do all other acts necessary to carry out the purposes of the corporation" and allows vacancies to be filled without specifying the mechanism).

This decision to require a life-time commitment has led to a situation where the average age of the Trustees is relatively high. Abbott noted,

> However, an age shift recently has occurred on the board, with several new trustees having joined in the last few years. Today, most board members are younger than in the past, with the average member being between 60-70 years old (Abbott 2012:53).

There remain five primary board members today, plus the Mayor of Athens who serves as an ex-officio board member as a result of the 1904 charter amendment by the Georgia Legislature. Meetings are held monthly.

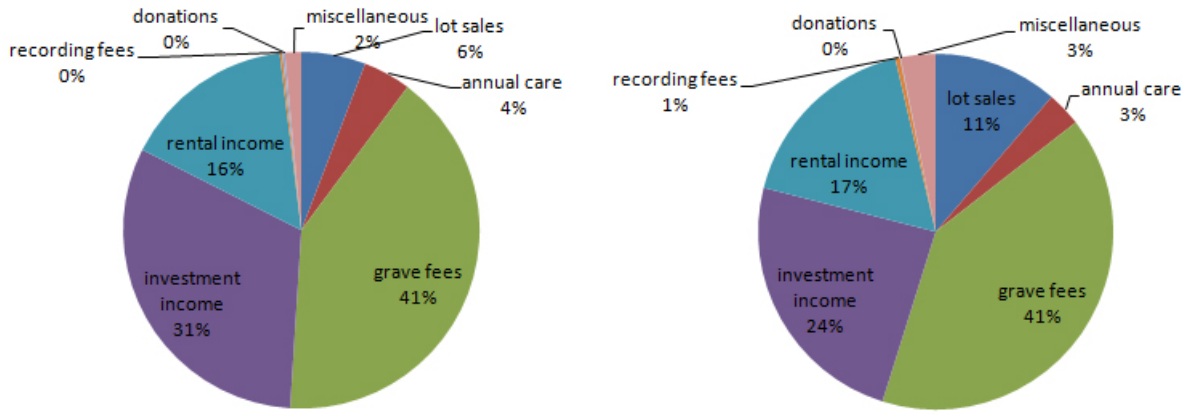


Figure 20. Revenue sources for the Oconee Hill Cemetery Trustees, 2006 (left) and 2011 (right).

In the past the Sexton did not attend the meetings and instead received instructions from the senior Trustee. Abbott correctly noted that channeling instructions through a single Trustee could conceivably create,

> a situation that could inhibit the sexton from hearing the whole range of issues the board has discussed. While it may be easier from a maintenance perspective for the sexton to take orders from a single person, the demonstrated sensitivity of his grounds surveillance responsibilities emphasizes the need for the sexton's actions to reflect the will of the whole board. Because the sexton is the only face that the visiting public typically ever sees of the management team, it is important that his actions are informed by a broad understanding of the issues the trustees are facing. Trustees could easily improve communication with the sexton in this respect by allowing him to attend monthly trustee meetings (Abbott 2012:125-126).

We are happy to learn that the Sexton has recently been asked to attend the meetings. This provides all the Trustees with the opportunity to receive a formal monthly report of accomplishments, problems, issues, and recommendations, as well as allow the Sexton to receive immediate feedback from all of the Trustees.

Abbott observes that one of the primary functions of the Trustees is to manage the perpetual care funds of the cemetery, as well as "all primary budget issues" (Abbott 2012:52). Elsewhere he acknowledges that funding for maintenance is contingent on issues such as lot sales and return on investments (see, for example, Abbott 2012:90). Thus, it may help to briefly

review those funding issues. To do so we have reviewed the Trustees' Form 990 for the current filing year (2011) and 2006, five years earlier.

Revenue in 2011 was $156,198, with the bulk ($63,086 or 40.4%) coming from grave fees. Return on investments and rental income (the rental of parking for tail-gating during football games) are the second and third largest revenue generators at $37,688 (24.1%) and $27,100 (17.3%) respectively. Combined, these three revenue streams account for over four-fifths of the cemetery's cash flow.

Grave fees were still the major revenue stream five years ago, generating $57,555 or 40.8% of the cemetery's revenue. Investment income was, like today, the second largest fund generator, followed by rental income.

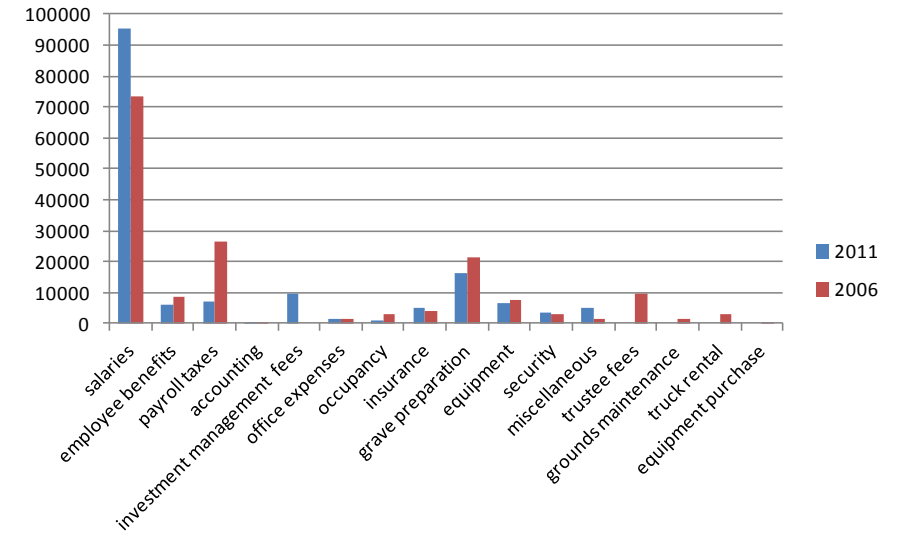


Figure 21. Cemetery expenses in 2006 and 2011.

Thus, while revenue has increased by 10% between 2006 and 2011, there has been no substantive change in how the Trustees attempt to fund the cemetery. Nor has there been any decline in revenue from lot sales – in fact it has more than doubled (although it may be that the price of lots has increased). More surprising is that annual care funds have dropped from $6,102 (4.3%) to $4,915 (3.1%). Both are very low given the large number of graves outside perpetual care, but the figures also suggest that there is no effective mechanism for converting annual care contracts to something more permanent.

In contrast, expenses in 2006 were $164,747, dropping by 5% to $156,780 in 2011. Such a reduction in expenses would be laudable if they were accompanied by the same level of cemetery maintenance. It is questionable that they were.

Figure 21 reveals that salaries have increased by nearly $22,000 or 30%, while the reported number of employees dropped from six in 2006 to five in 2011. In spite of the increase in pay, employee benefit costs actually declined, as did payroll taxes.

The cemetery's assets have increased by 20% between 2006 and 2011, from $1,052,897 to $1,275,106. These include primarily a mix of short-term and long-term investments. The investment management fee in 2011 was about 8%. Forbes Magazine reports that the typical investment adviser charges about 1.0% per year on the first $1 million dollars of assets under management. Thus, these management fees may include other services not clearly defined.

Between 2006 and 2011 the cemetery's liabilities, primarily their perpetual care funds and safe-keeping funds, have increased from $863,987 to $1,209,609.

It seems clear that the Trustees, while substantively balancing their budget, are not generating the level of funding needed for a cemetery the size or maintenance needs of Oconee

Hill.

In particular, the Trustees do not appear aggressive in their marketing of the cemetery.

The Friends recently began an ad campaign through local newspapers and on-line to generate "interest in the cemetery and to increase sales of lots." They have explained that their goal is to dispel the notion that there are no longer lots for sale. We understand the motive, but question its effectiveness when there is no mechanism to effectively follow-through on sales inquiries.

For years Oconee Hill Cemetery sold plots through word of mouth. It was "the" City cemetery, where generations of earlier Athenians were buried and it was just assumed that the cemetery would continue to be used. As a result, the current Oconee Hill website lacks a unique sales page and visitors must go to "About" and then scroll down to find "Purchasing a Lot." There the consumer finds the message to call, leave a message, and the call will be returned (http://www.oconeehillcemetery.com/purchasinglot.php).

The 2011 Consumer Reports Survey reported that 67% of customers have hung up the phone out of frustration that they could not reach a "real person." A Harris Interactive Poll found that 75% of customers believe it takes too long to reach a live agent or representative. In 2010 another Harris Interactive Poll found that 9 out 10 consumers would be willing to pay more to ensure a superior customer experience.

In contrast, Spring Grove Cemetery lists plots, locations, and prices on their website, explaining what is included and offering monthly payments for pre-need.

These few statistics should help Trustees to better understand that asking either pre-need or potentially grieving customers to leave a message to obtain burial plot pricing is a poor idea.

The Friends and Trustees should coordinate their ad campaign with personal attention – having a friendly voice on the phone when the initial contact call is made that can provide basic information, guidance, and assistance. This can be a hired office manager or it can be scheduled volunteers. The cemetery might even seek interns from a mortuary college to assist. In any case, customer service training is essential. Common sense is not adequate in today's consumer driven market.

In addition to a staffed office, the caregivers should place information concerning the availability and cost of plots on the website. The Pew Research Center's Internet and American Life Project in 2010 found that 58% of Americans perform on-line research prior to making their purchase. It is incumbent on Oconee Hills to provide customers with immediate information, regardless of the hour or day of the week – and the internet can accomplish this.

Cemetery Competition

Cemeterians recognize the presence of "heritage" facilities in some market areas. These are well-designed and well-maintained facilities with considerable antiquity. The customer base of such cemeteries derives from the family ties of those in the community whose ancestors or other significant relations are interred there (Smith 1996:167). Clearly Oconee Hill has operated as such a facility, focusing little attention on advertizing or its competition such as Evergreen Memorial Park, Athens Memory Gardens, and East Lawn Memorial Cemetery. This was not wise.

Abbott observes the impact of competition on Oconee Hill, noting that,

> Oconee Hill began to face stiff competition when the new Evergreen Memorial Cemetery opened on the Atlanta Highway in 1952. Offering a more contemporary landscape style and lower prices for burial lots than Oconee Hill, this lawn cemetery attracted much of the business upon which Oconee Hill had always relied (Abbott

2012:42-43).

Heritage facilities compete with other cemeteries in their market area on the basis of the prices they charge, as well as on the basis of nonprice factors that distinguish them from the competition. In other words, the product of the cemetery is not simply the burial right it sells initially based on factors such as location; the product includes nonprice items such as continuing maintenance and security to ensure perpetual care.

We were initially told that lot prices at Oconee Hill are lower than for surrounding cemeteries. If the data supplied is correct, Oconee Hill is actually one of the more expensive burial options in the Athens area. However, to charge a fee that is higher than other cemeteries, it is critical that Oconee Hill significantly improve maintenance, buttress its perpetual care program, and ensure that it can offer the community nonprice items to justify the rate of a heritage facility. We are not currently convinced that the overall condition of the cemetery justifies the prices being charged.

Table 3.
Comparison of Lot Prices

	Oconee Hill	East Lawn	Athens Memory Garden	Evergreen
1 space	1220	975	1265	1745
opening closing	1500	800	985	
1 space total	2720	1775	2250	1745

Other concerns focus on a lack of effort to convert annual plot care to a more permanent funding basis, with a 17% decline between 2006 and 2011. The Trustees should be proactively appealing to annual plot care holders to convert that into perpetual care. They should also be contacting those who dropped care to determine why and work to win back those lot holders.

A Look at Perpetual Care

Smith observes that what a cemetery – including Oconee Hill – sells is not simply real estate, but rather the security of perpetual care (Smith 1996:166). The attractiveness of a cemetery to both at-need and pre-need purchasers "is the adequacy of their perpetual care funds" (Smith 1996:224).

Abbott reported that, "about half of the proceeds from lot sales contribute directly to the year's budget while the other half is placed in a perpetual care trust fund" (Abbott 2012:89). This may be a convenient shorthand, but with the current price structure, one 5x10 foot lot costs either $1,220 or $1,420, plus either $550 or $660 earmarked for perpetual care. Thus, the perpetual care fee is actually 45% to 46% of the lot cost – not quite half.

But the investment of perpetual care fees is generating only 24% of the cemetery's revenue, or in 2011 about $37,700. We don't know precisely how many acres are fully under perpetual care (we are told that 80% of the 8,000 graves are under perpetual care), but if only a third of the cemetery's nearly 39 plotted acres, or about 13 acres, are under perpetual care, then the current fund generates about $2,900 per acre per year – ignoring all of the forested land and all of the plots not under perpetual care. That amounts to $242 per month per acre to take care of everything – mow the lawn, trim around memorials, treat weeds, fertilize, perhaps water, maintain roads, trim trees, repair and replace equipment, maintain buildings, cover overhead, and so forth. Would that be possible? Probably not.

If any reader doubts this analysis, look at it another way. Could Oconee Hill Cemetery hire any outside landscape firm to provide all their own equipment and supplies to take care of the perpetual care portion of the cemetery for $242 a month per acre (or about $3,200 a month)?

Of course right now, Oconee Hill is supplementing the income from the perpetual care fund with other revenue streams. This practice, while perhaps viable at present, is not

self-sustaining. As long as the cemetery has some activity – lots are being sold, graves are being dug, and so forth – the cemetery will be able to continue devoting this supplemental income to maintenance today. However, as Oconee Hill ages, sales will slow. If the perpetual care fund doesn't generate enough revenue, sales will further suffer, as visitors see conditions declining and refuse to purchase lots. This will further compound problems and at some point the cemetery will become an eyesore.

There is yet another problem created by the current operations. It has been correctly noted that law prevents these perpetual care funds from being used on non-perpetual care sections (see, for example, "Adopt-A-Lot Needs YOU!," *Friends of Oconee Hill Cemetery*, Spring 2003, pg. 4). This of course is where the non-restricted funds should come into play – these funds *could* be used to help maintain roads, non-perpetual care lots, the Sexton's Cottage, the bridge, and other aspects of the cemetery. But they *can't* be used in this fashion because the perpetual care funds are inadequate and are generating inadequate returns.

John F. Llewellyn (1998) provides a mechanism to test the adequacy of endowment or perpetual care funds. He notes that this process of testing determines "how well the cemetery is doing in fulfilling its ultimate responsibility to the families who have entrusted their loved ones to it and to the community" (Llewellyn 1998:151). Simply put, having a fund that is sufficiently large to provide the income necessary for the care of the cemetery far into the future is a fundamental responsibility.

Municipal Funding

It is reported today that the reason City Council fails to fund Oconee Hill is that they fear it will establish a precedent requiring that all cemeteries be funded, although a lack of funds at the turn of the century was another reason for the city's reluctance. While the Trustees have on numerous occasions solicited assistance and have often voiced their concern over the lack of financial support (e.g., "Local Government's Duty to Oconee Hill Cited," *Friends of Oconee Hill Cemetery*, Spring 2001, pg. 1), there is also distrust of what city involvement would bring (Abbott 2012:91).

Positions such as these place both parties (the City and the Trustees) in untenable and unsustainable positions. In terms of the City, there are numerous southern cities that operate – often in conjunction with friends groups – cemeteries, such as Raleigh (NC), Atlanta (GA), Rome (GA), and Savannah (GA). Nor is a precedent established by determining that a cemetery can be a major historic tourism benefit to the community. In addition, Athens-Clarke County has already established a precedent through its funding and support of Gospel Pilgrim Cemetery. Finally, Oconee Hill Cemetery is clearly different from all other cemeteries in Athens-Clarke County in that it was purchased by the City for use as a public, municipal cemetery.

But the Trustees must also realize that municipal support comes at a price – in this case, the requirement that they relinquish their control.

The Georgia Legislature created a law allowing communities to establish a hotel-motel excise tax, which Athens has done, collecting 7% from most stays. The law stipulates how this money must be used, a substantial proportion going to "promoting tourism, conventions, and trade shows" (Georgia Code 38-14-51). It seems reasonable that Athens-Clarke County tap into this fund to assist in the long-term preservation of Oconee Hill Cemetery.

Cremation and Future Expansion

The role of cremation continues to expand; in 1990 about 31% of individuals selected cremation, increasing to 39% in 1999, and 46% in 2004. The only notable exceptions to this trend are African Americans (20%) and members of the Baptist and Catholic religions (29%).

In spite of this, the level of cemetery property ownership has remained very consistent

over time: 59% in 1990, 57% in 1995, 55% in 1999, and 56% in 2004. This has led researchers such as Smith to observe that,

> even when cremation is incorporated into the final disposition process, the cemetery is the logical site for the permanent disposition of cremated remains. This includes inurnment followed by containment in a columbarium, as well as scattering of cremains in a memorial site (Smith 1996:380).

At present Oconee Hill is only offering in-ground burial of cremains. The cost is nearly as substantial as burial in a full-size plot. This at least partially negates one of the primary reasons reported for cremation, its lesser cost.

Oconee Hill may wish to explore other options, including the creation of a columbarium or scattering in a natural setting. There are clear density benefits in such approaches. It is possible to inter between 1,000 and 1,250 single density casketed burials per acre, compared to the burial of 6,000 to 7,000 cremated remains, or 30,000 to 60,000 niche interments in columbariums.

The Friends

The Friends of Oconee Hill Cemetery were incorporated in 2003 with the mission statement,

> to build a partnership between the cemetery and the community by focusing the attention in a positive manner on the cemetery's beauty, historic legacy, facilities, and needs, particularly for the restoration and for support of the cemetery through membership dues and other funding (Friends of Oconee Hill Cemetery, 2011 IRS Form 990-EZ).

The organization operates under EIN 582662835 and was determined to be a 501(c)(3) non-profit by the IRS in 2003, although they were established in 1999. The Friends organization has about 300 members and is lead by a Board of Directors that includes five officer positions that rotate on two-year terms.

Prior to this assessment the Friends have undertaken projects that the membership felt enhanced the cemetery, without any specific prioritization or consideration of long-term impacts. Examples of projects cited by Abbott include the renovation of the Sexton's House, now rented out; creating a memorial plaza at the cemetery's entrance; planting new trees; initiating an adopt-a-lot project; analyzing broken water pipes; painting the cemetery bridge; building a garage and shed; and initiating the process to nominate Oconee Hill for inclusion in the National Register of Historic Places (Abbott 2012:55). Most recently we understand efforts are being undertaken to fund a chapel.

There can be no disagreement that the Friends have been very active, funding a wide-range of projects, many of which are very worthy.

Not all of the projects funded, however, have had equal merit. For example, it is questionable whether the erection of a flag pole ("President's Report," *Friends of Oconee Hill Cemetery*, Fall 2004, pg. 1) makes a substantive improvement to the cemetery. Of course, that is the goal of this report – to provide prioritized recommendations for long-term preservation benefits.

In some cases the problem occurred in the implementation of the project. For example, we are very supportive of planting trees, but those trees must be selected with considerable care. The suggestion of post oaks, mockernut hickories, magnolias, and beech trees are perhaps not the best solutions for a cemetery setting ("Planting Trees," *Friends of Oconee Hill Cemetery*, Spring 2004, pg. 3). All of these suggested trees have problems ranging from poor drought tolerance to

surface roots, to the production of large amounts of litter.

But beyond establishing priorities, another legitimate concern is the long-term stability – or sustainability – of the projects. For example, we fully endorse the efforts to recover the Pauper and Colored burying grounds. We cannot agree more with the observation that the effort "rights a historical wrong and restores dignity to the cemetery" ("Restoration of Two Historic Sections of Oconee Hill Cemetery," *Friends of Oconee Hill Cemetery*, Spring 2013, pg. 4). The problem is the long-term sustainability of the work. One of the two articles concerning the project suggests that "the area should be ready to be managed by the Sexton and his staff" ("The Friends Face Newest Challenge," *Friends of Oconee Hill Cemetery*, Fall 2012). It is difficult to envision how this is possible when other sections of the cemetery are not routinely maintained in an acceptable fashion.

Figure 22. Revenue sources for the Friends in 2011 and 2006.

Other projects produce similar concerns. While the restoration of the Sexton's Cottage is lovely, who will fund the installation of a new roof in 15 years? Who will replace the air conditioning in 10 years or the heating system in 15 years? Every single introduction into the cemetery landscape must not only be judged against the Secretary of Interior Standards, but it must also be evaluated in terms of sustainability. Good practice dictates that with the repair of the Sexton's Cottage, the garage behind the cottage, and the equipment shed across the river, and now the bridge, the caregivers should have established a maintenance fund for those structures. Otherwise, the structures will simply enter a new downward spiral.

We discourage Oconee Hill from undertaking additional projects, such as a chapel, that will require more long-term maintenance. The reality is that additional cemetery hardscape will create additional long-term maintenance requirements that far outweigh any perceived economic benefits – at least at the present time.

It is important that the Friends, while enhancing the cemetery and supporting the efforts of the Trustees, maintain their independence. They can have a unique role in further new ideas and innovations at Oconee Hill and ensuring that the cemetery remains firmly rooted in the Athens community.

As with the Trustees, we have examined the Friends' Form 990 for their current filing year (2011) and five years previously (2006).

Figure 22 compares revenue for the two years. Revenues in 2006 were $207,135, dropping to $94,682 in 2011. This is a nearly 55% reduction in funding. With a slight increase in membership dues, this decline is the result of reduced contributions and grants.

In spite of the decline in revenues, the Friends maintained a very active funding campaign at the cemetery, increasing their out of pocket expenses from $46,851 to $75,146, a 60% increase.

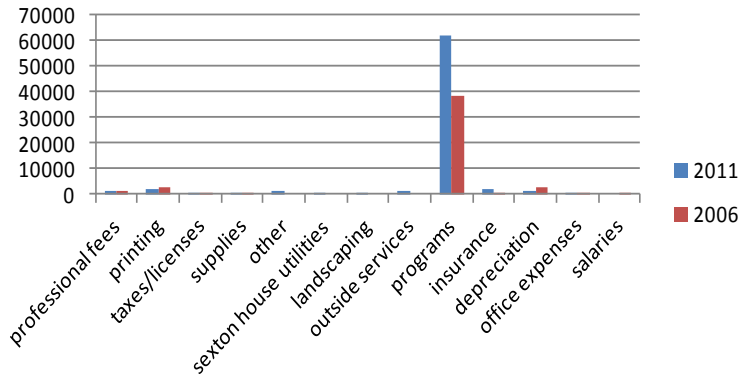


Figure 23. Expenses for the Friends in 2011 and 2006.

The wisdom of increased expenditures at a time of reduced revenues may be a concern, but Figure 23 reveals that the Friends' expenses are minimal and they are doing an excellent job of ensuring that their mission statement is fulfilled. We are hopeful that this assessment will help focus future funding activities by the Friends of Oconee Hill Cemetery.

Recommendations

- The Trustees should obtain a legal opinion regarding its ownership of the cemetery, as well as reasonable expectations from Athens-Clarke County.

- The Trustees should obtain a legal opinion regarding the applicability of municipal laws such as trespass, open containers, and intoxication to the Oconee Hill Cemetery grounds. If it is found that any provisions do not apply, the Council should be petitioned to amend the laws to ensure they can enforced on the cemetery property.

- Modifications of existing regulations include setting specific times the cemetery is open, better defining whether pets are allowed in the cemetery or not, and setting specific requirements for commercial tours and outings.

  - Several regulations should be immediately repealed, including the requirement that photography be permitted, and requiring visitors to obtain a permit or permission for picnics.

  - Additional regulations should be enacted, including a warning that the stones are fragile; that children must be accompanied by a responsible adult; a prohibition against alcohol, fireworks, and firearms; a specific notice of the flower policy; the requirement to obtain permission for plantings; and a clear notification of who to contact for maintenance or questions, as well as emergencies.

- The Trustees and Friends should carefully review Judson Abbott's thesis, exploring options for improvement.

- The Trustees should begin integrating community activities at Oconee Hill in order to increase visitation and support. Initially at least one activity a month should be planned and within two or three years several activities per month should be sustainable.

- The Trustees should revamp the website to maximize it as a sales tool, including information on plot availability, locations, costs, payment plans, and pre-need options.

- The cemetery office must be staffed with an individual who can answer consumer calls, provide assistance to visitors, and assume some of the paperwork duties of the sexton. This individual can be paid staff, although it may also be scheduled volunteers or even unpaid interns.

- The Trustees should begin contacting annual plot care families in an effort to

convert them to perpetual care. Those who have dropped the annual care should also be contacted to win them back.

- Trustees should test the adequacy of their perpetual care funds. It may be necessary to increase perpetual care charges or else find additional funds to place into the endowment.

- The Friends must not undertake any projects for which there is not also guaranteed funding for long-term sustainability.

- The Friends, while maintaining close cooperation with the Trustees, should ensure their independence.

- Future funding activities by the Friends should be driven by the priorities recommended in this assessment.

Roads and Pedestrian Issues

Vehicular Access and Circulation

As previously discussed, the entrance to the cemetery has changed over time (see Figure 6). Today, the entrance is off East Campus Road (Figure 24), although there is a secondary entrance at the rear of the cemetery, off Carr Street.

Figure 24. Entrance into the Cemetery from East Campus Road.

At the main entrance off East Campus Road there is a turn lane for south-bound traffic, although the turn is not well marked and is easy for visitors to miss. In addition, the view into the cemetery is partially blocked by the raised train grade, the drop in elevation as one enters the Cemetery, and the non-descript vegetation. There is nothing at the entrance that beckons visitors.

The train crossing is protected only by a common crossbuck – and the only warning signal is located on the cemetery side of the crossing. There is no warning device on the East Campus side. Also lacking are pavement markings to provide advance warning and stop lines on both sides of the track. It may be that the Manual on Uniform Traffic Control Devices (MUTCD) does not require these at this crossing (likely because of the low traffic volume).

The entrance road has curb and gutter for about 335 feet on the north side of the entrance road extending on the road to the parking area, and for about 235 feet on the south side of the access road extending onto West Hill.

Once in the cemetery there are a variety of signs – too many in fact – but none direct the first-time visitor to either an office, additional information, or parking. Additional guidance on signage is provided in a following section dealing with Maintenance Issues.

The parking area is graveled and the size, while suitable for daily visitation, would prove to be a hindrance for any significant public event. Thus, it may be necessary for the caregivers to anticipate off-site parking and bussing individuals

Figure 25. Entrance area once in the Cemetery.

to the Cemetery.

The Cemetery roads were certainly designed for a different era and were soil and gravel until being paved by the City in 1960. While the entrance road is fully two-lanes, with a width of 20 feet (two 10-foot travel lanes), most of the other roads in the old section are at best a single lane, averaging about 9 to 10 feet in width. The bridge across the North Oconee River provides a single 14 foot travel lane (the approaches are only 11 feet), making two-way traffic difficult. In the new section many (but not all) roads are wider, ranging from 9½ to nearly 20 feet. The width of the roads, coupled with the proximity of road-side graves, significantly limits two-way traffic in the cemetery.

Road widths also make movement of maintenance vehicles difficult and require speeds of no greater than 10 miles per hour (mph). Unfortunately, we observed Cemetery staff vehicles going considerably faster – a practice which must cease.

The cemetery roads lack traffic signage advising visitors about speed limits, the possibility of encountering bicycles or pedestrians, who has the right-of-way, or where roads will take them. In fact, the only road signage in the entire cemetery is a sign posting the weight limit of the bridge at 3 tons.

We recommend the placement of signage in the cemetery limiting the speed limit to 10 mph. On these signs we also recommend placing "Share the Road" signs, alerting drivers to the presence of bicycles in the cemetery.

The circulation pattern is typical for both rural landscape and lawn-park cemeteries, with winding roads. The extensive and largely mature tree growth, however, drastically limits vistas. Figures 3, 10, and 11 illustrate the road network in the old and new sections.

There are few options for improving circulation. While some roads could be made one-way, the necessary signage would detract from the cemetery ambience. In addition, with the low traffic volume, we question the need for modifications.

At some point, should traffic increase, it may be appropriate to close redundant roads. Currently an effort is made to close the lower road in West Hill using traffic cones. This is ineffective and we don't believe there is a need for this closure at the present. We recommend the cones be removed.

If road closures are, at some point, appropriate, we recommend the use of removable bollards that are locked to the road surface. These are manufactured by a variety of companies. Critical issues include the weatherability of the

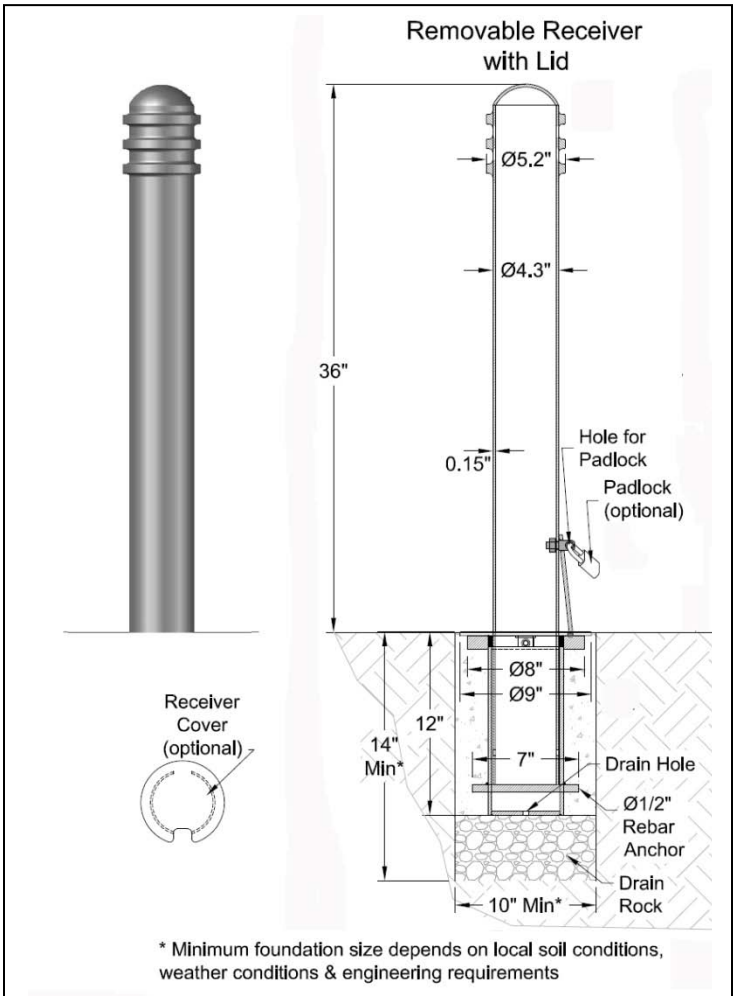


Figure 26. Example of a removable bollard (courtesy Reliance Foundry).

metal (the best is powder coated stainless steel), the keying alike of all padlocks, and the placement of the bollards sufficiently close together to prevent the entry of automobiles.

Concrete Curbs

The concrete entrance curbs are serviceable, but in deteriorating condition. They should be repaired prior to additional deterioration requires complete replacement. While initial construction costs are about $20 per linear foot, replacement costs can be as high as $70 per linear foot.

Repair typically involves renovating the shape of the existing concrete curb by bonding a new concrete curb cap to the remaining curb.

The process involves cleaning the existing concrete to remove loose material, paints, grease, and other objectionable material. A bonding grout is then applied as a thin surface and thoroughly broomed or brushed into the prepared surface. The new concrete cap is immediate formed to match the existing curb.

Road Conditions

We were initially told that the cemetery contains 6.5 miles of roads. Our measurements reveal that only 2.9 miles of roads are actually present.

As previously noted, these roads were installed in 1960 – over 50 years ago. The typical performance life of hot mix asphalt is 20 to 25 years. We anticipate that these roads have exceeded that life because of the low traffic counts and, in particular, the low number of heavy trucks using the roads.

We are told that the only maintenance activity performed is what is known as throw and go patching. A cold-fill is applied and perhaps compacted. This technique does not repair structural damage, there is no attempt to achieve edge bonding, compaction is minimal, and the repairs are typically short-lived.

In order to better evaluate the condition of these roads, we randomly selected 10 locations to be examined (Figure 27), walking 100 feet on either side of the location. We recorded the type, quantity, and severity of each pavement distress and then determined the pavement's rating based on a standard pavement condition index.

Common conditions included edge cracking, longitudinal cracking, transverse cracking, alligator cracking, pothole patching, and

Figure 27. Roads and assessment locations (in red numbers).

raveling. Not observed was block cracking, rutting or bleeding.

Edge cracking is recognized as crescent-shaped cracks that intersect the pavement edge and are located within 2 feet of the edge adjacent to the shoulder. This problem is usually the result of an inadequate pavement thickness to support traffic, or displacement of embankment fill.

Longitudinal cracking is found parallel to the pavement centerline and may indicate settlement of the roadbed under traffic, shrinkage of the surface course, or insufficient pavement thickness.

Transverse cracking occurs roughly perpendicular to the pavement centerline. It may indicate shrinkage of the surface course or pavement structure or insufficient pavement thickness.

Alligator cracking is identified as interconnected cracks forming a series of small sharp-angled polygons. The general cause is unstable base or roadbed. Since it occurs under fatigue conditions it is limited to areas of pavement subject to traffic loads.

Pothole patching may be either temporary, recognized by irregular shapes, characteristic of “throw and go,” or more permanent, with straight cuts. The latter are not

Figure 28. Typical road conditions at Oconee Hill Cemetery. Upper left photo shows a longitudinal crack with grass growing in the crack. Upper right photo shows pavement edge damage. Middle left photo shows an unrepaired pothole. Middle right photo illustrates longitudinal and transverse cracks. Note how water is retained in the cracks, causing further damage to the underlying base. Lower left photo shows raveling. Lower right photo shows a permanent patch.

Table 4.
Road Condition Assessment

	Pavement Condition Rating
Section 1	41.8
Section 2	60.6
Section 3	72.5
Section 4	84.1
Section 5	80.6
Section 6	78.8
Section 7	74.0
Section 8	54.3
Section 9	78.8
Section 10	83.5

counted as defects since they are assumed to function as the original pavement.

Raveling represents the progressive wearing away of the pavement surface through the dislodgement of aggregate particles. The cause may be associated with uneven distribution of bitumen, or the loss of binder due to oxidation.

While not found in any of the sampling areas, some of the roads in the cemetery, notably in Section F-2, have been heavily damaged by tree roots.

Table 4 identifies a pavement condition rating for each of the 10 sampled areas. Those roads with scores above 71 are in a condition where preventative maintenance actions are still a viable choice. Scores below 55 indicate that preventative maintenance is no longer a good option and some form of rehabilitation is required. Those scores between 56 and 70 may benefit from preventative maintenance, but some light or minor rehabilitation will be required in the near future.

Thus, many of the roads in the cemetery (represented by Sections 3, 4, 5, 6, 7, and 10) require only preventative maintenance. Crack sealing/filling is one of the most common preventative maintenance activities. This places specialized asphalt-based material in working or non-working cracks. Working cracks are those with more than 1/10-inch of movement. These are generally transverse cracks and they typically require routing. Non-working cracks have little or no movement and often include diagonal, longitudinal, or block cracks.

The cold pour sealants are applied at ambient temperatures and do not require heating. This type of material is more appropriate for cracks of 3/16-inch or less in width. Since a great many of the cracks in the roads are well over 3/16-inch, a hot pour crack sealant is a better choice. This material, generally an asphalt cement often with a modifier such as rubber, must be heated and poured into cracks. As the material cools, the hot thermoplastics harden.

Costs of this crack repair technique range from about .25¢ to $1.00 per linear foot if done in-house. If contracted out, a reasonable cost would be about $10,000 per mile. Life expectancy may be up to 3 years, although it is best done on a yearly basis.

All of the roads with scores above 55 would benefit from a process known as chip seal. This is an application of asphalt/emulsion followed immediately with a cover of single or multiple layers of aggregate. It waterproofs the surface by sealing low severity fatigue cracks, restoring surface friction. Cemeteries such as Spring Grove routinely apply chip seal on a routine basis in order to maximize the longevity of roads.

A single chip seal application has a cost of about $15,000 per mile for single lane roads such as those at Oconee Hill. A single chip seal has a life expectancy of about 5 years.

For those roads with scores below 55, it will likely be necessary – in the very near future – to either use a 2-inch hot mix overlay or possibly even mill the existing surface and then apply an overlay of new asphalt. These are far more expensive options, averaging about $100,000 per single lane mile. The cost dramatically escalates if there is damage to the base material and it becomes necessary to reconstruct the roadway.

Road Edges

Virtually all of the cemetery roads lack curbs. Asphalt simply terminates where grass begins. In most areas the grass is never trimmed along the road, resulting in two significant problems. The first is that the roadside has an unkempt appearance, detracting from the cemetery landscape. The second problem is that this vegetation growth exacerbates edge cracks and serves to further deteriorate the asphalt pavement.

Figure 29. Example of grass growing over and into the asphalt roadway.

All of the road edges should be trimmed on a yearly basis. While this is often done with nylon trimmers, this is a poor technique. A better choice is the use of a commercial walk behind edger. Depending on features this will cost between about $700 (McLane 4G-7-P Lawn Edger) and $2,800 (Husqvarna BE550). The differences between commercial models include their engine horsepower, the depth of their cutting blades, whether or not the cutting blades have carbide teeth, and similar features.

Given the multiple miles of roadbed, a heavy duty model would be a good investment and consumer models, while less expensive, should be avoided.

Pedestrian Access, Pathways, and Sidewalks

As Abbott observed, most people visiting Oconee Hill come by vehicle. There is no nearby bus stop and bike routes are limited. There is a sidewalk on the west side of East Campus Road which is used by a large number of students. Students are also observed walking through the cemetery with considerable frequency.

The cemetery is fenced, although this is a somewhat permeable boundary. Both of the pedestrian gates in the new section of the cemetery have been locked for a number of years because of perceived vandalism. As will be discussed in a following section, we found little support for the belief that vandalism is a significant issue in the cemetery.

It is our view that one or both of the pedestrian gates into the cemetery should be placed on the same schedule as the front gate (i.e., opened at 8:00 am and closed at 5:00 or 6:00 pm depending on the season). This would encourage more activity in the cemetery and should problems emerge it is always possible to change the policy. However, we can see no convincing reason to limit access.

The pedestrian gates have a free opening of 36-inches or less. This is suitable for wheelchair access, although if work is conducted in the future a wider opening will allow better access.


Figure 30. Steep pathway in East Hill.

The old sections of the cemetery were designed with distinct pathways running between lots. Most of these were – and remain – grassed. Widths vary considerably, from about 18 to 24-inches in the Factory Section to a consistent 4-feet in West Hill. In East Hill pathways vary from 4.5 feet to 6.5 feet. The variability in East Hill seems to be the result of plot owners often intruding into the paths with family plots. In addition, many pathways are only partially usable since trees have been allowed to grow up in the pathways.

In addition, many of the pathways in East and West Hill are steep and hazardous to navigate, especially when they have not been cleaned of leaves or the grass is damp and slippery.

The only example of an asphalt pathway is found in East Hill, where about 200 feet of pathways, varying from 4.5 to 8 feet, are found. The condition of the asphalt is similar to that found in the cemetery roads, suggesting that these paths may have been paved at about the same time. Overall they are in poor condition and the surface is disharmonious with the layout of the section. We recommend that the pathways be removed and grass established in their place.

In addition to the formal pathways, we identified a single "social trail." Social trails are informal trails or paths created by erosion due to foot traffic from people and animals. At Oconee Hill the eroded pathway leads from the rear of the Sexton's Cottage to the rear of the Ella Francis White ledger. It appears to have been created by cemetery staff taking a shortcut into the Sexton's Cottage. In the process an opening has been created in a line of shrubbery forming a division between the different spaces.

This social trail should be closed by filling in the hedge with a new plant and clearly instructing staff not to use this shortcut. If this is not effective, such paths can also be combated through the placement of boulders, logs, or metal fencing to redirect pedestrian circulation.


Figure 31. Asphalt pathway in East Hill.

Figure 32. Informal or social trail from the North Slope Section to the Sexton's Cottage that is damaging the hedge.

Universal Access

Many who visit cemeteries are elderly and therefore impairments associated with older age should particularly be taken into consideration, especially when cemeteries are amenities for tourism as in the case of Oconee Hill Cemetery. In addition, while it is not always possible to make a natural landscape fully accessible, partial access is better than none at all. Moreover, all future modifications should explore accessibility issues in an effort to maximize access by all citizens.

Steep grades are found in several pathways, especially in the older sections of East and West Hill (see, for example, Figure 29). Such areas will be extremely difficult and dangerous for most people with disabilities to use. The remainder of the Cemetery, however, is more accessible, at least with regard to the slope. Some areas have rough terrain and in a few locations the proximity of monuments can make movement difficult.

The existing grass is a less than ideal surface for wheelchairs and others with mobility or sight disabilities. Paths in a cemetery or grassed setting should have a smooth, regular surface, with tactile warning underfoot of any hazards such as a change in level. A critical factor is to avoid simply repeating street pavement details that would clash with the cemetery setting. In fact, we have recommended that an existing asphalt pavement in East Hill be removed at the first opportunity.

Gravel should only be used if it is well compacted, with no loose stones greater than ¼". This makes it possible to push wheelchairs and reduces the possibility of tripping for those who are unsteady on their feet. Regular maintenance is required, although bound gravel or epoxy bound gravel reduces the level of maintenance. Gravel, however, is often a harsh introduction into a burial ground where pathways were never found historically or were historically grassed. Moreover, the gravel should not use stone already found in the cemetery (such as marble or granite) since such efforts may confuse the public, giving the impression that monuments were converted to paving material.

Should paving pathways eventually be required, a far better choice is to use grass tracks underlain by a reinforcing system to provide a firm, but free draining layer on which the grass can grow. If the grass is well maintained it will not unduly hinder wheelchairs. Unattended, however, it will inhibit wheelchairs, as well as hide tripping hazards – so maintenance is critical. The pathway can be clearly identified by using a grass distinct in color and texture, providing clear visual clues to those using it.

One grass reinforcement system commonly available is the Grasspave2 porous

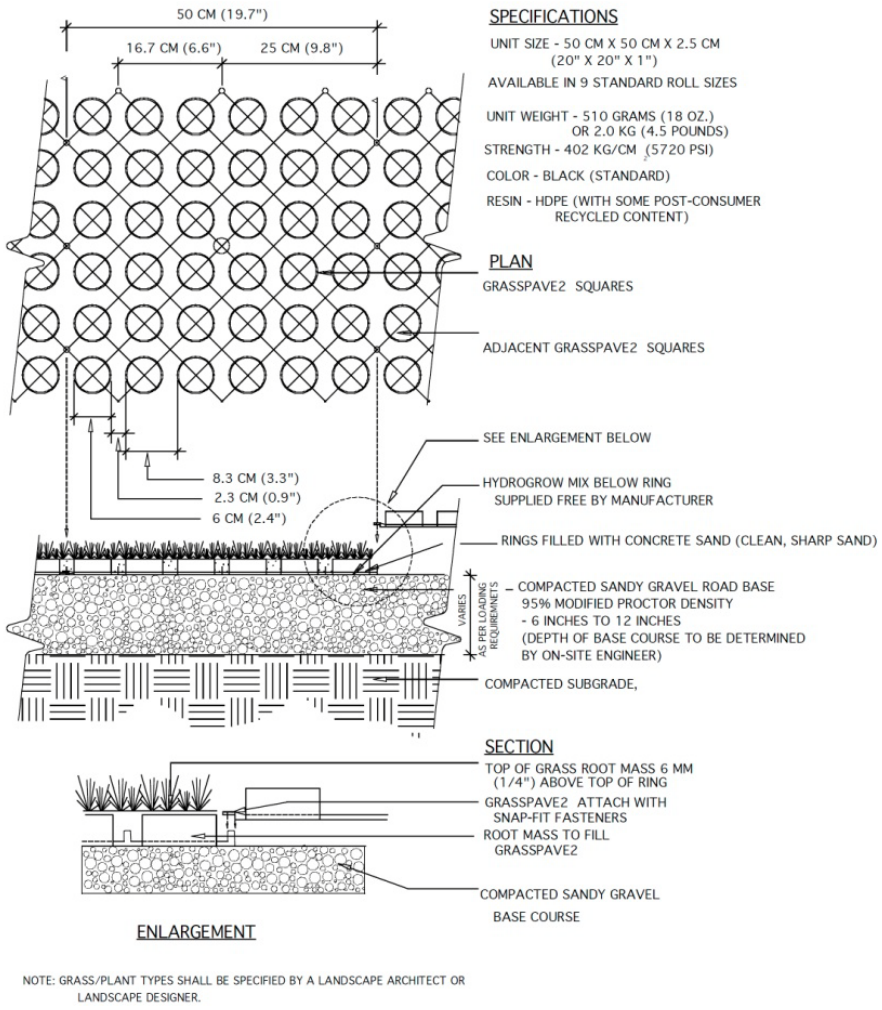


Figure 33. Specifications for one brand of grass reinforcement system.

pavement by Invisible Structures, Inc. (http://www.invisiblestructures.com/grasspave2.html). This system has the added benefit of having been approved for ADA use.

Ideally paths should be at least 5'7" in width to accommodate wheelchair users and people with visual impairments assisted by a sighted person or guide dog. A path of this width will also allow an adult and child to walk together. The minimal suitable width is 3'11".

Clearly there are numerous paths that cannot achieve these width requirements. For those that can and which also are relatively level, future consideration should be given to the installation of grass reinforcement to achieve ADA compliance.

There are, of course, additional issues in achieving universal access, such as the use of appropriate signage and even the selection of routes in the Cemetery. While ADA compliance may not be required, the goal should be to create additions to the Cemetery that are as accessible as possible. In addition, existing obstacles to access should be removed wherever possible.

Stairs

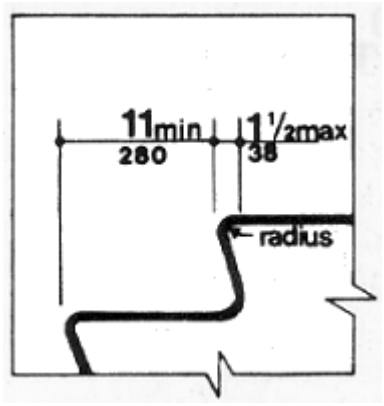
Oconee Hill Cemetery contains many stairs providing access to plots from depressed roadways. Most of these are granite, but fieldstone and brick are occasionally found. While many are in fair to good conditions, several are in badly deteriorating condition and present a significant hazard to the public. These require immediate replacement.

Even those steps in fair condition, however, may be hazardous because of the dense debris that are found on them. In several cases it appeared that leaf debris and limbs had not been removed for long periods of time. Staff must be instructed to clean all steps on a weekly basis.

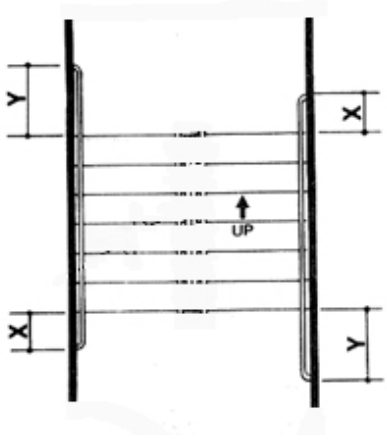
Table 5.
Condition of Stairs at Oconee Hill

Section	Material	Number	Number With Handrails	Handrail Heights	Comments
B	Granite	3	2	32-39"	variable conditions, one hazardous
D	Granite	1	1		
E	Granite	3	2	36"	good to fair condition
East Hill	Granite, granite & brick	10	5	24-35"	variable conditions, several hazardous
F-2	Granite, field stone	3	3	25-37"	good condition
Factory	Granite	1	1	24"	good condition
New G	Concrete	1	0	-	broken, hazardous
Old G	Granite	2	2	38-39"	good condition
H	Granite	10	10	33-41"	good condition
West Hill	Granite, concrete	10	4	25-47"	variable conditions, several hazardous

Another significant factor in the safety of these steps involves their design. All stairs should have uniform riser heights and uniform tread widths. Most codes require stair riser heights to be no less than 4-inches and no more than 7-inches. Tread widths should be no less than 11-inches.



Tread Width and Nosing



Stair Handrail Placement

Figure 34. Detail drawings for ADAAG compliant stairs. In the illustration of stair handrail placement, X is the 12-inches minimum handrail extension required at each top riser and Y is the minimum handrail extension of 12-inches plus the width of one tread that is required at each bottom riser.

In many cases at Oconee Hill both riser heights and tread widths are variable within the same set of stairs. Research has identified that a difference of ¼-inch or more between adjacent risers creates a significant tripping hazard.

Thus, many of the steps in Oconee Hill are not safe and must receive repair or replacement (see http://cloud.chiefarchitect.com/1/pdf/magazine-articles/stone-steps.pdf). This is skilled work and will require a competent stone mason with experience building ADA compliant stone steps. Some landscapers have suitable experience, especially if prepared granite is being used. Costs average about $300 for setting the first step and $50 for each additional step.

The ADA Accessibility Guidelines (ADAAG) provide additional details regarding steps and handrails, beyond the need to have uniform riser heights and tread widths. ADAAG specifies that stair grab bars or handrails must be 1¼ to 1½-inch in diameter and that handrails be located on both sides of the stairs. The gripping surface must be uninterrupted or obstructed by construction elements. The ends of handrails must be either rounded or returned smoothly to the wall. Finally, the top of the handrail gripping surface must be mounted between 34 and 38-inches above the stair nosings (an ideal height is about 34-inches).

While the Friends have sought to improve safety at Oconee Hill by installing a variety of handrails, almost none of these handrails meet these ADAAG requirements. Some, in fact, pose considerable hazards in their own right because of

Figure 35. Stair and handrail problems. The upper left photo shows stairs with different height risers and treads of various widths. The upper left photo shows the hazard resulting from the failure to clean stairs on a regular basis. The middle left photo shows hazardous concrete stairs with extensive deterioration. The middle right photo shows stairs with damaged risers that are allowing grass to grow. Lower left photo shows stairs that have sunk into a lot, presenting a significant hazard to users. The lower right photo shows a handrail that poses a penetration hazard to pedestrians who might lose their footing on the steep slope leading to the stairs. Many of these issues require immediate intervention.

Figure 36. Example of a component, build on-site stair rail that is ADA compliant.

very low or high mounting heights, inadequate extensions, or hazardous terminations.

The existing handrails should be immediately evaluated for compliance with ADAAG requirements and re-engineered and/or re-set to achieve compliance.

Additional handrails should be fabricated as soon as practical to ensure that all steps have handrails on both sides.

While welding handrails is possible, it will be important to use minimally 1¼-inch round stock. Although more expensive, stainless steel would reduce long-term maintenance and may be preferred. This approach, however, requires very careful compilation of shop drawings for each stair to ensure that once on-site the stairs will fit correctly. Consequently, it may be better to use component handrail systems that allow construction on-site with a minimum of measurements. One example is available at http://www.simplifiedbuilding.com/store/kits/handrail-kits/surface-mount-railings/ada-518-single-rail-ada-compliant.html#gallery.

Recommendations

- Trustees and Friends should evaluate the size of the available parking area for various proposed events.
- Signage should be erected in the cemetery limiting the speed limit to 10 mph and warning motorists to "share the road" with bicycles.
- Staff must be explicitly instructed to abide by the 10 mph speed limit,
- Cones closing off the lower road around East Hill should be removed.
- The concrete entrance curbs should be repaired prior to additional deterioration.
- Many of the roads require the preventative maintenance of crack sealing/filling. The Athens-Clarke County Engineering Division of the Transportation and Public Works Department may be able to provide assistance procuring suitable contractors.
- Other roads in Oconee Hill require surface treatments, such as chip seal, in order to prevent further deterioration. The Athens-Clarke County Engineering Division of the Transportation and Public Works Department may be able to provide assistance procuring suitable contractors.
- A few of the roads have deteriorated to the point that they require the use of an overlay or possibly a mill and overlay treatment. The Athens-Clarke County Engineering Division of the Transportation and Public Works Department may be able to provide assistance procuring suitable contractors.
- All of the road edges should be trimmed or edged on a yearly basis.

- One or both of the pedestrian gates in the new section of the cemetery should be opened during the days and hours that the cemetery is open.

- The asphalt pathways in East Hill should be removed and replaced with grass.

- The single social trail identified in the office area should be closed by replanting the missing shrub. Staff should be directed to use only approved pathways.

- All future modifications at Oconee Hill should be evaluated for their impact on universal access. Universal access should be a goal whenever possible.

- Future consideration should be given to establishing grass tracks underlain by a reinforcing system to achieve ADA compliance on selected pathways of appropriate widths and low slopes with road access.

- All steps in the cemetery must be cleaned on a weekly basis throughout the year.

- All steps should be immediately evaluated for ADA compliance. Many of the steps will require resetting or replacement.

- All existing handrails should be immediately evaluated for ADA compliance. Those not meeting ADAAG requirements should be removed and re-engineered. As soon as practical handles should be added to both sides of all steps. Those steps with no handrails should have handrails installed or the stairs closed to the public.

- While ADA compliant handrails can be engineered, Oconee Hill may find it more convenient to use pre-engineered component handrail systems.

Structure Issues

Oconee Hill includes a number of structures, including the Sexton's Cottage, the Sexton's Office, two maintenance buildings, an animal pen, a raised bed garden, a grape arbor, and a well house, as well as several above ground tombs. These will be briefly considered in this section.

The Office Area

The Office or Maintenance area is found just inside the front gate (Figure 37). While this is a suitable location for an office, it is otherwise a poor location for maintenance activities, which should be located in a less visible area of the cemetery. Nevertheless, the defect can be mitigated through judicious landscaping.

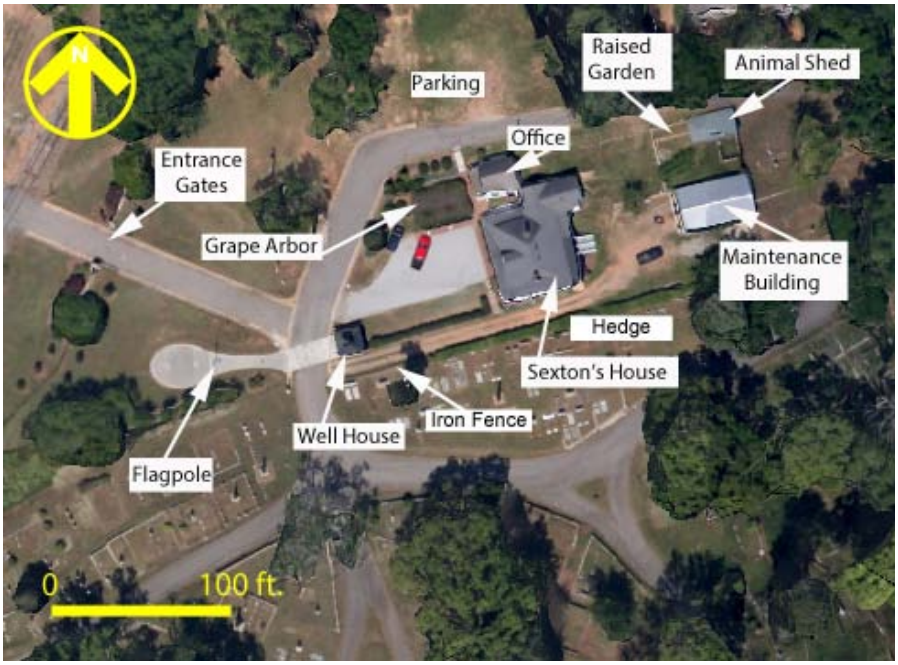


Figure 37. Aerial image of the office area showing the various features and structures.

The Sexton's Cottage

The Sexton's Cottage was substantially rebuilt in 1907 and is listed on the National Register as a contributing resource. Unfortunately, the structure had been allowed to deteriorate to the point that consideration was being given to its demolition when the Friends stepped in and raised the funds for its restoration.

This work removed much of the deteriorated original historical fabric, salvaging what could be used, and replacing the rest. The cost of this work was approximately $150,000.

Today this structure is used for functions, including meetings and funeral receptions. During 2012 the Sexton's Cottage was used by 842 people representing 10 rentals and 11 comped events.

In the basement of the structure a space has been established for the maintenance staff. We are told this includes a microwave and refrigerator, as well as bathrooms.

Shortly after the structure was completed there was a roof leak resulting from improper flashing installation. Today the house has a

Figure 38. Front façade of the Sexton's Cottage, looking east.

decidedly musty smell, perhaps as a result of mold growth in the walls or perhaps as a result of the donated oriental carpets.

Since this structure is being rented, the Friends should ensure that any mold is remediated. This may require the services of a certified mold remediation specialist.

The structure has a variety of long-term maintenance needs. For example, the life span of asphalt shingles is about 10-15 years; the life expectancy of split unit HVAC systems is about 20 years; and the life expectancy of most exterior paints is 5 years. There may be additional maintenance issues, including plumbing and electrical concerns, as well as more routine issues such as interior painting and general floor maintenance.

Thus, the Friends should establish a special escrow account for house maintenance, setting aside a few thousand dollars yearly. Doing so will avoid the problems associated with deferred maintenance and when significant maintenance is needed, it can be performed without delay.

We are told that the house is alarmed. The Friends should verify that the monitoring includes not only doors, but also glass break and smoke monitoring. This protection should extend into the basement.

It would be useful to determine if the alarm could be set with different staff having their own access codes, allowing the tracking of entry into the structure.

The closest fire hydrant is just over 100 feet to the west. The Friends should verify with Athens-Clarke County Fire and Emergency Services that the hydrant is operational.

There is storage under the back porch of the cottage. Some of this represents orphan stones and fence parts. They are not well organized and none of the materials are individually identified. The iron work is laid directly on the ground, exacerbating corrosion. One of the stored stones is apparently not from Oconee Hill. We also observed a large quantity of paint cans. If these are oil based paints they are combustible and their storage here is a very poor idea. Even if they are latex, most of the cans appear old and it is unlikely the paint is still useful. Further under the house is a grinding stone, apparently left from an earlier period.

A day should be spent to remove all of these materials, discarding the paint, determining if a museum might want the grinder, returning the stone that does not belong in Oconee Hill to the

Figure 39. Storage under the Sexton's Cottage. This area must be cleaned and better organized.

Athens-Clark County Police, and restacking the remaining materials in an orderly fashion. It reflects poorly on the cemetery to have ironwork simply thrown in a pile.

All fence materials should be photographed, so there is a good record of what is present. In addition, consideration should be given to moving the ironwork further in the basement since the lattice work provides only the most minimal security.

The Sexton's Office

This structure has recently been painted, but the roof shows wear with areas of popped nails, replacement shingles, and very old flashing. This structure requires exterior maintenance in the near term. Its size and simple construction should, however, reduce the costs of most maintenance operations.

We did not view the interior of this structure, so cannot comment on its arrangement as a functional office.

This structure, measuring about 18 feet square, is not entirely amenable to modern administrative building functions. It, however, is also listed as a contributing resource on the National Register of Historic Places and thus for the immediate future must suffice.

We encourage the Cemetery to convert this structure into a reception/work space for an office manager who will assume the duties of greeting visitors, providing the public with cemetery information, and assume the responsibilities of selling plots. This means that new furnishings will be necessary to convey comfort and warmth to visitors.

If not already, the Sexton's Office should receive the same monitoring of door contacts, glass break, and fire, as the Cottage. Not only is it an important structure in its own right, but any undetected fire in this structure would quickly spread to the Sexton's Cottage.


Figure 40. Oblique view of the Sexton's Office, looking northeast.

Grape Arbor

In the front of the Sexton's House there is a historic grape arbor. We are told that it still bears, although it has become heavily overgrown and honeysuckle is beginning to take over in some areas. While it should be an amazing horticultural feature, it today appears abandoned.

This arbor is an integral landscape feature and deserves careful protection. In addition, it offers a unique teaching and public relations opportunity. The Cemetery could offer short lectures on grape tending, pruning grape arbors, and even offer cuttings – calling them Oconee Hill Cemetery Heirloom Grapes.

We understand that Charlotte Marshall once grew grapes and expressed an interest in taking over the arbor to get it back in shape. This is a wonderful opportunity to begin offering horticultural workshops at the cemetery.

Grapes are best pruned in spring (February/March, or even as late as early April) because if pruned too early a hard frost in late winter can damage the canes and buds. Thus, there is time to plan for this event.

Raised Garden

Another exceptional opportunity in the work yard is the raised bed garden. This, like the arbor, appears abandoned and clearly has not been planted in years.

It offers an exceptional opportunity for educational plantings. It might, for example, be planted with a variety of traditional cemetery plants, such as boxwood (*Buxus sempervirens*, first mentioned in America in 1652), canna lilies (*Canna* spp., introduced in 1596), daffodil (*Narcissus* spp., introduced in


Figure 41. Heavily overgrown grape arbor, looking north.

1737), iris (*Iris germanica*, first mentioned in America in 1672), snowbell (*Leucojum aestivum*), snowdrop (*Galanthus nivalis*, introduced by 1500), and climbing or rambling rose (*Rosa hybrida*).

Like the arbor, it would be possible to integrate this garden into various horticultural workshops.

Figure 42. Animal pen. The upper photo shows the animal pen with a shed roof. To the left is the raised bed garden. The lower photo shows logs thrown into the pen – these must be removed. Note also the original hardware.

Animal Pen

At the rear edge of the work yard is a stone animal pen. Although we are told that dogs were at one time kept there, it seems likely that this was used earlier for other animals.

Of greater importance, this is a very well preserved utility building that retains its character and original door hardware. It deserves special care and protection.

At the present, logs have been thrown into the pen. These detract from the historic integrity and will serve to introduce termites into the structural supports – causing extensive damage and considerable expense to the cemetery. Since there should be no use of fireplaces in either the Sexton's House or Office and open fires in the cemetery should be prohibited, these logs should be immediately removed. Afterwards the structure should be inspected to ensure that no maintenance is required.

Maintenance Building

The existing maintenance building does not maintain the architectural detailing of other structures, having wood board and batten siding and a metal roof. The Friends have recently renovated this structure as well, although their focus was largely to provide deferred maintenance.

This, like the Sexton's Office, is a rather antiquated building. A modern maintenance building should provide a dedicated workshop (for repairing equipment, parts storage, sharpening mower blades), adequate bay space for

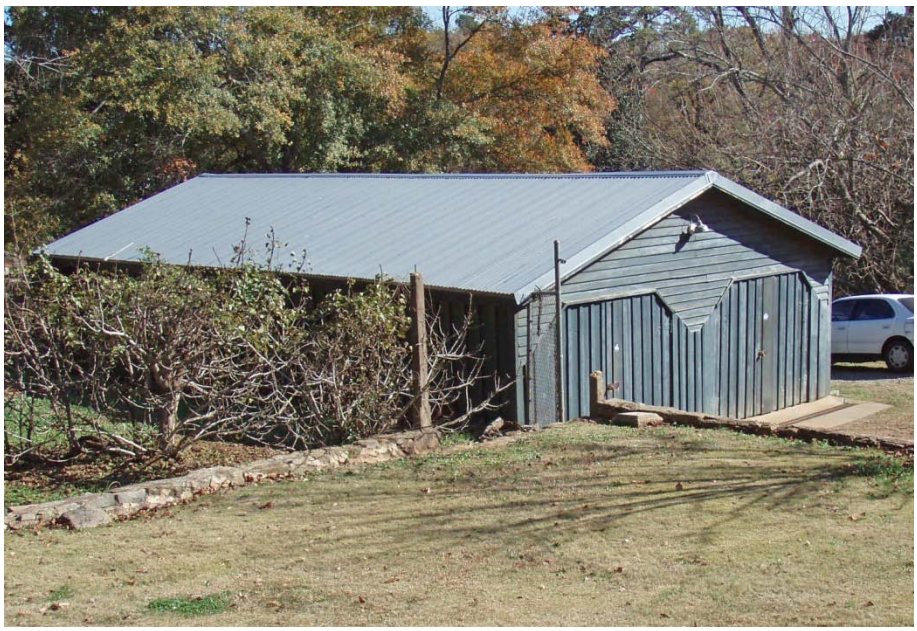


Figure 43. Oblique view of the maintenance building, looking southeast.

storage of vehicles, equipment such as a compressor (for inflating tires), an office for the foreman, a locker room for staff, and a mechanical room. This building provides only an open space into which materials are stored as best as possible.

It is, however, possible to better utilize the space in this structure. We understand that an ATV in the garage is owned by the Sexton and used only during home games when part of the cemetery is rented for tail-gating. Given the low use of this vehicle, it should be removed to the maintenance building on the other side of the river. The push mower that is stored in that building – and used in the East and West Hill sections – should be brought over to this building. This will free up additional floor space and allow more organized storage.

We also observed the storage of a very large quantity of plastic gasoline cans in this building. Figure 44 shows only some of the gasoline containers and we estimate that if they are all filled, this structure contains in excess of 50 gallons, exclusive of that in gasoline tanks of the three mowers and other equipment.

We believe that this amount of Class 1B flammables is allowed by NFPA in an unprotected space, although we recommend that the Trustees confirm this with the Athens-Clarke County Fire Marshall.

Of greater concern is the reliance on the use of plastic containers. OSHA 29 CFR 1926.155(l) specifies that containers must have a "flash arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to

Figure 44. Storage of gasoline in the Maintenance Building.

fire exposure." Clearly, plastic containers do not meet this standard – a problem recognized by many landscape firms (see, for example, http://www.fcps.edu/fts/safety-security/publications/seh-37.pdf). Another safety expert provides a similar analysis (http://www.wisesafetyenv.com/newsletter/archives/february2012/jr%20TechTalk%20Safety%20Cans%20knowing%20what%20to%20use.pdf).

We strongly recommend that the Cemetery acquire appropriate Type I or Type II safety cans. Reputable manufacturers are Justrite (http://www.justritemfg.com/products/safety-cans-and-containers/) and Eagle (http://www.eagle-mfg.com/cans.html).

Because of the value of equipment stored in the maintenance building, it should be alarmed. A space monitor may be more appropriate than door contacts. A smoke alarm should also be included.

The Well House

At some point the well house was modified, converting it into a focal point with no real function. The signage in the building provides no real benefits to the cemetery and consideration should be given to using the facility as an open air kiosk.

Figure 45. The Well House, view to the northeast.

A weatherproof map of the cemetery, coupled with weatherproof display racks (rules, Friends membership brochures, upcoming events) could allow this structure to play a real role in the cemetery.

The Flag Pole

The flag pole represents another maintenance issue with little real benefit to the cemetery. The current concrete statue does not enhance the space and should be removed.

We could not determine if the flag is made of an all-weather material. If it is not, then it must be removed during inclement weather. In addition, if the flag is not to be taken down at sunset (it is not at present), then it must be lighted.

Garbage Containers and Port-a-Lets

There are two rolling carts to the side of the grape arbor in front of the Sexton's Cottage. This is a location that is seen by all visitors, including those that are renting the cottage. There is a 2 or 3 yard dumpster located north of the Cottage in a parking area. Although not as visible, it is seen by all who are visiting the Factory Section or the Jewish Cemetery. Finally, we observed three port-a-lets situated immediately behind the Cottage, visible to anyone stepping out on the back porch.

We understand that the Trustees will require the port-a-lets, which are used during home games, to be set and picked up in one day and will not allow them to remain in the cemetery during the entire football season. This is good.

The trash containers in front of the Cottage should be moved to the location of the dumpster and all three should be surrounded by a privacy fence in order to minimize the view

Figure 46. Trash cans off the parking lot in front of the Sexton's Cottage and adjacent to the grape arbor.

to visitors of the cemetery.

The Second Maintenance Building

A second maintenance building is located on the south side of the river in the new section. We are told that the only item stored here is a push mower used primarily in the old sections. Rather than store the mower at this location, it would be more appropriate to move the ATV, which is used rarely and personally owned by Sexton, to this facility and locate the mower where it will be more convenient and accessible.

This is not an especially attractive building, although it could provide additional storage space for equipment. Any long-term use, however, will require that the building be alarmed and this may provide difficult given its isolated location.

We did not enter the building and did not gain access to the flat roof. The peeling paint suggests that it has not received much maintenance. We recommend a more detailed assessment of condition, including the longevity of the flat roof assembly.

The Receiving Tomb

Like most nineteenth century (or earlier) cemeteries, Oconee Hill has a receiving tomb in West Hill that was historically used to store coffins prior to burial. It represents part of the historic fabric of the cemetery and is an important part of the cemetery's history.

We did not have the opportunity to inspect the interior of the vault. The exterior, however, reveals that the vault has been significantly ignored and is facing a variety of problems illustrated by Figures 48 and 49.

Figure 47. Maintenance building located in the new cemetery section.

Figure 48. Holding vault. The upper photo shows the overall tomb condition. The lower photo shows spalling stucco and water damage.

Figure 49. Holding vault. Photo of the badly damaged vault door.

The vault is brick with stone coping and stucco. The stucco has had multiple coats of a blue-gray paint, much of which has faded or been eroded off. The stucco is failing and there are areas where water intrusion, tide lines, and biologicals are obvious. The iron door is in severely deteriorated condition with corrosion overall and loss of much of the decorative plating. The locking mechanism is no longer functional and the door is chained shut.

The vault measures 20 feet 8 inches along the road and its height varies from 10 feet 3 inches to 7 feet 3 inches. The tomb is approximately 16 feet in length. The door is 3 feet in width and 5 feet 9 inches in height.

This tomb requires a detailed conservation assessment to evaluate construction details and more specific condition issues. Until that time it is critical that ivy be removed from the walls and vegetation on the left side of the vault be pruned back. The door should be lightly cleaned of corrosion and a coat of Rust-Oleum Rust Reformer® applied. Additional information concerning its treatment can be found in the section dealing with fences.

The Cemetery Bridge

In late 2009 the cemetery bridge was evaluated by Hatch Mott MacDonald in Atlanta, Georgia (Edwards 2009). The bridge was found to consist of six spans (numbered from south to north, with the main truss span identified as Span 2).

Span 1 is the south approach supported by steel beams and is 18.1 feet in length. The span is supported by a stone abutment (Bent 1) at the south and a 14 foot high brick masonry pier at the truss span (Bent 2). There is a concrete deck with 3-inches of asphalt as an overlay.

Span 2 is a 90 foot long steel Pratt through truss with five panels that span the river. The decking consists of seven 10-inch deep steel stringers supporting corrugated steel decking filled with asphalt. Bents 2 and 3 are masonry piers capped with large granite slabs.

Spans 3 through 5 at the north end are simple span, steel beams kinked to accommodate the left hand curved roadway. The deck is concrete with an asphalt overlay. The deck is supported by Bents 4, 5, and 6.

The inspection found a variety of problems, including severe rust and section loss in Span 1, extensive corrosion of the metal deck in Span 2, with vegetation growing along the deck edges and water ponding on the surface. The steel truss exhibited moderate rusting throughout and a number of defects were listed. The masonry piers (Bents 2 and 3) were identified as being in "fair condition" with vegetation, efflorescence, and moisture seeping out of the joints. Spans 3 through 6 had clogged drains, map cracking, and scaling. There are significant transverse cracks

Figure 50. Bridge and approach from the north side looking south.

Figure 51. Bridge concerns. Top photo shows recent breakthrough corrosion of recently painted top chord. Middle photo shows vegetation along the brick deck. Bottom photo shows extensive corrosion and failure of the decking.

over the intermediate bents and there is minor corrosion. Some welded connections have failed. There is soil erosion and undermining.

The condition rating evaluated each span individually. In Span 1, the deck received a satisfactory rating (6). The superstructure, however, was rated 3, indicating a serious condition with "severe section loss of the end of the facia beams." The substructure was rated as fair condition (5).

The deck for Span 2 was given a rating of 3, indicating a serious condition, since more than 60% of the deck area was either water saturated or deteriorated. Superstructure and substructure were rated 5 and 6 respectively.

Spans 3 through 6 were combined. The deck was given a satisfactory rating (6); the superstructure was given a satisfactory rating (6); and the substructure was given a fair rating (5).

Based on their observations, the bridge was given an operating rating of 9 tons – based on the assumption of a single truck on the bridge, standard impact factors, and future wearing surface.

Although this sounds like a reasonable weight, it is

not. Even the lightest landscape dump trucks have a gross vehicle weight (GVW) of about 24,000 pounds – or 12 tons. The heaviest construction dump trucks have a GVW of 56,000 pounds – or 28 tons.

As a result of the inspection, the document offered 13 repair recommendations. To date, only the first recommendation, focused on cleaning and painting the structural steel, has been accomplished.

There is a misconception that the recommendations were prioritized. They were not. Far more important than painting, for example, are the recommended repairs of lateral bracing (providing structural stability), cleaning and repairing the beam sets and bearings (allowing for free expansion and contraction), and repair of the deck (which is causing additional deterioration of supports as a result of water leakage).

We have observed that there is already break-through corrosion in at least one area. The Cemetery should determine if this is acceptable or may warrant some additional treatment.

It appears that the most significant recommendations have yet to be acted on – including several that are actually rather simple fixes. For example, our brief review confirmed that vegetation was still growing on the masonry piers and that there was still much vegetation holding water on the bridge deck.

Other issues that are likely not so simple to resolve include problems with deck of Span 2, with obvious corrosion and deterioration.

We were informed that some additional repair work was anticipated, but that funerals precluded its schedule.

Given the condition of the bridge, we strongly recommend that the additional repair work be conducted – regardless of whether funerals are anticipated. The safety and preservation of this bridge is of greater importance than the minor inconvenience of entering the cemetery through the rear gate for a funeral.

In addition, we were given the impression that with the 9 ton rating the Friends felt that the bridge was "safe," suggesting that little attention was being paid to the various recommendations offered in the Hatch Mott MacDonald study. This is not the case and the additional work should be rapidly funded and contracted out. In addition, the firm should be contacted to discuss their concern that only visual inspection methods were used and "pins on non-redundant fracture critical structures should be inspected using non-destructive testing." Most metal truss bridges are non-redundant fracture-critical structures, i.e., failure of one member or one joint (or connection) would theoretically cause a total collapse of the bridge. Visual inspection is not always sufficient to identify hidden defects.

The only questionable item is the need to upgrade the handrails to meet the current codes. This is likely to affect the historic character of the bridge. Any modifications that change the historic fabric should be very carefully considered and limited to those absolutely necessary for the safety of the public.

Regardless, there are numerous repairs still required by this bridge and the Friends must not be lulled into believing that painting is adequate for the long-term preservation of this bridge.

In fact, good practice demands that bridges of this nature be inspected every 3 years – thus the bridge was due for inspection in 2013. This is a preventative maintenance activity that must occur on a regular basis.

The Proposed Chapel

Given the numerous issues at Oconee Hill that will require significant levels of funding, we cannot recommend the construction of a chapel. In addition, we believe the proposed cost of $100,000 is insufficient and will result in the

Figure 52. Three examples of VA NCA Committal Service Shelters showing different designs and materials.

project taking shortcuts that will cause additional maintenance problems in the future.

Good comparisons are the Committal Service Shelters found at most National Cemeteries. The function of the Committal Service Shelter is to provide a location for interment services away from the actual gravesite. It is a quiet, dignified, open, covered pavilion designed to provide temporary shelter from wind, rain, and sun.

It is useful to focus on some of the features of these structures. They are roofed, open-air pavilions with four to six columns. The covered area provides seating for a family of approximately 10-20 people and is approximately 900 square feet. There is an additional uncovered paved area to provide space for approximately 50 additional people. This uncovered space is between 300 and 900 square feet. There is an enclosed storage closet of about 125 square feet to store a rolling bier, 20 stacking chairs, and other necessary items.

The structure should have a simple, functional design with a design life of 50-100 years. Structural elements should be easy to maintain. The 900 square feet covered area typically measures about 25 by 36 feet. The columns provide a clear height of 10 feet. It is recommended that a metal roof (gabled or hipped) be used because of its low maintenance and long life. Below grade drainage is critical to ensure that the space remains clean and dry. The storage space is typically located at one end of the structure, measuring 5 by 25 feet. The uncovered gathering area is usually textured concrete to both clearly define the gathering area and to provide a safe walking surface during inclement weather. Building materials are expected to be relatively maintenance free, such as brick, stone, or cut masonry block.

Extras such as vernacular, detailed items, extra trim, and unnecessary ornament should be avoided, as should expensive stone, copper roofing, synthetic slate, or clay roofing tiles since all these add extra, undesirable costs.

Open trusses, open column tops, or perching areas should not be permitted because of the maintenance and cleaning required. They also result in unpredictable distractions occurring during the burial ceremonies. Features that encourage birds and insects to nest should be carefully avoided.

A paved drive should surround the shelter for access and parking. A small loop drive, adjacent to the shelter, wide enough for parking the funeral cortege in two rows on both sides of the road with approximately 15 vehicles in each row, and an open center lane for moving traffic have been found to work well. Thus, the paved road would be approximately 30 feet in width.

A structure of this sort, built for simplicity, low maintenance, and a long life cycle is estimated to cost about $200 to $250 per square foot, excluding site work. Thus, an 1,800 square foot structure would have a cost of $360,000 to $450,000.

With this mind, we find it impossible for the Friends to construct a suitable and long-lasting chapel for only $100,000.

Our fear is that the resulting structure will not be designed with life-cycle costs in mind and that no funds will be set aside to ensure long term maintenance. In addition, this is not a feature where cost-cutting measures are appropriate or where they will have any long-term benefit to the cemetery's management.

Recommendations

- The possibility of mold in the newly renovated Sexton's Cottage should be further evaluated by a certified inspector. If mold is present, it should be removed.

- The Friends should establish an interest bearing maintenance account into which $2,000 a year is deposited for long-term maintenance needs of this and other structures in the cemetery.

- The Friends should verify that the Sexton's House has door contacts, glass break, and smoke (fire) monitoring. This should include the basement and first floors.

- The Friends should verify with Fire and Emergency Services that the hydrant to the west of the Sexton's Cottage is operational and provides suitable protection.

- Materials stored under the Sexton's House porch are poorly organized. Old paint should be discarded; fence parts should be removed, photographed, and restacked neatly, in a more secure area of the basement; stones should also be photographed and inventoried. The stone not belonging at Oconee Hill Cemetery should be returned to law enforcement for disposition.

- The exterior of the Sexton's Office will require maintenance, such as new flashing and a roof, within the near future.

- The interior of the Sexton's Office should be refurbished to provide a reception/work space for an office manager.

- The Sexton's Office, if not already, should also receive intrusion and fire alarm protection.

- The grape arbor should be immediately pruned and integrated into a horticultural workshop series. Consideration should be given to selling cuttings from the arbor as a public relations tool.

- The raised planting bed should be amended and planted for integration in horticultural workshops. An initial planting may focus on traditional cemetery plants, although heirloom herbs may also be appropriate.

- The logs in the animal pen should be

immediately removed.

- The ATV in the maintenance building should be moved to the building in the new section of the cemetery, allowing additional floor space to store push mower(s).

- Only OSHA approve metal gas cans with flash arresting screens, spring-closing lids and spout covers, and pressure releasing devices should be used by the Cemetery. The use of plastic containers should be immediately discontinued.

- The maintenance building should receive security and fire protection.

- An effort should be made to identify a useful function for the well house. One suggestion is an open air kiosk containing a map of the cemetery and literature for the public.

- If the flag pole is to remain and the flag flown 24/7, then it must be of an all-weather material and must be lighted at night.

- The usefulness of the storage building on the far side of the river is not clear. The push mower in this building should be moved over to the maintenance building where it will be more convenient.

- The maintenance building in the new section of the cemetery should be evaluated for maintenance needs, with special attention to the flat roof system.

- The holding vault should receive a more detailed conservation assessment.

- The ivy should be removed from the holding vault and the trees to the left of the tomb pruned to allow more air movement.

- The iron door to the holding vault should receive immediate conservation treatment.

- There remain a variety of critical bridge repair needs and these should receive immediate attention.

- The bridge requires inspection every 3 years and the 2012/13 inspection was not made. This should be immediately scheduled.

- We do not recommend that a chapel be constructed at this time. There are too many critical needs to allow such funding or distraction from critical long-term preservation concerns. In addition, careful review of similar structures reveals that the proposed cost of $100,000 is too low and will not result in sound construction with reduced long-term maintenance.

Cemetery Security

Oconee Hill, like virtually all cemeteries, has over time been plagued by vandalism. As early as 1911 an *Athens Weekly Banner* headline announced, "Desecration" with the story reporting that "depredations committed there [would] shock those who have loved ones buried there" (*Athens Weekly Banner*, March 24, 1911, pg. 5).

More recently, at least one theft is known from the cemetery. In 2002 a bronze marker, installed "just inside the [main] gate at the right of the front drive" was "pried . . . off its concrete post and removed" ("Help Sought in Finding Stolen Historical Marker," *Friends of Oconee Hill Cemetery*, Fall 2002, pg. 1). While attributed to vandals, the plaque was likely stolen for its recycling value (which today is only about $2/pound).

Unfortunately it wasn't until 2012 that Georgia limited the purchase of burial objects by secondary metals recyclers (Georgia Code of Laws § 10-1-350 et seq). This law should significantly reduce the theft of bronze funerary objects such as plaques and vases.

In 2004 the Taylor mausoleum was broken into and three skulls were stolen. While a police report was filed, the skulls were apparently never recovered.

Vandalism

Neither the Friends nor the Trustees have a formalized mechanism for identifying or reporting vandalism. Nor is maintenance at a sufficient level to preclude the likelihood of vandalism (there is a correlation between maintenance and vandalism).

At the present time there is no systematic inspection process – either by the Friends or the Trustees. It seems unlikely that the maintenance staff – so heavily overworked – would recognize vandalism for what it is, or have any idea when it occurred. It will be difficult to ascertain the level of damage the Cemetery suffers without some method of periodic inspection.

There are relatively few studies of the causes of vandalism. Those that exist present a broad range of possible reasons, including poverty, unemployment, disintegration of family life, and availability of drugs and alcohol. Other studies include problems inherent in single family homes and parents that fail to guide their children in social and moral issues. Even the judicial system itself is thought to contribute to the problem by failing to deal more harshly with offenders (see, for example, de Wet 2004).

Unfortunately, cemetery specific vandalism has not been studied and we must rely on studies largely focused on school vandalism to understand the phenomenon (although we have no assurance that the two can be reasonably related). Most school vandals are typically young (junior high school), male, and act in small groups. Participating in vandalism often helps a youth to maintain or enhance his or her status among peers. They have typically done poorly academically and have little or no understanding of how their behavior affects others. They are not, however, any more likely to be emotionally disturbed than their peers who do not commit vandalism. Those who commit vandalism are not likely to be judged harshly by their peers. Youth who lack fulltime parental supervision during after-school hours are more likely to commit vandalism.

To this we can add that vandalism at the Old City Cemetery on the UGA campus has been extensive and there seems to be a very strong

correlation between the vandalism and home football games when there is much tail-gating and considerable alcohol consumption.

Physical measures to reduce vandalism – such as installing fences and erecting lights – have great appeal. Such projects are easy to understand and physical measures generally have only a one-time outlay of funds. Nevertheless, most authorities agree that vandalism is the combined result of the offenders' characteristics and those of the physical and social environment in which the behavior occurs. If our response is to be effective we must focus on both the person and the environment. Programs that target only one of these variables – such as physical measures – will not be successful in the long-term. Moreover, they run the risk of making the cemetery appear fortress-like.

Unfortunately, measures that examine offender behavior, administrative policies, or community involvement seem more complex and difficult to implement. Group consensus for more complex programs may be more difficult, largely because the possible responses can be overwhelming. To simplify, we will focus on four main tactics: those that impact the physical environment, those that impact the offender, those that focus on administrative practices, and those that enlist the community's help. We encourage the implementation of a balanced approach involving all four tactics and believe that the success of programs to reduce cemetery vandalism rely on a broad-based initiative.

It is worth noting that vandalism does not seem especially pronounced at Oconee Hill. In fact, during this assessment we were unable to identify a single damaged stone that could clearly and convincingly be attributed to vandalism. A far more common culprit is the number of unpruned trees.

Therefore, while we will briefly mention a few steps that we recommend to minimize future occurrences, vandalism is not seen as a significant threat at present to Oconee Hill Cemetery.

Changes to the Physical Environment

Control access to deter unauthorized entry

The Cemetery boundary must be less permeable. In practice this means immediate effective repair of the existing Cemetery fencing and the erection of additional fencing where needed. These measures can reduce the opportunities for illegal or inappropriate entry and can also delay or make the intruders' efforts to get away more difficult.

In areas where the boundary fence is visible, we found areas where trees had fallen on the fence or there was other damage. We recommend that the entire fence be cleaned and repairs made where necessary.

The cleaning can best be accomplished using an herbicide such as Garlon 4 Ultra (http://msdssearch.dow.com/PublishedLiteratureDAS/dh_0061/0901b80380061e1d.pdf?filepath=ivm/pdfs/noreg/010-50595.pdf&fromPage=GetDoc) with a blue dye to mark areas sprayed along a strip about 2 feet wide outside the fence. Inside the fence the vegetation will need to be removed by hand and mulched, with the mulch spread along the fence line.

Once the vegetation is removed, access can be obtained to make fence repairs. These should minimally consist of resetting line posts, reattaching the fencing where necessary, and resetting and tensioning the three strands of barbed wire.

Additional fence should be erected to better control access from the railroad right-of-way at the entrance to the cemetery. While it may be impossible to totally enclose this frontage, the existing fence should be extended an additional 50 to 100 feet.

Figure 53. Fence damage, including fallen trees, overgrown fences, and collapse, that requires repair.

Post Regulatory Signage

Access-control signs are an important part of "rule setting" in that they establish the types of activities prohibited in the Cemetery. As discussed in the section entitled "Other Maintenance Issues," the Cemetery requires regulatory signage. These signs need to be installed at both entrance gates.

On the other hand, we observed a variety of "no trespassing signs" that give the Cemetery an unfriendly feel. These occur on chained woods roads and one was even found in Section A. These are entirely unnecessary and should be removed.

Lighting

Lighting is sometimes seen as reducing vandalism. There is no consensus on whether well-lit areas or "dark" locations are superior in terms of crime prevention. Cemeteries were not lighted historically. Thus, the introduction of lighting detracts from the historical integrity of the properties, changing the historic fabric. Another issue to be considered is that lighting is only useful if there is someone guarding the property, using the lighting to identify problems. This is not the case in most cemeteries, including Oconee Hill Cemetery.

It may be useful to place the Sexton's Cottage porch lights and the light over the maintenance building on either timers or motion sensors.

Otherwise, we do not recommend that any additional lighting be installed.

Repair damage quickly and improve the appearance of the Cemetery

Clean, well-maintained cemeteries free of debris or garbage, free of evidence of past vandalism, and with attractively landscaped grounds are less at risk for vandalism. Consistent maintenance may serve as an "occupation proxy," giving the appearance that the cemetery is under steady surveillance by those concerned about keeping it safe. Conversely, cemeteries with much trash, evidence of damage, or poorly maintained grounds give the appearance of abandonment; if no one in society cares for the property, why should the prospective vandal? Simply put, the appearance of abandonment breeds additional damage and vandalism. Thus, it is critical that the level of maintenance at Oconee Hill Cemetery be immediately improved.

Ensure Ready Access to the Property by Law Enforcement

There is no quick and reliable means for law enforcement to enter the locked Cemetery at present. They must have this access to allow them to pursue and apprehend vandals and others improperly using the Cemetery.

We recommend that a Knox-Box® be installed at both the main and rear entrances. The Knox-Box® rapid entry system is a secure emergency access program developed for property owners and fire/law enforcement departments. When there is an emergency, Knox® products allow immediate entry into buildings and property without forced entry damage or delay. Property owners store entrance keys in high-security Knox-Boxes mounted near building or property entrances. Each Knox-Box® purchased by a property owner is keyed to a single master key controlled by the fire or police department.

The cost of a Knox-Box® 3200 would be less than $300.

We also recommend the installation of a Knox-Box® at both the Sexton's Office and Cottage. In addition, we recommend that these buildings be keyed alike.

Offender-Focused Responses

Increase the Frequency of Police Patrols

Increasing the frequency with which police patrol the Cemetery periphery increases the likelihood that potential vandals will be seen. Even though police do not have access to the Cemetery grounds during routine patrols, the act of raking their spot light through the Cemetery from either Carr Street or Cemetery Street will give the appearance of visibility.

We also encourage an effort to have the police make at least a weekly patrol through the cemetery during the hours it is open. During our three-days on-site, we observed no police presence and this is a problem.

Use of Electronic, CCTV, or Photographic Monitoring

An option for hardening cemetery targets is the use of video and photographic imaging technologies. At the high end are systems such as VistaScape – an automated wide-area surveillance system that detects, tracks, and classifies objects in real time on a computer screen. If an object violates a policy set by the user, the software streams live video of the alarm event to the display and can also send wireless alerts to law enforcement personnel. Although an ideal solution, the cost makes such system beyond the reach of most cemeteries.

An alternative, however, is the Flashcam by Q-Star Technology (http://www.qstartech.com). This self-contained digital system is motion activated; a photograph is taken (a flash unit allows night photographs at 100 feet), and a customized recorded announcement is played. Units are solar powered,

eliminating the need for electrical connections. Photographs are high resolution and time/date stamped. Units can be downloaded wirelessly. Although not inexpensive, they are among the most affordable solutions for cemeteries facing on-going vandalism and theft problems.

Though the initial financial outlay may be significant, over the long term, these surveillance systems may be less expensive than security patrols. Nevertheless, we would only encourage this outlay if the Cemetery experiences significant problems in the future.

Provide Caretakers on the Cemetery Grounds

The continuous presence of a caretaker in a cemetery can deter potential intruders. At one time this was achieved by resident superintendents who lived on the property in exchanged for rent free housing. While this is not possible at Oconee, several other options are possible.

Volunteers should be given readily identifiable t-shirts (distinctive color and logo) to wear when working in the Cemetery and this should be publicized. Volunteers should be scheduled to conduct periodic inspections of the Cemetery during the week and on weekends, throughout the year. Like police patrols, these visits should be unscheduled and occur at different times and on different days. These volunteers should not confront vandals, but should be eyes and ears, providing a presence in the Cemetery and immediately reporting any suspicious activities.

Hold Offenders Accountable

Very few perpetrators of cemetery vandalism are identified and apprehended, and even fewer are prosecuted. Courts are generally lenient with offenders, and in most cases, the damage from an individual incident is seen as minor and does not appear to warrant harsh penalties. However, creative and well-publicized interventions to hold offenders accountable can have both a specific and a general deterrence effect. Restitution programs include a set of administrative and legal procedures to get money from offenders to pay for repair or replacement of damaged property. Publicizing the results of these efforts is important to maintain their deterrent effect.

Both the Trustees and Friends should ensure that police investigate vandalism and work to secure an arrest. If an arrest is made, representatives of the Friends should be present in court, testify concerning the impact – and cost – of the damage, and ask for the maximum punishment possible. If no restitution is required by the court, the Friends should consider civil court action to recover costs associated with professional repair of the damage.

Management Practices

Maintain an Inventory of Cemetery Stones and Their Condition

Vandalism often goes unreported because cemetery caregivers do not know what is present in the cemetery or its condition. Thus, vandalism can be overlooked as pre-existing damage. We understand that many of the stones in the cemetery have been photographed. An effort should be made to make these photographs more accessible, especially if there is evidence of vandalism.

Volunteers must also become familiar with the stones in the Cemetery and their condition. While it is obviously impossible to know each stone, volunteers may be assigned specific areas to become familiar with the stones and the condition of the stones in that one area. Inspections could then be conducted monthly.

Community-Focused Responses

Provide Rewards for Information Concerning Vandalism

Offender-focused responses require that vandals be identified and apprehended. Police

investigations of vandalism incidents can be enhanced by high-quality information provided by community residents and even students from local schools. As seen with traditional "Crime Stoppers" programs, setting up telephone or internet-based tip-lines, offering rewards for information, and guaranteeing anonymity encourages people to come forward with specific information. The most effective programs actively involve volunteers in collecting and synthesizing information for police, and in determining payout amounts in the event of apprehension.

Create "Cemetery Watch" Programs

Similar to "Neighborhood Watch" efforts, community residents can conduct citizen patrols of Cemetery property during evenings and weekends. Membership and regular participation in voluntary patrols increase when some form of prestige is offered to volunteers. Effective practices include:

- patrolling regularly, but at unpredictable times;
- ensuring volunteers have cell phones for prompt communication with police or other emergency services;
- engaging in passive surveillance only, and not interacting with potential vandals or intruders in any way; and
- publicizing activities and outcomes through school-based and local media outlets.

As an adjunct to this, residents in adjacent buildings should be especially encouraged to be attentive to problems in the Cemetery. Unusual noise, lights, or activities should be sufficient to have neighbors call the police to report their concerns. The Friends should seek to encourage the active participation of residents surrounding the Cemetery, especially in the Carr Street vicinity. Meetings should be held, preferably in the evening and preferably on the premises of the residents, to allow the Friends to enlist the support of these residents.

In response to a specific problem or rash of incidents, Watch programs can produce short-term reductions in vandalism. However, these programs are difficult to sustain, so the Friends will likely need to periodically "rejuvenate" the program by holding new meetings and bringing in new participants.

The Friends should also consider developing similar programs at UGA, enlisting students (such as those in fraternities and sororities or students with specific emphases, such as historic preservation) to assist in collecting trash, cleaning stones, painting fences, or other activities. Boy and Girl Scout troops should also be contacted. Involving students in the care of cemeteries, and engaging them in ongoing, active projects will help establish a strong bond in the community.

Vandalism Records

We recommend that The Cemetery develop a form designed for the reporting of cemetery-specific vandalism (Figure 54). This form should include information such as what was damaged, with specific information concerning each stone, including the name and lot/plot; how the stone was damaged (toppled, broken into how many fragments, scratched, etc.); where is the stone now (was the broken stone gathered up for storage, if so, where is it stored); an estimate of when the damage occurred, including the last time the stone was known to be undamaged; an estimate – from a conservator – of the extent of the damage and cost for repair; a photograph of the damaged stone; when police were notified; when police responded and took a report, with a copy of the report attached; and the outcome of the police investigation.

Theft

There are no specific records of theft other than the few items mentioned in the introduction to these discussions. Nevertheless, we do know that theft has been a long-standing issue, as it has elsewhere.

Chicora Foundation, Inc.
PO Box 8664
Columbia, SC 29202
803-787-6910

CEMETERY VANDALISM/DAMAGE REPORT FORM

Cemetery: **Number of Stones/Objects Involved:** **Are Human Remains Involved:** ☐ yes ☐ no

Grave #: **Section #:** **Lot #:**

Date/Time Damage was First Observed: am/pm **Name of Observer:**

Date Last Observed Undamaged: am/pm **Name of Observer:**

Potential Witnesses:

Nature of Damage (attach photographs of damage):

Date Reported to Police: **Investigating Officer:**

Police Incident No: **(Attach a legible copy of police report to this form)**

Estimate of Damage (attach justification, conservation treatment proposals): $

Owners of Monuments Identified: ☐ yes ☐ no **Owners Will Repair:** ☐ yes ☐ no ☐ not certain

Follow Up with Police:

Repairs Undertaken by Cemetery (attach conservation treatment reports):

Total Cost of Repairs: $ **Insurance Eligible:** ☐ yes ☐ no **Date Claim Submitted:**
Date Claim Approved/Paid: **Amount of Claim Payment: $**

Internal Evaluation for Future Prevention:

Form Completed By: **Date(s):**

Figure 54. Example of a vandalism report recommended by Chicora.

At Oconee Hill, for example, in just East Hill, a quarter of the gates have been stolen. There are numerous gates in the cemetery that are easy to lift off their connectors and steal. These gates are valued in antique stores and are almost impossible to recover once stolen.

Figure 55. Example of a gate protected with stainless steel cabling that has been painted to blend with the fence.

It is a simple maintenance step to use woven stainless steel wire to secure gates to their hinge posts. This allows the gates to open and close, but makes them considerably more difficult to lift off their hinges and steal. The cost to protect gates is less than $20 each and the time involved is about 15 minutes. This is something that the Cemetery staff, the Friends or other volunteers could easily accomplish. The NPS article, http://crm.cr.nps.gov/archive/25-02/25-2-15 .pdf provides additional information.

Dealing with the Homeless

The 2009 Point in Time Survey, which provides a snapshot of people experiencing homelessness on a particular night of the year, has already been discussed for Athens. Readers may remember that it identified over 450 homeless in the Athens area. Fully a third have a severe and persistent mental illness, over a quarter are chronically homeless, and nearly half have chronic substance abuse.

Clearly homelessness is an extremely complex social problem that impacts the quality of life in every community. There are no easy solutions. There is a fine line between homelessness as a social issue and a criminal issue. Many homeless are on the street because of substance abuse, mental illness, or both. Often the disorder issues associated with homelessness are criminal in nature but difficult to enforce.

While being homeless is not a crime, many kinds of public conduct are illegal and should be reported to the Athens-Clarke County Police Department. These include being intoxicated, loitering, prowling, fighting, trespassing, aggressive panhandling, soliciting, urinating and defecating, consuming alcoholic beverages in public, camping or sleeping in public areas, littering, disturbing the peace by loud and unreasonable noises, using offensive words, behaving in a threatening manner, etc.

At present we are told that should homeless be encountered they are asked to leave. As a public cemetery it is inappropriate to request anyone leave the property without a specific cause. When a cause exists, we recommend that law enforcement be notified and asked to escort the individual out of the cemetery. By doing so the Cemetery avoids liability and any resulting anger is more likely directed to the police than the Cemetery property.

Should any shopping carts, bedding, or other personal belongings be found secreted away in the cemetery, they should be removed from the promptly. The landscape must be maintained to prevent hiding places and to ensure clear lines of sight. The Cemetery must be kept free of litter and debris.

Building Security

As previously discussed, the alarm systems in the Sexton's Cottage, the Sexton's Office, and the Maintenance Building should be carefully evaluated.

The Sexton's Cottage should not only have contact alarms, but also glass break alarms to detect entry through windows. The basement should be protected using a passive infrared sensor (PIR sensor). Smoke detectors should be installed on both the main floor and in the basement. If funds allow, a heat detector should be considered for the attic. If the current system will support it, we recommend that Trustees, Friends, and Staff each have a different arm/disarm code.

The Sexton's Office should have a similar array, although because of the smaller building size a simple door contact and PIR sensor may be sufficient. The structure should have a smoke detector.

The Maintenance Building is especially vulnerable given the amount of equipment stored there. The structure should have one or more PIR sensors, as well as a smoke detector. If dust is found to cause nuisance alarms a heat detector may be used, but it is a poor choice for many types of fires.

We recommend that the Sexton's Cottage and Office be keyed alike and that a Knox-Box® rapid entry system be installed for the buildings.

Equipment Security

The Cemetery has suffered one loss of equipment and this is not surprising.

Landscape and construction equipment theft is a billion dollar industry and most often the reward is greater than the risk. Georgia is tied with South Carolina for the fifth spot in terms of equipment thefts in 2012. Nearly half of all stolen equipment was lawn mowers. Tractors account for an additional 13% of thefts. Toro is the fifth most common brand stolen and most equipment thefts occur in June, July, or August – precisely when the equipment is most valuable for resale and when the Cemetery can least afford to be without equipment.

The majority of stolen equipment (80%) is never recovered and many thieves are repeat offenders. Recovery of equipment is difficult for several reasons. There is no mandatory equipment database that police are able to rely on (as with an automobile); identification of the equipment can be difficult; and the time of discovering that a theft has occurred can take days or sometimes weeks, depending on when the equipment is needed or used. In addition, equipment is not titled or registered like a car, so when someone buys used equipment it is difficult for them to know if it is stolen or not.

Although 100% prevention is unlikely, there are several things that the Cemetery can do to deter theft and increase chances of having the stolen items returned. Remember that if you can make your equipment a more difficult target, then often thieves will move on, targeting equipment elsewhere.

Equipment can be customized by painting it with unique colors and the Cemetery logo. This will make it harder for a thief because they will have to remove the paint prior to being able to sell it.

All equipment should have Owner Applied Numbers (OAN) that are large and easy to see.

The Cemetery should maintain a detailed and accurate inventory of all equipment. This inventory should include the year, manufacturer, model number and PIN or serial number from actual plates/decals. All numbers on the

equipment, including engine numbers, should be recorded. When describing a unit, use actual manufacturer model names; avoid using generic terms such as "tractor" or "mower."

Use etching tools, die stamping or a steel punch to duplicate a unit's Product Identification Number (PIN) or other serial numbers in at least two places on the equipment, one obvious, one hidden; record the location of these numbers. This will help in the identification of your equipment and proof of ownership.

All equipment should be photographed, showing as many sides or views as possible.

When the equipment is stored, it is useful to chain or wire rope all of the items together. This provides another security layer and will further slow down a thief.

The Cemetery should ensure that all equipment is listed with its insurance carrier and consideration should be given to the appropriateness of the chosen deductible.

Turf magazine has an article that may provide some additional guidance at http://www.turfmagazine.com/article-2737.aspx.

Non-Owned Equipment

We understand that some of the equipment being stored at the Cemetery is not owned by the Trustees. Specifically, the Sexton has brought in an ATV, as well as a backpack blower.

While it is admirable to be willing to "loan" equipment to the cemetery, we discourage this practice for a variety of reasons. It comingles equipment and, without an inventory, makes it impossible to prove ownership on either side. It also creates a situation where the Cemetery faces additional liabilities, especially in the case of an ATV, which many insurance carriers will not routinely cover and which by practice tend to be more prone to accidents. We note that in 2011 there were more than 100,000 injuries and 500 deaths involving ATVs in the United States.

The ATV Safety Institute (http://www.atvsafety.org/) recommends wearing a variety of safety equipment, including a helmet, gloves, and goggles. They also note that ATVs are intended to be operated off-road and there is no need to operate off the paved roads in Oconee Hill Cemetery. Both the ATV Safety Institute and the U.S. Consumer Safety Commission recommend that all users take a hands-on safety course.

While we have elsewhere recommended that the ATV be removed from the Maintenance Building to make room for Cemetery equipment, the Trustees should evaluate whether this equipment really needs to be operated in the Cemetery. We believe that street vehicles would serve the same function and present less liability to the cemetery.

Keys and Related Issues

All Cemetery locks and keys should be numbered. As many as possible should be keyed alike. For example, we recommend that all padlocks on chained roads be keyed alike, all maintenance locks be keyed alike, and so forth. This will significantly reduce the level of effort necessary and will begin to reduce the number of keys necessary.

A good introduction to padlock security and different types of padlocks is provided by http://www.insight-security.com/uploads/files/choosing_your_padlock_-_10_critical_factors.pdf. One of the higher security padlocks in the U.S. market is the Assa Abloy Medeco System Series (http://www.medeco.com/en/site/medeco/Products/?groupId=915458&productId=915470). It is, however, unlikely that the cemetery requires such a padlock for routine use, especially without reinforcing or replacing hasps.

We have previously recommended, in a similar goal to improve security, that both the Sexton's Cottage (including the basement) and the Sexton's House be keyed alike.

The Trustees should ensure that there are

duplicates of all keys and they are stored in a locked key box to which only the Office Manager, and one or two Trustees, have keys. This will ensure that should keys be lost or stolen that the Trustees are immediately aware and are able to make a determination of whether rekeying is necessary. It will also prevent random use – and failure to return – duplicate keys.

Recommendations

- Vandalism is not currently a significant issue at Oconee Hill. The Trustees and Friends should, however, review options to combat vandalism and determine which could be implemented to help harden the cemetery against vandalism.

- The boundary fence should be cleared of all vegetation using a combination of brush killer and hand labor. Once cleared the fence should be inspected and repairs made as necessary.

- The boundary fence should be extended along the front railroad tracks for an additional 50 to 100 feet.

- All plot gates should have stainless steel cabling used to attach the gate to the hinge post to reduce the potential for theft.

- The Cemetery should begin using a form to identify and record evidence of vandalism.

- Homelessness is not a crime and absent some specific infraction the Cemetery staff may not request the homeless to leave the Cemetery. If there are rule infractions (open alcohol, drunkenness, belligerent behavior, etc.), the incident should be reported to local law enforcement. Staff should no longer attempt to deal with the issue.

- Additional security measures should be implemented as necessary to ensure that the Sexton's Cottage, the Sexton's Office, and the Maintenance Building are all appropriate protected against illegal entry and fire.

- The Knox-Box® rapid entry system should be installed at the front and rear gates, and on the Sexton's Cottage and the Sexton's Office. To facilitate this process the structures should be keyed alike and the gates should be keyed alike.

- Cemetery equipment should minimally have Owner Applied Numbers stenciled on all equipment in a highly visible location. These numbers and Oconee Hill Cemetery should be etched or stamped in one or more locations on the equipment. All Cemetery equipment should be inventoried and photographed. This inventory should be provided to the insurance carrier to determine that all equipment is covered in case of damage, loss, theft, or mysterious disappearance.

- When the equipment is stored overnight, it should be chained or, preferably, cabled together to make it more difficult to quickly steal items.

- Personal or non-owned equipment should not be stored on cemetery property.

- All Cemetery keys and padlocks should be numbered. As many as possible should be replaced with keyed-alike padlocks. Duplicate keys should be made and stored in a lock box for which only one or two Trustees have access.

Cemetery Fixtures and Furnishings

Several cemetery issues sometimes discussed under "fixtures and furnishings" have already been discussed. These include the Cemetery's buildings, discussed in the section "Structure Issues," and the boundary fence, discussed in "Security." Readers should review those sections for additional information on these topics.

Mausoleums

Although mausoleums are technically monuments, they are discussed here since there are only four in the cemetery and they do require a different preservation approach. In addition, these mausoleums were given only a cursory inspection. While all are in better condition that the Cemetery's own Receiving Tomb, they should be given a more thorough examination as time allows.

Figure 56. Silicone caulk that has failed on the Glenn Mausoleum in West Hill.

Mausoleums suffer many of the same problems found in masonry buildings – poor foundations, settling, splaying walls, roof leaks, iron jacking, and so forth. They require constant maintenance just as any structure. They also pose a liability to the Cemetery far in excess of typical monuments.

Given the problems that mausoleums can pose to cemeteries, we strongly recommend that should any owner in the future desire to build such a structure, the Cemetery should charge them a perpetual care fee equal to the cost of the mausoleum construction.

The Glenn mausoleum is found in West Hill and is made from marble, measuring 8 feet by 3 feet 7 inches by 4 feet. Although the condition is satisfactory, it was apparently repaired (there is a new front panel) using silicone and other caulks. While such caulks are often used by monument companies today, the products are inferior to appropriate mortar mixes and fail readily. This mausoleum does require additional work to maintain a relatively tight seal. The stone also exhibits atmospheric staining and biological growth.

The Smith Mausoleum is found in Section F-2. It is of granite construction and measures about 11 feet by 11 feet by 20 feet. The structure has bronze doors, although it appears that the glazing has been replaced with solid


Figure 57. The Smith Mausoleum in Section F-2.

metal. The overall condition of the mausoleum is good, although the granite is stained and exhibits light lichen growth.

East Hill includes two mausoleums, ranging from fair to good condition.

The Hunter mausoleum is marble and measures about 11 feet by 8 feet by 7 feet in height. The most noticeable deficiency observed was the need for the marble to be pointed. The structure does exhibit extremely heavy biologicals and these obscure details. Cleaning is also recommended.

The Taylor/Lucas Mausoleum is the most complex in the cemetery and is also constructed of marble. This is without doubt the most ornate and complex of the private mausoleums in the cemetery. It measures 12 feet by 6 feet and is approximately 25 feet in height. We are told that at one time an angel was mounted on the roof. The overall condition of this structure appears good. There are heavy biologicals and cleaning is recommended.


Figure 58. The Hunter Mausoleum in East Hill.

Other Amenities

Benches are the most common amenity in the Cemetery, with 71 being identified in this study (Table 6). The most common material is granite, accounting for about 38% of the total, followed by concrete contributing an additional 34%. Also found were two cast iron benches, marble, fieldstone, wood, and resin benches. In general the granite and marble benches were in the best condition and the wood and resin benches were in the poorest condition.

Eventually all benches require some degree of maintenance and often plot owners are no longer able to make repairs.

There is currently no prohibition against benches or regulation regarding the material in

Figure 59. The Taylor/Lucas Mausoleum in East Hill.

the *Rules and Regulations of the Trustees of the Oconee Hill Cemetery*, although the rules do permit the Trustees to adopt future rules and regulations. We recommend that in the future only granite benches be permitted since they are most likely to survive with minimal maintenance. In addition, consideration should be given to prohibiting additional benches in the older sections of the cemetery since they would not typically have existed when the older sections were most active and are therefore out of character. Relatively few benches appear to be used on a routine basis and their presence may simply attract vagrants or others that will discourage use of the Cemetery by the public.

Urns or vases are also relatively common, especially in the newer section, with 54 being identified in this assessment. Typical urns are granite and marble, although concrete is also found. Most are in functional condition, although almost none are being used as intended. Urns are often sold by monument companies to clients who are unaware of the upkeep. As a result, the urns often hold water, breed mosquitoes, collect trash, are turned upside down, or are just ignored. They are rarely repaired or replaced when broken. They are likely not used since most floral arrangements today come in their own plastic container, rendering the urns and vases redundant. We saw no urns actually planted in annuals or perennials as they were intended to be.

Since all monument designs must be approved by the Trustees, some consideration should be given to prohibiting the introduction of additional urns or vases in the cemetery.

Table 6.
Plot Amenities by Section

	Benches							Urns
Section	Iron	Concrete	Granite	Marble	Fieldstone	Other	Not Specified	
B			1	1				3
C		1		1				11
D		3	3	1				12
E		3	2	3	1			1
East Hill							1	6
F-1		1		1				0
F-2		1	4	1				0
New G		2	2					1
Old G		1	3	2		1		9
H		2	5	1				2
J	1	4	7		1	1		2
North Slope								1
River Rd.		5						2
Valley	1	1						4
West Hill							2	0

Figure 60. Bench and urn problems in the cemetery. The upper row shows two unsafe, poorly supported benches, one concrete and the other granite. The middle left photo shows a poorly set granite bench that is a safety hazard. Middle right photo shows two concrete urns, neither of which are planted. The urn on the left shows typical freeze-thaw deterioration and should be removed. The urn on the right is filled only with trash. The bottom left photo shows a polished granite urn that is partially filled with water. The bottom right photo shows a marble urn that is filled with trash and debris and which is settling in the ground.

In addition, there are obviously unsafe benches. Families with unsafe benches should be sent a registered letter demanding repair or replacement, or the Trustees will enforce their right to remove the item.

We have previously mentioned the flagpole at the cemetery, but again make note of it since it is essentially another amenity. There does not appear to be an active constituency maintaining it. The flag must be all weather if it is to be flown in inclement weather and it must be lighted if it is not taken down at night.

The placement of the flag at the entrance is inconsistent with the other eighteenth and nineteenth century features such as the Sexton's House and West Hill. We stop short of recommending its removal, but the Friends and Trustees must be more careful not to introduce incongruous items into the cemetery, as well as avoiding the introduction of items that require long-term maintenance. There are simply too many demands already placed on the funding ability of the caregivers.

Recommendations

- All of the mausoleums require cleaning. Given the liability large structures pose, we also recommend yearly inspections.

- There are benches in the Cemetery that are unsafe. The owners of these amenities should be notified by registered letter to make the benches safe. If they are not, the Cemetery should remove the benches.

- The Trustees should consider revising the rules to limit the introduction of additional benches on plots in the older sections of the cemetery. The Trustees should limit future benches to granite.

- The Trustees should limit the introduction of additional vases or urns in the cemetery.

Landscape Issues

Staffing

To refresh the memory of readers, Oconee Hill Cemetery consists of about 38.8 acres of plots. We understand that this has traditionally been maintained by the Sexton, one or two assistants, and some seasonal hires. In 2013 we understand the staff consisted of 3 full time individuals (including the Sexton) and three seasonal hires. Elsewhere we are informed that there were 3.41 FTE. Assuming 3 full time employees, this leaves less than .5 individual for 12 months, or three seasonal hires for not quite three months.

Salaries

We understand that the Sexton's salary is about $40,300 a year, although this does not include a $3,000 a year truck allowance, $2,500 a year for Saturday work, substantial tips from the Lettermen, a $150 Christmas bonus, and a $50 referral fee for each time the Sexton's Cottage is rented as a result of his referral. These would bring the total salary to over $45,800. Hospitalization insurance is also provided.

The Department of Labor's Occupational Employment Statistics System reveals that the annual mean wage for a first-line landscape supervisor is $42,700 in Athens-Clarke County. The annual median wage is $42,400.

Thus, the Sexton's salary is very generous and actually well above both the mean and median salaries for the immediate area. Even if the truck allowance and additional pay for Saturday work were removed, the base salary of $40,300 is still very reasonable for a non-profit cemetery.

We believe adjustments are appropriate. The $3,000 a year for vehicle use amounts to 5,400 miles a year at the IRS rate of 0.55½¢ per mile. We recommend that this money be spent on purchasing several utility vehicles for use in the cemetery (discussed below under equipment).

In addition, Saturday pay is reasonable only if the Sexton is classified as a non-exempt employee. Certain classifications of employees are considered exempt and thus do not receive overtime pay. Generally such employees are paid on a salary rather than an hourly basis and earn at least $455/week. In contrast, non-exempt employees are entitled to overtime pay by the Fair Labor Standards Act.

While we realize that the $50 referral fee is very modest, it seems unreasonable to pay an employee for supporting and encouraging the success of a Friends organization. If the Friends do well financially (which is at least partially related to renting the Sexton's Cottage), then they are able to purchase equipment and other cemetery needs that will no doubt make the Sexton's job's easier. Thus, there should be substantial incentive without a referral fee.

Full-time landscape technicians are reportedly paid $9.50/hr. Part-time landscape technicians are paid $8.75/hr. The Department of Labor does not distinguish between full and seasonal workers in its landscaping and grounds keeping workers data for Athens-Clarke County. The hourly mean wage is $9.69, while the hourly median wage is $8.94. The 75th percentile hourly wage is $10.70.

Thus, compared to other similar workers, both the full-time and part-time landscape technicians at Oconee Hill are being underpaid by comparison to other jobs in the field.

In addition, it is important to compare

these wages to either "living wages" or "self-sufficiency wages," which are again calculated specifically for the Athens-Clarke County area.

Both the full and part time landscape technicians' wages are considered living or self-sufficient wages – but only if the individual is single, supporting only themselves and no children or spouse. While such individuals exist, they do not contribute to a stable workforce and tend to be transient in nature. There is also no ability to advance, further devaluing the pay.

Job Descriptions

We understand that at present there are no published job descriptions. This is a significant error on the part of the Trustees, for if there is no job description, then it becomes impossible to determine how effectively an employee is performing their job.

Cemetery Landscape Manager

In general, we understand that the Oconee Hill Sexton is responsible for landscape maintenance and selling plots. We have previously recommended that the two tasks be split and that an office manager be placed in charge of the office, sales, and public interaction.

The position of Cemetery Sexton grew out of the eighteenth century, when the sexton was responsible for recording burials and seeing that graves were dug in churchyards and city cemeteries. Landscape maintenance duties were light, at best, and pay was often based on the number of burials. In the twenty-first century it is an antiquated term and no longer provides a clear statement of duties and responsibilities.

A position such as Cemetery Landscape Manager or Grounds and Facilities Manager would be more appropriate. While such a job description needs to be developed by the Trustees, we can offer a few suggestions.

The description should specify to whom the individual reports. We do not believe it has served the Cemetery well to have the Sexton report to one Trustee alone. We recommend that the individual reports to either the Trustees as a group or a maintenance committee. The description should also specify whether the individual will be classified as exempt or non-exempt.

A general statement of duties may be along the lines of, "Directs cemetery program, supervises workers in maintaining graves and equipment."

The individual should have training in equipment such as backhoe, mowers, lowering devices, compactors, trimmers, air compressors, grinders, hand and power equipment, chains, ropes, saws, paint brushes, bars, sod rollers, rakes, heaters, etc. They should also have knowledge of replacement parts, hardware, lubricants, paints, grave markers, records, and miscellaneous reports. They should also be capable of updating and maintaining computer systems.

The work environment should be specified as "Indoor/outdoor all weather conditions." The description should specify that the individual is responsible for exercising supervision over equipment operators, landscape maintenance technicians, and laborers. Physical requirements should include a statement that the individual will be responsible for manual labor including lifting and carrying heavy objects, bending, kneeling, climbing, extensive walking, and the ability to operate Cemetery equipment is required daily in the position.

Specific job duties, often referred to as "performance responsibilities," should include such items as: supervises and coordinates activities of workers in providing burial services and maintaining graves and equipment, vaults, and mausoleums; performs turf management; prunes trees and shrubs; responsible for maintaining cemetery grounds, roads, buildings, and equipment; directs the location of burial markers installed by other persons; plans and performs landscaping; plants new trees and

removes old ones; hires, evaluates, and disciplines landscape technicians; locate graves, supervise opening of graves, internments, and reinternments; maintain time records for regular employees and other employees; make purchases in accordance with Trustee policy; make recommendations for equipment purchases and cemetery improvements; assure that the grounds crews' uniforms, personal appearance, actions, and demeanor present an appropriate image to client families; maintain a safe working environment by training the staff in proper techniques and use of safety equipment; manage landscape contracts and contractors to ensure compliance with Trustee standards; and assure that the Cemetery complies with OSHA and EPA regulations and that the employees comply with appropriate regulations. As with most job descriptions, there should be a phrase noting that the list is not all-inclusive and duties will vary depending on the direction of the Trustees.

Knowledge, skills, and abilities should include a minimum of two years' experience; knowledge of computerized cemetery systems; understanding the rules and regulations pertaining to the cemetery, including requirements related to lots; and good public relations skills. The description should specify a thorough knowledge of turf management, plant nutrition, equipment repair and maintenance techniques, safety procedures, mechanics, and a working knowledge of mathematics.

The individual must be able to operate tractors, backhoes, loaders, mowers, turf maintenance equipment, pruning equipment, hand tools, and other Cemetery equipment. The ability to understand and anticipate problems, to enforce department safety policies and procedures, and to interpret written instructions, maps, schematics, diagrams, reports, and manuals is required. This employee should possess a strong mechanical aptitude, and excellent public relation, supervisory, organizational, oral and written communication skills. The individual must also be able to work as a team member.

The minimum qualifications should be a high school diploma or equivalent, a minimum of three years cemetery experience, prior supervisory experience in the same or related field, a valid driver's license, and a clean driving record. The job description must also make clear that continuing education in a related field is expected. It would be appropriate to note that this is a hands-on supervisory position that will manage the maintenance operations at Oconee Hill Cemetery.

We also recommend that the position statement specifies the individual currently holds or will obtain within 6 months of employment a private pesticide applicator license in the State of Georgia. This license can be obtained free of charge by attending training at the local County Extension Office. The description should also specify that the license must be keep current by obtaining the required continued education training (currently 3 hours of CEUs are required every 5 years).

Cemetery Landscape Technician

This job description can obviously be simpler, although it should still cover all of the previous broad headings. It should indicate that the position is for semi-skilled work in general cemetery maintenance.

Essential duties might include such items as: hand rake around memorials, shrubs, trees and clean up low spots; use hand tools to dig ditches or holes; remove tree suckers and other undesirable vegetation; pick up trash; hand shovel dirt, gravel or asphalt; operate large deck mowers; operate small push mowers; service mowers; sharpen blades daily; clean equipment; wear safety equipment, including eye and ear protection; use shovel, rake, sod roller, etc.; seed and sod; weedeat using gasoline powered nylon trimmers; trash and rubbish removal; chipping vegetative debris; general clean-up of grounds, buildings, lunch room; washing mowers and equipment; general clean-up of tools and return to proper place; light carpentry and painting; repositioning or resetting memorials; and running errands (fill gas cans, obtain parts, etc.).

Knowledge, skills, and abilities should specify that the individual must be at least 18 years old; must have a valid driver's license; must have and maintain a satisfactory driving record; must have the ability to perform the cited tasks; must be able to work 40 hours a week, plus overtime if required; ability to arrive at work on time; and ability to maintain a regular and reliable level of attendance. We also recommend a statement such as, "high school graduate or equivalent desired" as well as "must be proficient in English."

The work environment should be specified as "Indoor/outdoor all weather conditions." Physical requirements should include a statement that the individual will be responsible for manual labor including lifting and carrying heavy objects, bending, flexing, twisting, stooping, crouching, kneeling, climbing, extensive walking, and the ability to operate Cemetery equipment is required daily in the position.

Cemetery Office Manager

This job description can be generally clerical with an emphasis on public relations since the individual will be tasked with greeting guests, providing tours, answering cemetery questions, and helping to locate graves.

There should, in addition, be some specific cemetery-related duties. For example, supervises and conducts cemetery lot sales, maintains records of lot ownership and burials; direct/coordinate interments and disinternments. Be responsible for paperwork and communi-cations with funeral homes or families concerned; maintain plot and lot records on map and on computer; record receipts, receive money, transfer funds to Trustees; maintain the record of burials by name, age, sex, date, lot number, etc.; receive burial permits; make purchases in accordance to Trustee policies; make recommendations for cemetery improvements; and coordinate with the landscape superintendent regarding needed maintenance.

Specific knowledge, skills, and abilities might include: thorough knowledge of the principals and practices of office management and administration, including office record keeping and reporting; knowledge of budget preparation, book keeping methods and principals; knowledge of the occupational hazards and standard safety precautions of the work; ability to carry out administrative details independently; ability to establish and maintain effective working relationships with co-workers, local funeral homes and monument companies, and the general public.

The job description may indicate that the position is sedentary work that involves walking or standing some of the time, exerting up to 10 pounds of force on a recurring basis, routine keyboard operations; the job requires normal visual acuity, field of vision, hearing, speaking, color perception, sense of smell, depth perception, and texture perception.

In terms of job requirements, a high school diploma or its equivalent, four years of experience in cemetery management, or an equivalent combination of education and experience that is determined to be directly related to the job requirements may be substituted. As with other positions, the applicant should hold a valid driver's license. It may also be useful to require the individual to be, or become, a notary public within three months of hiring.

Job Oversight

Regardless of the credentials or certification, the complexities of Oconee Hill Cemetery require that the technicians are well supervised and are held accountable for their performance. It is especially important, therefore, that the supervisor(s) be carefully defined. The selected individual(s) must not only be well trained and knowledgeable, but also possess demonstrated supervisory experience. The supervisor(s) must be expected to work alongside the crews on a daily basis.

As will be more fully explained in these discussions, the current crew requires more supervision than they are currently receiving. The

Elements	Work Performed this month	Problems requiring attention	Suggestions for Improvement
BEDDING PLANTS & PLANTERS			
SHRUBS & TREES			
GROUNDCOVERS			
PERENNIALS & GRASSES			
LAWNS			
HARD LANDSCAPE AREAS			
IRRIGATION			
LIGHTING			
OTHER			

Figure 61. Brief landscape maintenance report.

Cemetery Landscape Manager must take responsibility for all activities and ensure that standards are fully communicated and achieved.

In addition, it becomes critical for the Trustees to take a more active role in the management of the cemetery. While not everyone can be equally well versed in all aspects of cemetery management, this assessment should provide the background for the Trustees to more fully understand what needs to be accomplished.

The Cemetery Landscape Manager should be responsible for providing the Trustees with a written monthly report itemizing activities during the month. This document need not be extensive, Figure 61 provides a brief list that may be helpful. Figure 62 provides a more extensive checklist that the Trustees may find helpful when they independently review the condition of the landscape.

Size of Staff

We typically recommend two workers and one supervisor per 10 acres. This is based on the Boston Historic Burying Grounds Initiative (Atwood et al. 1989) and is particularly suitable for the situation at Oconee Hill since it is estimated that mowing old cemeteries with 3-dimensional monuments requires six-times the labor than modern lawn park cemeteries (Klupar 1962:239; Llewellyn 1998:100).

Thus, for the approximately 38 acres of Oconee Hill Cemetery, we would recommend a full-time staff of 12 people – far more than the attention currently devoted to the cemetery. As an initial increase, we recommend increasing full-time, permanent staffing to nine; this might include the Cemetery Landscape Manager, two crew leaders, and six technicians.

The current staffing level is impossibly low and affects the ability of the Trustees to have an adequate presence in the cemetery, perform the necessary maintenance, and help ensure the long-term viability of the cemetery. The higher level of staffing would also help minimize vandalism and inappropriate activities in the cemetery.

Appropriate maintenance established by good practice includes weed control, tree trimming, pruning, seasonal cleanup, maintaining the roads, conducting section inspections, survey of monuments for maintenance needs, maintenance of shrub beds, maintaining section signs, maintaining water lines, rehabilitation of barren areas, raking, resetting stones as needed, inspecting and repairing fences, watering newly planted areas, sodding as necessary, identification of trees for removal, removal of flowers and grave decorations, removal of wild growth, and inspection and cleaning of catch basins (see, for example, Klupar 1962:226-228).

The importance of maintenance was clearly stated by West, “one thing is certain, the

Cemetery Maintenance Inspection Form

Cemetery:_____ Date:_____ Inspected By:_____

Elements	Issues	Good	Requires Attention	Not Applicable	Comments/Location
LAWNS	General Appearance				
	Mowing Height				
	Water/Moisture				
	Edging/Trimming				
	Pest/Disease Control				
	Weed Control				
	Fertilization				
	Other				
BEDDING PLANTS & PLANTERS	Plant condition				
	Water/Moisture				
	Pest/Disease Control				
	Cultivation				
	Staking				
	Dead Heading				
	Trimming				
	Fertilizing				
	Weed Control				
	Edging				
	Mulching				
	Other				
PERENNIALS & GRASSES	Plant Condition				
	Water/Moisture				
	Pest/Disease Control				
	Cultivation				
	Staking				
	Dead Heading				
	Trimming				
	Fertilizing				
	Weed Control				
	Edging				
	Other				

Chicora Foundation, Inc. • PO Box 8664 • Columbia, SC 29202 • 803-787-6910

Elements	Issues	Good	Requires Attention	Not Applicable	Comments/Location
SHRUBS & GROUNDCOVERS	General Condition				
	Water/Moisture				
	Pest/Disease Control				
	Pruning				
	Shearing				
	Trimming				
	Weed Control				
	Cultivation				
	Fertilizing				
	Mulching				
	Other				
TREES	General Condition				
	Water/Moisture				
	Pest/Disease Control				
	Edging Wells				
	Mulching				
	Pruning				
	Repair				
	Hazards				
	Plant Support				
	Stakes/Wires/Anchors				
	Base Damage/Girdling				
	Fertilization				
	Other				
IRRIGATION	Heads/Risers				
	Pressure				
	Coverage				
	Controller Settings				
	Leaks				
	Other				
DRAINS/DITCHES	Debris				
	Pollution				
	Other				
FURNISHINGS & FIXTURES	Damage				
	Dirty				
OTHER					

Chicora Foundation, Inc. • PO Box 8664 • Columbia, SC 29202 • 803-787-6910

Figure 62. Form that can be used by the Trustees as an independent evaluation of landscape conditions.

cemetery must be maintained in a proper manner or public confidence will suffer" (West 1917:26). That is almost certainly what has already occurred at Oconee Hill with a FTE staff of only 3.41 individuals.

This larger – and permanent – crew would also allow the Cemetery to train certain employees in the appropriate way to reset monuments, as well as make simple repairs. It would be possible to undertake, for example, an appropriate level of fence maintenance and even begin repairing the numerous collapsing retaining walls. Operating a permanent crew will also allow the employees to develop a sense of ownership and continuity. It also reduces the need to yearly begin the process of identifying candidates, hiring, and then training, only to lose those employees only a few months later.

Consequently, the Trustees must provide a staffing level that will maintain the beauty, dignity, and historical significance of this cemetery.

Staff Hiring and Continuity

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

Obtaining this continuity, of course, demands that the Trustees provide a reasonable pay scale for new workers and ensure that staff do not feel trapped in a dead-end job. This can be accomplished by annual reviews and salary increases, as well as providing staff training opportunities.

While continuity is good, no position should be viewed as hereditary and the Trustees should enact a prohibition against nepotism. The Cemetery Landscape Manager must be able to adequately supervise and discipline staff. This is made far more difficult when a family member is employed.

If the Trustees desire professional landscape maintenance it is critical that they expect all employees to be well trained, must act, and must look professional at all times.

Staff Training

At the present time there is essentially no training provided at Oconee Hill Cemetery. This was particularly evident in the area of safety. We observed staff refilling gasoline in lawn mowers while smoking cigarettes; we saw no use of either eye protection or hearing protection while using blowers or nylon trimmers. By the Cemetery's own admission all training is "common sense" and this is entirely unsatisfactory.

Sadly, professional training in the landscape industry, at least among the public, is undervalued. This contributes to rapid turn-over and inappropriate maintenance activities.

Given the large number of trees on the cemetery, the importance of these trees to the vistas and historic landscape, and the potential damage that improper tree care can create, we recommend that the Cemetery Landscape Manager be a member of the International Society of Arboriculture (ISA) and have at least some tree experience.

Certified arborists have a minimum of three years experience in some aspect of tree care and have passed an exam developed by an international panel of experts. The exam extensively covers every aspect of tree care and the individuals must have an acceptable level of knowledge in all areas of arboriculture.

We understand that the cemetery cannot afford its own Certified Arborist. Nevertheless, there are two Certified Arborists associated with Athens-Clarke County (Roger Cauthen and Andrew Saunders), as well as one associated with the University of Georgia (Stephen Pettis). Thus, there is ample expertise for the Trustees to call on when needed.

In 2005 the Associated Landscape Contractors of America (ALCA) and the

Professional Lawn Care Association of America (PLCAA) merged to form the Professional Landcare Network (PLANET). This organization offers three certification programs.

The first is the Certified Landscape Technician – Exterior. The exam for this certification is a hands-on field test and candidates can be tested in Installation, Maintenance, or Irrigation.

The second is Certified Turfgrass Professional – a comprehensive study of both warm and cool-season turf grasses developed by the University of Georgia Center for Continuing Education. Certification in this area demonstrates a mastery of weed, insect and disease identification/control, as well as diagnosis of common turfgrass problems. The material supports Integrated Pest Management concepts and pesticide safety – significantly reducing the City's liability for operations.

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

The caregivers at Oconee Hill Cemetery are especially fortunate that the University of Georgia has developed several exceptional training programs readily available either on-line or through DVDs.

One is the SuperCrew series that provides professional training developed in cooperation with industry leaders and endorsed by professional organizations. Topics range from "Being Safe with Grounds Equipment" to "Pruning Ornamentals."

The training is available through either nine DVD programs that can be used to train staff on-site or through individual on-line enrollment. The former has a cost of $470, although the DVDs can be used to train an unlimited number of individuals and include both English and Spanish scripts. The second option allows a single individual to take the nine lessons self-paced for a total of $170. The latter option allows the individual to receive a Certificate of Completion after successfully completing the online quizzes. Additional information is available at http://www.supercrew.caes.uga.edu/.

The Georgia Center for Urban Agriculture also sponsors the Georgia Certified Landscape Professional (GCLP) program. This is a voluntary testing program that certifies those in the landscape profession who have mastered a thorough knowledge and understanding of job skills. The program is endorsed by the Georgia Green Industry Association, the Georgia Turfgrass Association, the Metro Atlanta Landscape and Turf Association and is officially recognized by the Georgia Department of Agriculture.

The certification test consists of four written components and eight hands-on components. Applicants are provided a 400+ page printed study manual and access to a internet study site developed by the University of Georgia. Additional information is available at http://ugaurbanag.com/what-georgia-certified-landscape-professional-program.

In addition to these training opportunities, the Georgia Center for Urban Agriculture has also developed a computer program known as Hort Management. This program, costing only $100, provides estimates for landscape maintenance costs, assisting the user in estimating material, labor, and equipment costs. While it provides a bid price, it also indicates a break-even price that would help Oconee Hill better determine the effectiveness of its landscape management activities. It provides industry averages for time/task data and costs are used throughout the application.

The Friends may help with funding these activities and it is possible that the University of Georgia will provide discounted rates for non-profits.

Unfortunately no one associated with Oconee Hill Cemetery has sought additional training in spite of its local availability and affordable costs. Nor is anyone a member of either a local association or PLANET.

The Trustees should not simply provide opportunities for its staff to become certified in different areas, but must insist on continuing education and training for all employees – not simply the Cemetery Landscape Manager.

Such efforts would improve the level of care and maintenance and develop a greater sense of stewardship. Eventually this core of trained individuals could also provide in-house training to other staff.

Soil Erosion and Sedimentation Control Certification

The State of Georgia requires anyone moving soil – even by shovel – to have at least one individual with erosion and sediment control certification. It appears that a Level 1a, Fundamentals workshop, would be sufficient for Oconee Hill Cemetery. Additional information is available at http://gaswcc.georgia.gov/sites/gaswcc.georgia.gov/files/EducationandCertificationFactSheetRevisedOct2008.pdf. Course dates are available at http://www.gaswcc.org/esc-courses.php.

Staff Uniforms/Dress Policy

We have been told there is a desire for staff to have uniforms since that would promote greater respect for staff on the part of the public. We are supportive of assigning staff uniforms – although not for this reason. We believe that respect is given based on professionalism, knowledge, and ability to deal effectively and politely with the public.

Rather, we believe that uniforms are a sign to staff that professional behavior, beginning with how one dresses, is expected at all times in the cemetery.

We note that staff were at one time provided uniforms by the Friends, but as they wore out or staff changed, the practice was not maintained.

The easiest approach is to rent uniforms from a company such as Cintas (http://www.cintas.com/uniform-work-apparel/). Under such an arrangement work uniforms are individually fit for each employee to ensure the right look and fit; soiled uniforms are picked up weekly and professionally cleaned uniforms are delivered; uniforms are laundered, inspected, repaired, and replaced as needed; and it is possible to add additional uniforms as the size of the work force increases.

It is also possible to lease uniforms and under such an agreement employees are required to launder their own uniforms. We suggest a rental program as a perk for staff.

If for whatever reason the Cemetery chooses not to provide uniforms, we minimally recommend a dress policy.

Such a policy should specify that employees be fully clothed at all times, to include upper garment to cover body from the waist to the neck, and long pants. No shorts or sleeveless shirts are to be worn. Garments that have a message, slogan or printing of any kind should be prohibited. Employees must maintain a neat and professional appearance throughout the work day. No shirts or pants should have holes or otherwise appear unkempt.

Employees should be expected to provide (and wear) steel toed boots that comply with ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear." The Trustees may consider a 50% reimbursement of the cost after 2 months, with a maximum expenditure of $80. The Cemetery must provide safety glasses (meeting the requirements specified in ANSI Z87.1-2003 High Impact) and ear protection (meeting the requirements specified in ANSI S3.19-1974).

General Employee Behavior

Cemeteries are special places and all employees must understand that their work often requires contact with, and exposure to, grieving individuals. Cemetery personnel must exercise and exhibit absolute decorum, courtesy, and respect while within the cemetery or at its perimeter or entrances.

Employees must not engage in loud or boisterous behavior, angry outbursts or use profane or abusive language at anytime on the cemetery.

Playing radios and/or electronic games/devices, smoking or chewing tobacco products, shall only be done at lunchtime and in a designated work area.

Food and beverages (other than water breaks) should be consumed only within designated areas, such as the lunch room in the basement of the Sexton's Cottage.

Intoxication, and violence or criminal acts of any kind should never be tolerated - and should be cause for immediate removal from Cemetery property. Use or sale of intoxicating beverages and/or drugs should be strictly prohibited. It is up to the Trustees to determine if they wish to have a pre-employment and/or routine drug screening program. Regardless of that decision, we recommend mandatory drug screening in cases involving Worker Comp accidents.

No employee should sit, lean or place any item of his person on any headstone/markers and should never place or lean equipment on any headstone/marker.

Cemetery Soil

Oconee Hill Cemetery reports that no soil sampling for either turf or trees is currently conducted. This certainly can't be a result of cost, since commercial analysis is no more than $10 per sample and the work might be performed at an even lower cost by UGA. Regardless, it becomes impossible to manage vegetation in the cemetery if there is no data on the condition of the soils.

It is good practice to test soils every three to five years and we recommend this practice begin immediately. A simple tutorial on soil sample collection is provided at http://www.caes.uga.edu/applications/publications/files/pdf/C%20896_4.PDF.

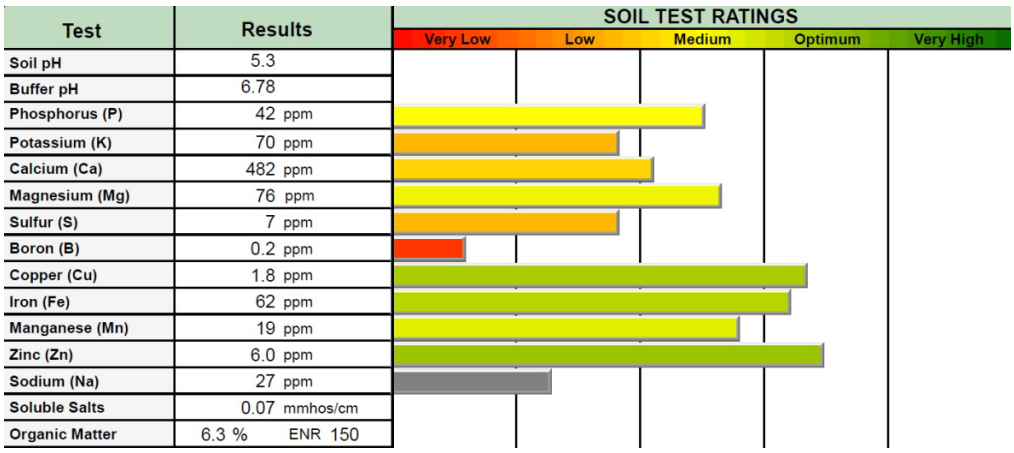
For this assessment samples were collected from East Hill, West Hill, Valley, Section D and Section E. Analysis was conducted by A&L Eastern Laboratories. The results of these tests are provided in Figure 63.

The clay soils have low cation exchange capacity (between 2.8 and 5.7 meg/100g). The cation exchange capacity is the maximum quantity of total cations, of any class, that a soil is capable of holding, at a given pH value, available for exchange with the soil solution. It is used as a measure of fertility and nutrient retention capacity, and in general, the higher the number, the higher the soil fertility. The cation exchange capacity can be improved with the introduction of humus and organic matter. The results of this study show that all of the tests soils are relatively unable to retain nutrients and thus are infertile.

Organic matter is low, ranging from only 2.8% in Section D to 6.3% in East Hill. The soils would benefit from soil amendments, although this is difficult to accomplish in turf soils. More important than the current levels are changes over time – providing another reason by periodic testing is beneficial.

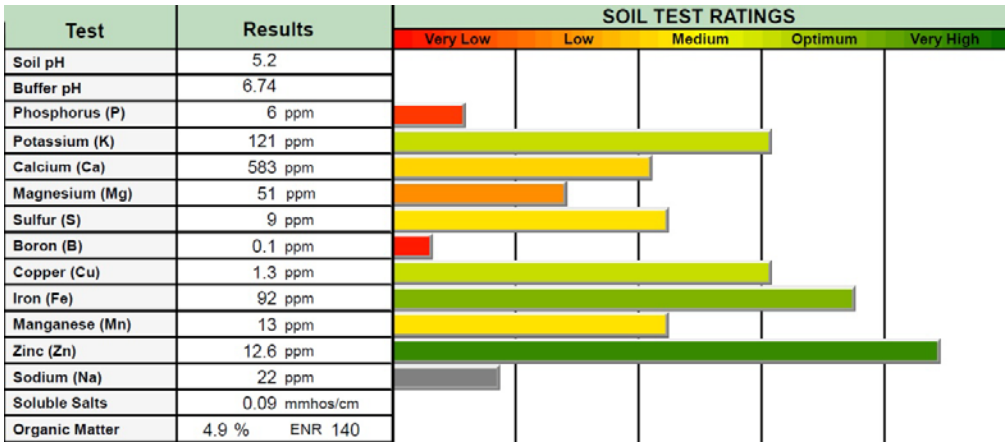
Soil pH ranges from 5.0 to 5.3, figures that are acidic and outside the optimum plant growth range. In addition, pH levels of 5.5 or lower will reduce soil microbial activity. Liming is recommended to bring the soil pH to 5.8, although a range up to 7.0 is acceptable to most plants.

Phosphorus (P) levels are typically low or very low; this nutrient is found in moderate levels in only the sample from East Hill. Phosphorus is essential for photosynthesis, seed and fruit



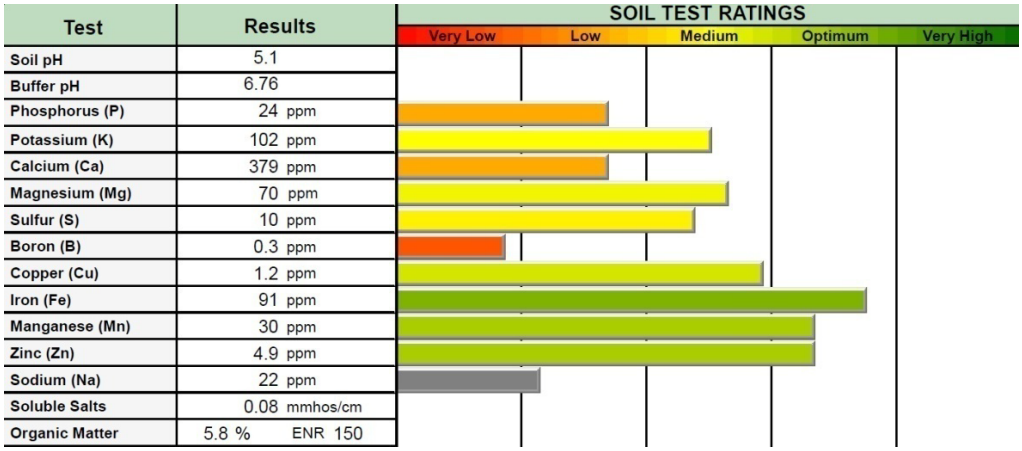
Test	Results	
Soil pH	5.3	
Buffer pH	6.78	
Phosphorus (P)	42	ppm
Potassium (K)	70	ppm
Calcium (Ca)	482	ppm
Magnesium (Mg)	76	ppm
Sulfur (S)	7	ppm
Boron (B)	0.2	ppm
Copper (Cu)	1.8	ppm
Iron (Fe)	62	ppm
Manganese (Mn)	19	ppm
Zinc (Zn)	6.0	ppm
Sodium (Na)	27	ppm
Soluble Salts	0.07	mmhos/cm
Organic Matter	6.3 %	ENR 150

East Hill



Test	Results	
Soil pH	5.2	
Buffer pH	6.74	
Phosphorus (P)	6	ppm
Potassium (K)	121	ppm
Calcium (Ca)	583	ppm
Magnesium (Mg)	51	ppm
Sulfur (S)	9	ppm
Boron (B)	0.1	ppm
Copper (Cu)	1.3	ppm
Iron (Fe)	92	ppm
Manganese (Mn)	13	ppm
Zinc (Zn)	12.6	ppm
Sodium (Na)	22	ppm
Soluble Salts	0.09	mmhos/cm
Organic Matter	4.9 %	ENR 140

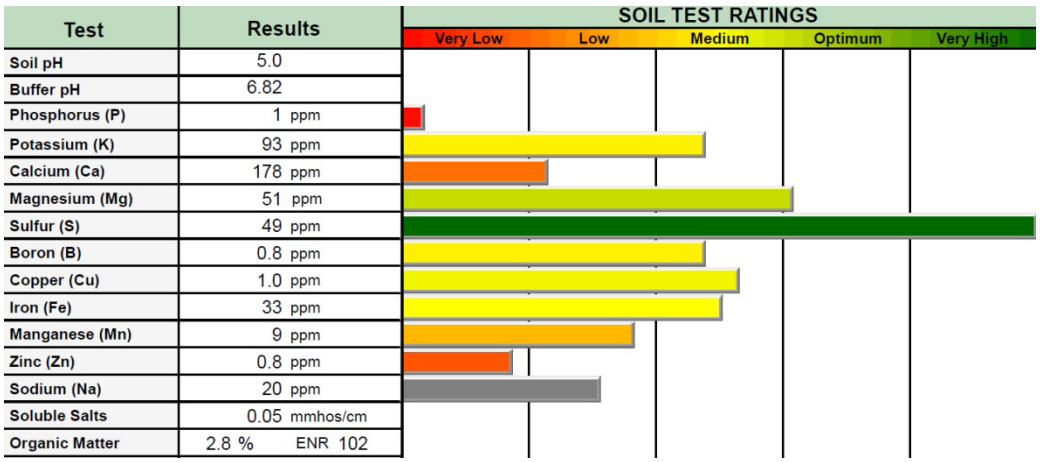
West Hill



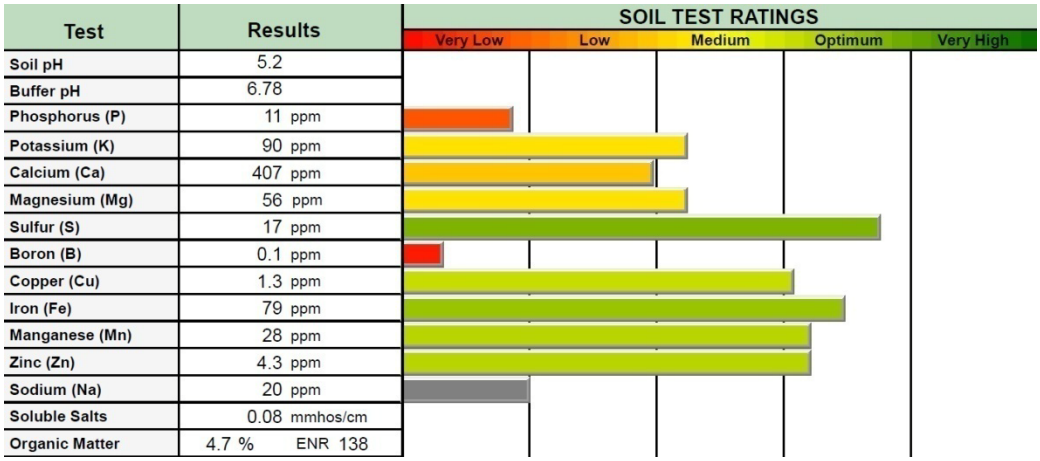
Test	Results	
Soil pH	5.1	
Buffer pH	6.76	
Phosphorus (P)	24	ppm
Potassium (K)	102	ppm
Calcium (Ca)	379	ppm
Magnesium (Mg)	70	ppm
Sulfur (S)	10	ppm
Boron (B)	0.3	ppm
Copper (Cu)	1.2	ppm
Iron (Fe)	91	ppm
Manganese (Mn)	30	ppm
Zinc (Zn)	4.9	ppm
Sodium (Na)	22	ppm
Soluble Salts	0.08	mmhos/cm
Organic Matter	5.8 %	ENR 150

Valley

Figure 63. Soil sample results.



Section D



Section E

Figure 63, continued. Soil samples results.

production, plant energy production, and cell division. Adequate supplies will promote root growth and formation, greater flowering and seed production, better growth in cold temperatures, and efficient water use. Soil compaction and a lack of aeration – both problems at Oconee Hill – will reduce phosphorus levels. In general soils with low cation exchange capacities – such as those at Oconee Hill – will require higher phosphorus levels to supply plants. Similarly, since much of the phosphorus in soils is provided by the available organic matter, if organics are low, the phosphorus will likely also be low (as is the case here).

Potassium (K) is also essential in photosynthesis, plant growth, and effective response to drought stress. Like phosphorus, it tends to be reduced by low pH and low cation exchange capacities. By reducing compaction and improving aeration, potassium levels are improved.

Calcium, magnesium, and sulfur levels range from low to medium, with the exception of Sections D and E, where sulfur levels range from optimum to very high. The reason for this is not known. In general, all three are affected by the soil acidity and the low cation exchange capacity.

Micronutrients include boron, copper, iron, manganese, and zinc. Only boron tends to be consistently low in these samples. Although boron is an important micronutrient, it is also easy to over apply. Therefore, we recommend waiting for a second series of soil tests to confirm the problem (once other issues, such as soil pH, have been corrected).

Table 7.
Recommended Liming for Turf Areas

Section	Lime (lbs/1000 ft^2)
East Hill	20
West Hill	44
Valley	39
Section D	25
Section E	20

Finally, we tested for soluble salts. These may be contributed by road salts, but are common is virtually all commercial fertilizers. They can affect not only the plants, but also the stones at the cemetery. Soluble salt levels were between 0.05 and 0.09 mmho/cm and these levels are considered very low.

This brief discussion reveals that the availability of many plant nutrients is being affected by the low soil pH and organic matter. Thus, while fertilizers could productively be used in several areas (most notably East Hill), we recommend instead that an effort first be made to raise the pH and then conduct additional soil tests to further evaluate macro and micronutrient levels.

Barneycastle may have different recommendations for the trees, but we suggest the application rates identified in Table 8. Dolomitic lime, which contains both calcium and magnesium, should be applied using a broadcast spreader prior to rainfall. Lime can be applied anytime of the year unless the ground is frozen or covered with snow.

If in the future fertilizers are to be applied, slow release organic fertilizers are preferable to commercial inorganic fertilizers since they have significantly lower salt indices. An excellent source explaining the differences between organic and inorganic fertilizers is http://www.cmg.colostate.edu/gardennotes/234.pdf. The publication at http://www.caes.uga.edu/applications/publications/files/pdf/C%20853_3.PDF provides information on converting traditional inorganic fertilizer recommendations to safer organic recipes.

Cemetery Trees

The Cemetery is obtaining a tree inventory and recommendations from the firm Barneycastle Forestry Services, Inc. That document will provide far more detail than this brief overview. Our discussions will focus on critical issues we observed during this assessment.

Selection Issues

Cemeteries, in general, have historically been dominated by large deciduous trees, although evergreens such as cedar are also very common. The trees provide a distinctly inviting image for visitors and passersby. They also provide some visual separation from adjacent buildings – especially in cluttered urban environments. They provide shade, reduce stormwater runoff, stabilize soil, and reduce evaporative water loss.

Ideally the trees selected should be historically appropriate. In the case of a planned cemetery, which Oconee Hill appears to have been, the ideal would be to use those trees selected by the original designers – respecting their original intent and interpretation. However, we have not identified any information concerning the original plan. It is also possible that many of the plantings were native and already present on the site.

All other issues being equal – plantings should focus on those tree species that are known to have been used. While diversification may be acceptable, it should not dilute the original design

Table 8.
Comparison of Historically Appropriate Trees That Might Be Used in Oconee Hill Cemetery

Common Name	Scientific Name	Origin	Cultivation			Size (HxS)	Litter	Breakage	Roots	Notes
			Zone	Light	Drought					
American Ash	*Fraxinus americana*	Native: 1724	3-9A	PS-FS	M	50-80x40-60	Moderate	Weak	Problem	Not tolerant of urban soils or heavy clay.
American Elm	*Ulmus americana*	Native: 1670	2-9	PS-FS	M	70-90x50-70	Moderate	Weak	Problem	Michael Dirr (1998) recommends "Valley Forge," "New Harmony," and Princeton" as respectably disease tolerant.
American Linden	*Tilia americana*	Native: 1752	3-8	PS-FS	M	50-80x35-80	Moderate	Weak	No Problem	Good specimen tree; typically more formal landscape.
Arborvitae	*Thuja occidentalis*	Native: 1536	2-7	PS-FS	M	25-40x10-12	None	Resistant	No Problem	Good screen or hedge plant; not commonly used as a specimen plant.
Eastern Red Cedar	*Juniperus virginiana*	Native: 1664	2-9	PS-FS	H	40-50x10-20	None	Weak	No Problem	Planted for "perfect columnar growth" and traditional cemetery tree.
Post Oak	*Quercus stellata*	Native	6-9A	FS	H	40-50x35-50	Moderate	Resistant	No Problem	Not widely available in nurseries
Red Oak	*Quercus rubra*	Native: 1783	5-8A	FS	H	60-70x50-60	Moderate	Weak	Problem	Not as popular as elm and maple.
Sugar Maple	*Acer saccharum*	Native: 1735	3-8A	S-FS	M	50-80x35-80	None	Resistant	No Problem	Excellent colors through all seasons; frequently used for ornamental plantings.
Weeping Willow	*Salix babylonica*	Exotic: 1730	2-9A	PS-FS	H	45-70x45-70	Moderate	Weak	Problem	Roots are especially aggressive.
White Oak	*Quercus alba*	Native: 1724	3B-8	PS-FS	M	60-100x60-80	Moderate	Resistant	No Problem	A northern oak; was a favored tree, however.

Light: shade, part shade, part sun, full sun; Drought: moderately to highly tolerant; Size shows height x spread in feet; Roots reflect the presence of surface roots or roots that lift sidewalks. Data from USDA, Forest Service Plant Fact Sheets, Adams (2004), and Simonds (1917).

or intent. Therefore, we urge care in selecting additional plantings, focusing on a small number of historically appropriate trees to maintain the historical integrity of the cemetery.

Some trees, whether historically appropriate or not, should probably be avoided since they pose significant maintenance issues. These include trees that produce dense shade (causing problems with the turfgrass); trees that exhibit suckers or surface roots (also causing turfgrass problems, e.g., beech, honeylocust, linden, poplar, and willow); trees that drop large quantities of leaves, seeds, or sap (such as ash, black cherry, catalpa, ginkgo, horsechestnut, mulberry, and sweetgum); and trees that are especially weak or vulnerable to wind or ice damage (such as ash, black cherry, pine, poplar, red maple, silver maple, tuliptree, willow, and white ash).

This is an issue that we observed in several articles in the Friends' newsletter. In Spring 2004 it was suggested the Cemetery plant beech, post oak, mockernut hickory, and magnolias. We have already mentioned that beech causes turf problems, primarily because of its surface roots and dense shade. Beech also has low drought tolerance, a significant issue in Athens. Post oak produces significant amounts of litter and the tree is not widely available in nurseries. The mockernut hickory is difficult to find as nursery stock, prone to a number of pests, and is difficult to transplant. Finally, while magnolia is a significant cemetery tree, it produces large amounts of litter and will produce dense shade eliminating turf. In sum, all of these trees would be poor choices for a cemetery already struggling with maintenance.

The Spring 2013 newsletter suggested the planting of dogwoods, redbuds, and ornamental cherries in the recently cleared Colored and Pauper sections. These areas will be difficult enough to maintain without the introduction of additional trees. Moreover, with the possible exception of the dogwood, a natural understory tree, these trees would never have been planted in either section and are not historically appropriate.

Figure 64. Small, unhealthy trees with evidence of nylon trimmer damage.

Obviously, there is no such thing as a perfect tree. Many of the historically appropriate species have significant problems as shown in

Table 7. At least some of these problems, however, can be overcome through judicious placement, appropriate planning, and careful early pruning.

Replanting

Trees should be replanted as older ones are removed and a general effort should be made to plan for future tree replacement, perhaps using a mix of fast-growing but short-lived trees intermixed with slow-growing but long-lived trees to create a planned appearance.

It is also appropriate to plant replacement trees in anticipation of their need, allowing them an opportunity to become established before the diseased or damaged tree is removed.

Planting Issues

Locations chosen for planting should not interfere with gravestones, curbing, or fences. Issues of security should also be considered and the use of small trees that obscure eye level views should generally be limited or avoided.

Research is suggesting that trees, especially older mature trees, improve in health when turfgrass is removed under the branch spread and mulch is applied at a depth not exceeding 3 to 4-inches. Fine-textured mulches prevent evaporative water loss better than coarse-textured mulches. This is a practice that could be productively employed at the Oconee Hill Cemetery, especially in the older cemetery sections. Staff should be closely supervised to prevent over mulching of vegetation.

All replacement trees or new plantings should be of at least 1-inch caliper and meet the minimum requirements of the American Nursery and Landscape Association's American Standard for Nursery Stock (ANSI Z60.1-2004).

This advice has clearly not always been followed. We found a variety of new trees planted along the road in Section H that were stunted, poorly developed, and that had suffered damage from trimmers at their bases. These trees will never be healthy and should be removed and replaced with trees meeting the ANSI Z60.1-2004 standards, given water bags, and protected from trimmer and animal damage. If trees are worth planting, they are also worth protecting and nurturing.

We have also been told that the Cemetery has had issues with both the drought and deer damaging young trees. Both problems are preventable and the Cemetery should take the steps to ensure that future plantings are better tended.

There are a variety of water bags for young trees, including the Treegator (http://www.treegator.com/home/). In fact, bags are now readily available in big box stores. Their use will require the Cemetery to acquire a water tank, but these, too, are readily available, including 100 gallon tanks that can be carried in the back of utility vehicles.

Young tree trunks can be protected from trimmer and animal damage using rigid tree guards (http://www.amleo.com/tree-bark-protectors/p/VP-BG/).

Tree Maintenance

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

Watering

The Cemetery does not water trees, relying instead on rainfall. While this is typically acceptable, the landscape plan should include provisions for deep-root water during periods of severe drought (assuming this is permissible). This is a critical step necessary to protect the historic landscape fabric of the cemeteries. Using a root feeder without fertilizer, it is possible to apply water 12-inches below the surface. This approach can not only be used during severe drought, but also during extended periods of dry weather during the winter (as long as the temperatures are above freezing).

Fertilization

The staff also reports that no tree fertilization is conducted, presumably because of the funds required. The trees in Oconee Hill Cemetery are vital components of the landscape. They represent part of the historic fabric and steps must be taken to protect that aspect of the landscape and vista.

Our soil testing reveals that liming is necessary and many of trees would likely benefit from fertilization and the additional application of boron in the form of broadcast borax.

Based on the recommendations of the Barneycastle certified arborists, the Trustees should anticipate periodic fertilization. Fertilization should be conducted on the basis of need as excess fertilization can damage trees; nevertheless, the ISA position is that, "tree fertilization should be done in accordance with ANSI A300 standards" (Lilly 2001:47). These ANSI A300 (Part 2)-1998 standards represent the standard of care of the industry. This is why more proactive involvement by certified arborists in cemetery maintenance is essential.

Fertilization is typically accomplished through deep root fertilization – an approach where the liquid fertilizer is injected into the soil with a probe, usually 6 to 12-inches below the surface at a spacing of about 2 to 3 feet. This process not only provides fertilization, but also some aeration of the soil. An alternative approach uses a drill to excavate holes in a similar pattern which are then filled with a granular fertilizer. Either is acceptable. The ANSI 300 standards allow foliar applications, injections, or implants only when soil application is impractical or ineffective.

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

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

Pruning and Hazardous Trees

While we defer to Barneycastle regarding specifics of tree health at Oconee Hill, we have

Table 9.
Tree Issues by Section

Section	Dominant Species	Pruning Needed	Hazard Trees	Stumps	Other Concerns
A	pine, oak	Y	5		
B	oak	Y	1	3	
Bull Dog Haven	oak, hickory	Y	1		new oaks and a river birch planted
C	oak	Y			
Colored	oak	Y	10+		remove trees under 4" caliper and poison ivy
D	oak, pine, hickory	Y	1	11	
E	oak	N			
East Hill	oak, magnolia, cedar	Y (1)	4	6	2 stump holes pose pedestrian hazards
F-1	oak	Y	1		
F-2	pine	Y			
F-3	oak	N		2	
Factory	oak, cedar	Y	4	10	
New G					
Old G	oak, pine	Y	2		
H	pine	Y		7	
J	oak	Y			
North Slope		Y			
New Pauper	oak	Y	1	2	
Old Pauper	oak		10+		remove trees under 4" caliper and poison ivy
River Road		Y	1		
Valley	oak, cedar, magnolia, pine	Y	2		
West Hill	oak, hickory, pine	Y (19)	2	6	poison ivy on many trees;

Figure 65. Examples of dead or hazard trees. Upper left, topped tree in East Hill. Upper middle, dead tree in Section A. Upper right, dying Chinaberry tree in Section Old G. Lower left, dead tree in Section B. Lower middle, dead tree in West Hill. Lower right, dead tree in Valley Section.

never seen a cemetery where the overall health and condition of the trees was as poor as it is at Oconee Hill Cemetery.

We are told that there has never before been any professional evaluation of the trees in Oconee Hill. Cursory inspections are reportedly conducted by the Sexton with the information relayed to the Trustees.

If this is the case, either the Sexton has failed to observe the numerous dead and hazardous trees in the Cemetery or the Trustees have failed to act in a responsible manner. In either event, the deferred maintenance has caused exceptional damage to both the landscape and the monuments.

As a clear example, we recently evaluated

Figure 66. Examples of stumps throughout the cemetery. Upper left, East Hill. Upper right, Factory Section. Middle left, New Pauper Section. Middle right, Section B. Lower left, Valley Section. Lower right, West Hill.

Figure 67. Stump grinding problems. Upper left, stump grinding hole, note the edge removed from the footstone by the grinder. Upper right, debris left by stump grinding. Middle left, stump grinding and debris. Middle right, stump grinding and debris left on the road by the contractor. Lower left., debris from stump grinding. Lower right, cemetery crew and cemetery equipment being used to clean up after the private stump grinding contractor. The contractor or the lot owners should have been required to correct the damage, not the cemetery.

tree damage to several stones along the road in the Valley Section. As a result of a single tree fall, a ledger was shattered, a statue toppled and broken, and another stone displaced. To remove the offending tree prior to it causing damage might have cost $800 to $1,000. The repair of the damaged monuments will cost approximately $7,000.

This demonstrates a lack of long-term management or preservation. It will take substantial funding and proactive steps to remove hazardous and dead trees, conduct appropriate pruning, and attempt to save as many of the older trees as possible.

During this assessment some general information was collected on a section-by-section basis and is presented in Table 8.

Hazard trees are those that can reasonably be expected to pose a hazard to monuments in the cemetery. This is not an ISA risk or hazard assessment using the Matheny and Clark system or some similar rating program. In fact, most of the 45 trees identified as potential hazards are dead or badly storm damaged. A few are hollow or have other obvious defects.

The presence of 45 trees that require removal from the cemetery in the near term is very disturbing since it will be difficult for the cemetery to recover from such an extensive modification. We would have no objection to postponing removal of trees thought by Barneycastle not to pose a threat to cemetery monuments.

There are also at least 47 stumps throughout the cemetery offering mute testimony to earlier tree losses. Many of these represent long removed trees, where the stump, typically 1-2 feet above grade, is in some stage of decay. These present a hazard to pedestrians both as a result of the stump hole, but also as a result of the often jagged wood.

Stumps in a cemetery should be removed as close to the ground as possible.

Once cut to 1-2 inches above grade, stumps should be allowed to decay naturally. No chemical additives should be used to hasten decay, although it is acceptable to paint an herbicide on the stump if it is a tree that will promote suckers. Stump grinders should ***never*** be used in the cemetery – there is simply too great a risk of damage.

During our assessment stumps (and roots) on a plot were ground by a private firm, apparently for a private lot owners. Figure 67 shows how the lot was left, including the damage that was done to a footstone during the process.

We inquired whether the firm was returning to finish the job and we were assured by the Sexton that the firm would be coming back the following day. In fact, what we observed is that the firm did not return. Instead, cemetery staff, using cemetery equipment, was repairing the damage caused by the private stump grinding firm. Unless the private firm or the plot owner is reimbursing the Cemetery for this labor, this is inappropriate and unacceptable. The Cemetery has neither the staff, time, nor budget to perform work for private contractors.

There is no need for stump grinding and the Trustees should prohibit such activities in the future.

There are trees in all but three sections that require immediate pruning for either thinning or cleaning. Thinning is a technique of pruning that removes selected branches to increase light and air movement through the crown. This also decreases weight on heavy branches. The natural shape of the tree is retained and its overall health is improved.

In cleaning, the pruning removes branches that are dead, dying, diseased, crowded, broken, or otherwise defective. This includes narrow crotches. At Oconee Hill it will also include a very large number of trees that have been incorrectly pruned in the past, leaving stubs 2 to 4 feet from the collar.

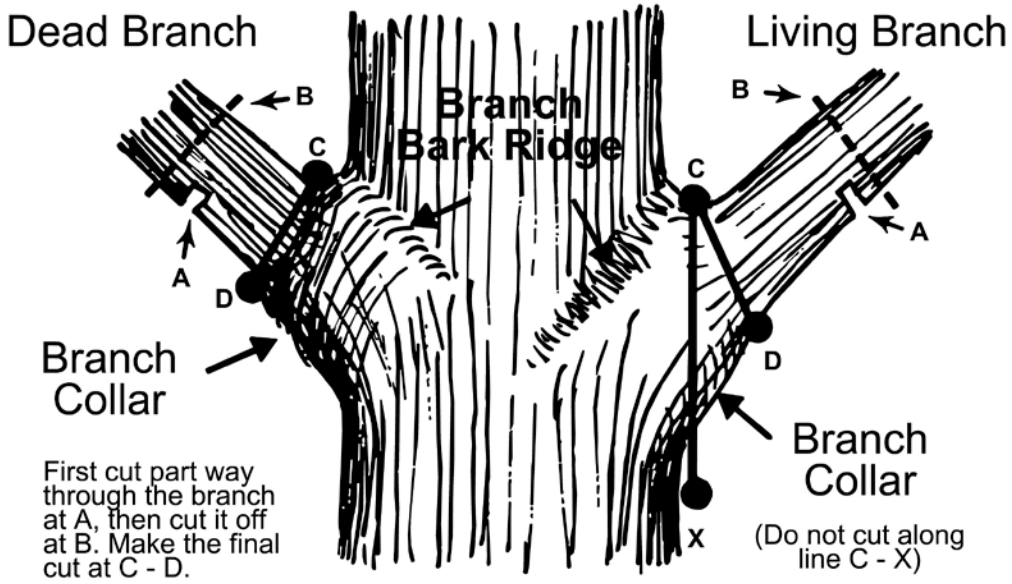


Figure 68. Tree pruning issues. The upper photo shows how trees throughout the Cemetery have been incorrectly pruned, leaving stubs. The figure below shows correct pruning technique, removing the limb back to the branch collar to allow the wound to heal properly.

Figure 69. Examples of trees that require pruning at Oconee Hill Cemetery. Upper left, tree with dead wood in West Hill. Upper middle, "widow maker" in a West Hill tree. Upper right, tree that requires cleaning up in the Valley Section. Center left, "widow maker" in Section Old G. Center middle, tree with much dead wood in the Factory Section. Center right, tree with dead wood and that requires thinning in East Hill.

Figure 70. Trees with dense growth of ivy that should be removed from the trees.

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

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

All pruning within the cemetery should be performed by an ISA Certified Arborist, preferably one who is also an ISA Certified Tree Worker/Climber Specialist. The ISA Certified Tree Worker/Climber Specialist has knowledge in the major aspects involved in tree care including pruning, removal, cabling and safety. These are critical skills when working among historic monuments.

The fact that we were unable to find one tree in the cemetery that had been properly pruned clearly reveals that past tree work in the cemetery has not been performed by ISA Certified Arborists.

Table 10 lists certified arborists in the Athens vicinity that are ISA Certified. The Trustees should require that any tree work conducted in the cemetery be done by one of these firms – or a firm that includes an ISA Certified Arborist. The cemetery trees and surrounding monuments are too valuable to trust to an individual without training, experience, and understanding of tree anatomy.

Some trees in the cemetery exhibit thick growth of either poison ivy (especially in the Colored and Pauper sections) or English Ivy. Both plants are bad for tree health and should be removed. This is a simple process of cutting the

Figure 71. Tree debris in the Cemetery. The upper, middle, and lower left photos are all from extensive tree damage in West Hill. This debris has been sitting in the cemetery for weeks, if not longer. The lower right photograph shows a tree that fell on the Gentry monument months ago, but has never been cleaned up. Situations such as these suggest the Cemetery is uncaring and dramatically affects public perception of the cemetery, the staff, and the Trustees.

vines as close to the ground as possible and painting the cut stems with an herbicide such as Garlon. In some cases this will need to be done several times, but it will eventually kill the vine roots and the vines above the cut will die and gradually fall from the tree.

Figure 72. Example of a tree that has significantly damaged a stone wall in the Valley Section.

Elsewhere in the cemetery we observed several trees that had fallen as a result of a storm. They had been partially cut, but much of the trees was still lying on plots and stones after weeks. The parts of the tree that had been cut were in multiple piles. In another case a tree had fallen on a monument months, if not a year or more prior to this assessment and the tree was still found where it fell.

The Cemetery must simply do better. Leaving these debris piles, downed trees, and log piles makes the Cemetery, its staff, and the Trustees look slovenly and uncaring. Storm damage must be cleaned up in one or two weeks maximum.

Trees should be inspected for potential threats to monuments, as well as general health. Ideally these inspections should be made yearly and after any storm where the winds exceed 55 mph. They should be pruned to remove potentially hazardous dead wood on a yearly basis, but safe pruning every 5 years by a certified arborist is acceptable. Rigging and/or a crane must be used to minimize the potential for damage to stones or the landscape. Under no circumstances are tree climbers (hooks, spikes, gaffs) to be worn while ascending, descending, or working in trees to be pruned.

There are some situations in the cemetery where plantings – intentional or voluntary – have grown to interfere with stones or fences. In these cases a decision needs to be made concerning the value of the planting vs. the value of the monument or fence. Where the tree has greater value, it may be appropriate to slightly relocate the monument – moving it to a location where additional damage will be avoided. Otherwise, it will be necessary to remove the tree. This decision may be aided by carefully evaluating the health of the tree involved.

Pest Control

During this visit we observed no obvious evidence of pests but Georgia is at risk for a great many problems, including the Emerald Ash Borer, Sudden Oak Death (a fungus), Laurel Wilt Disease, Sycamore Anthracnose, and the Wooly Adelgid. Given the importance of the trees to the cemetery landscape, it is of critical importance that the Oconee Hill Cemetery trees be very carefully inspected by a Certified Arborist on at least an annual basis.

Shrubs

Historically the Cemetery has not planted shrubs and those that are present were, presumably, planted by lot owners. Like other

Table 10.
Certified Arborists Working in the Athens Area (as of as/2013)

Name	Firm	Credentials
Chris Barneycastle	Barneycastle Forestry Services, Inc. Snellville, GA 30078 770-979-2770	Certified Arborist
Shawn Doonan	New Urban Forestry Athens, GA 30606 706-338-8329	Certified Arborist
Robert Driskill	Driskill Tree & Landscape Solutions Atlanta, GA 31145 770-330-7776	Certified Arborist Tree Worker Climber Specialist
James McElroy	Williams & Associates Athens, GA 30606 706-310-0400	Certified Arborist
Stanley Ogletree	Bear's Insured Tree Service Athens, GA 30603 706-546-6187	Certified Arborist
Johnny Simmons, Jr.	All From Above Tree Service Monroe, GA 30656 678-201-5473	Certified Arborist
Kevin Hamman	New Urban Forestry Athens, GA 30601 706-621-9335	Certified Arborist
Christian Hughes	Brookwood Tree Consulting, Inc. Athens, GA 30603 706-202-6516	Certified Arborist
Charles Rayfield	Rayfield Tree Care, Inc. Loganville, GA 30052 770-554-2022	Certified Arborist Tree Worker Climber Specialist
Andrew Saunders	Athens-Clarke County Athens, GA 30607 706-549-1267	Certified Arborist

issues some Trustees have mistakenly sought to require the burden of maintenance be placed on lot owners – many of whom are long dead.

Moreover, given certain uniform activities, it appears to us that the Cemetery staff is at least to some degree tending at least some shrubbery.

Ultimately, poorly tended plots reflect poorly on the entire cemetery, even if the fault lies at the feet of lot owners.

Selection and Planting

Most shrubs appear to be individual specimens, probably anticipated to serve as accents. Shrubs (and other plantings) identified in the Cemetery are listed in Table 11. Boxwood and nandina are dominant throughout the Cemetery, with lesser amounts of arborvitae, lantana, holly, camellia, azalea, eleagnus, and yucca. Relatively few bulbs were identified, with iris being most common and smaller quantities of daffodils and crocus. In addition, Rosemary and periwinkle are both present. English ivy was also observed, although primarily climbing trees.

The number and placement of plantings is not particularly effective overall since they lack a unifying or cohesive theme. They appear disjointed – representing the multiple episodes of "beautification" with no clear planting plan. This is most surprising for the older sections of the cemetery where it was hoped some remnant of an original planting plan might be discovered – it was not. Additional research may assist in helping to understand changes that may have taken placed in the cemetery over the past 100 years.

As with trees, when shrubs require replacement, they should generally be replaced with like material, especially if they represent

Table 11.
Dominant Shrubs and Plantings by Section

	Shrubs										Other Plantings				
Section	Nandina	Boxwood	Lantana	Arborvitae	Holly	Camellia	Gardina	Azalea	Elaeagnus	Yucca	Daffodils	Iris	Crocus	Periwinkle	Rosemary
A		x													
B		x										x	x		
C	x	x													
Colored														x	
D	x	x								x		x			
E	x	x				x			x						x
East Hill	x	x				x						x			
F-1	x	x									x	x			
F-2	x	x				x	x	x							
Factory												x			
New G		x	x												
Old G		x													
H	x	x		x	x	x		x							
J		x													x
North Slope	x	x													
Old Pauper														x	
River Road	x	x													
Valley		x				x		x			x	x	x		
West Hill	x	x													

plants traditionally used in cemetery settings. If planting lists cannot be located for the Cemetery, plants such as forsythia, hydrangea, lilac, and memorial rose (in addition to those listed) are all known to be period appropriate.

Fertilization

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

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

Most shrubs should be fertilized when they are actively growing and have available water to help absorb nutrients. Broad-leaved evergreens, such as boxwood, are best fertilized in the winter or spring. Summer or fall fertilization of these plants may induce late season growth that is highly susceptible to winter injury.

Pruning

It is again in the category of pruning maintenance that we see problems at Oconee Hill Cemetery. The two most obvious problems are inappropriate or technically incorrect pruning and the failure to remove weedy plants and vines from shrubs.

Examples of inappropriate pruning include a variety of unnatural and fanciful shaped creations and pruning that tapers inward from the top, preventing adequate light penetration. The latter created the accumulation of significant amounts of deadwood. Virtually all of the pruning appears to be done using shears, or even worse, nylon trimmers, instead of clippers. The continuous shearing of the shrubs has caused a thick outer shell of foliage which creates dense shade on the interior branches. This continuous shade has resulted in significant foliage drop, decreasing the health, value, and aesthetics of the plants.

Shrubs are best pruned, rather than sheared, to maintain a natural shape and to keep plants at a desired size so that they do not outgrow their landscape too quickly.

Allowing weedy plants to overtake shrubs detracts from their beauty and natural shape. Many of the shrubs in Oconee Hill look as though they have grown whiskers.

It appears that the shrubbery at Oconee Hill has been ignored for a very long time and, as a result, many of the plants are in poor condition. Those that can be saved by careful pruning should be. Those that are dead or that cannot be rehabilitated should be removed and similar species replanted.

The condition of the shrubbery at the cemetery provides an excellent example of why only trained and certified staff should be allowed

Figure 73. Examples of improperly pruned shrubs. Upper left photo shows a boxwood that was subject to incorrect renewal pruning. Upper right photo shows a sheared boxwood in a form that will promote additional interior dead wood. Middle left photo shows two nandina shrubs sheared into fanciful and unnatural shapes. Middle right photo shows a boxwood with multiple problems, including much dead wood that has been allowed to overgrow its location. Lower left and right photos show partially dead boxwoods that require removal of dead wood and renewal pruning.

Figure 74. Examples of shrubs being overtaken by weedy plants. Upper left photo shows a dead shrub; the green leaves are from a weedy plant growing in the middle. Upper right photo shows a shrub overtaken with weedy inclusions. Middle left and right photos shows boxwoods with dense weedy plants and trees (including young oaks). Lower left, boxwood with dense weedy plant that has dropped its leaves. When blooming there would be more of the weedy species than the boxwood. Lower right, boxwoods with top hats of weedy plants (leaves brown, but not yet dropped).

Figure 75. Examples of shrubs that should be removed. The top and middle row are all dead or dying boxwoods. Rather than leave these in the cemetery to detract from the landscape, they should be removed. They must, however, be replaced or the landscape will begin to look denuded. The bottom row shows a dead planting at the entrance to the cemetery. It is especially egregious to leave this in place since it is the first view – and impression – that visitors have.

to work in a cemetery landscape. The plantings at a cemetery cannot be easily replaced and, in fact, represent artifacts just like the stones themselves. It is essential that the Trustees re-evaluate the level of maintenance being provided to the Cemetery.

Proper Pruning

In general, summer-flowering plants should be pruned before spring growth begins since these produce flowers on the current season's growth. Spring-flowering plants, such as forsythia, should be pruned after flowering since they produce flowers on the previous season's growth.

By-pass pruners are generally chosen for most pruning tasks in either 6 or 8-inch lengths. The pruners must be very sharp and it is good practice to sterilize the pruners by dipping them in a 10% bleach and water solution between plants.

We provide some general instructions below, but staff that are to undertake pruning should receive specific, and detailed, training.

Pruning Boxwood

Boxwood tends to develop a very dense growth habit. This thick foliage can be a major factor in disease development. In addition, the dense outer foliage, especially if the plant is sheared, will encourage outer growth, while everything on the plant's interior dies from lack of sunlight.

Annual thinning brings light and air into the interior of the plant and encourages the growth of new foliage within the canopy that can take over for branches damaged by ice or snow.

Boxwoods can be trimmed at any time of year, but for plant health it's best to avoid pruning in the late fall as this may expose new, tender growth to freezing weather. Often they are pruned in the early spring, after the threat of deep freezes is over.

Some boxwoods are in such poor condition they require renewal pruning. This technique usually involves cutting the plant back to within 6 to 12 inches of ground level. This is not the best approach for boxwoods and the plant is likely to decline and die. A better approach is avoid drastic removal and instead cut back stems over a period of three years. At the first pruning, remove one-third of the old, mature stems. The following year, take out one-half of the remaining old stems and head back long shoots growing from the previous pruning cuts. At the third pruning in yet another year, remove the remaining old wood and head back the long new shoots.

An excellent overview of reviving and pruning boxwoods is available at http://www.usna.usda.gov/Gardens/faqs/BoxwoodThinning.html.

Pruning Nandina

The ordinary nandina present at Oconee Hill Cemetery grows lanky and bare at the bottom of the plant over time. Pruning should be conducted when the plant is dormant in the winter.

There are several pruning methods. For plants that are in generally good condition, but neglected, one-third of the main stalks can be cut to the ground every year for 3 years. Maintain a natural appearance by pruning each stalk to a different height, cutting back to a tuft of foliage. Remove old and weak branches to encourage new growth. This will gradually restore a full and compact look.

For more badly neglected nandinas, more drastic pruning is warranted. Cut a quarter to a third of the stems down to the ground, being sure to spread those being removed out throughout the plant. Then cut another third of the stems about halfway down. Again, spread them out. Leave the final third alone. The plant should look thinned out and balanced – not pruned. Using the one-third method will help ensure that the thicket is thinned without creating a

foliage-on-top-of-sticks look.

Pruning Lantana

Lantanas may be periodically repruned during summer by lightly shearing the tip growth to encourage repeat blooming. Plants that have become too large for their allotted space may be pruned back by up to a third of their height and spread. Water and lightly fertilize newly cut back plants and they will return to bloom quickly.

Prune perennial lantanas back hard in winter to remove old growth and prevent woodiness. Cut back to about 6 to 12-inches from ground level. Avoid hard pruning in fall as this can cause reduced cold hardiness.

Pruning Azalea

The best time to prune azaleas is in the early spring, before the plant puts out new growth. Although this will cut off the current year's blooms, it will give the plant a full growing season to fill out and recover (especially from drastic pruning) before winter.

The first branches to be removed are those that are shaded out. Then evaluate the overall appearance of the plant and determine what can be removed while maintaining the desired shape of the plant.

Older plants may have a number of tall branches which need to be eliminated. Doing that over several years reduces the shock to the plant. Remove two or three of the tallest branches, taking care to cut back to a side branch which is heading in the desired direction, and which is about one third the size of the cut branch. Cut close to that side branch, as any stubs will die back to the side branch anyway, and leave dead wood which may become infected later.

Next year take out two or three more branches using the same process, spreading the pruning over a three year cycle. This approach will result in the plant sending out new growth near the base, and lets you manage the shaping of the plant.

Pruning Elaeagnus

This plant has exuberant, flowing growth and should never be sheared or made to look "neat." They may, perhaps every second or third year, require some pruning to keep them in check or correct a defect.

Pruning to maintain shape and size should be done when the plant is dormant, during the late winter or early spring or in the late fall after the flowers bloom. Broken branches should be removed just above a strong bud. Remove branches growing into the interior of the shrub or that are rubbing against other branches, removing the smaller and weaker of the two. Growth that is longer on one side or in one area may be cut back. The cuts should be just above strong buds or branches.

Finally, dead or broken branches can be removed at any time of the year, trimming back 2 to 3-inches into healthy wood and about ½-inch above a strong bud or branch.

Other Plants

These discussions should allow the common shrubs at Oconee Hill to be properly pruned. There are a few isolated examples of other plants and we are providing links to some reasonable overviews.

Holly - http://www.finegardening.com/how-to/articles/pruning-hollies.aspx?id=102060

Camellia http://www.camellias-acs.com/display.aspx?catid=3,9,109&pageid=7

Gardenia http://www.walterreeves.com/gardening-q-and-a/gardenia-pruning/

Plants Too Close to Stones

There are examples of shrubbery at

Oconee Hill Cemetery that have been planted too close to stones and monuments. As the plants have matured, they have overgrown their location, over-taking the monuments. In some cases the shrubs have been very unnaturally pruned around the monument. In such cases the correct approach is to prune severely in an effort to bring the plants back into scale with their surroundings.

This approach takes the plants back to within 6 to 12-inches of ground level before spring growth begins. Pruning in late fall or midwinter may encourage new growth that can be injured by cold. If successful, renewal pruning will result in abundant new growth by midsummer. Once the new shoots are 6 to 12 inches long, the tips should be pruned to encourage lateral branching and a more compact shrub.

Renewal pruning works well with most broadleaf shrubs, while narrow-leaf evergreens (such as boxwood) do not respond well when severely pruned and may actually decline (as previously discussed). A better approach for these narrow-leaf evergreens is cutting them back slightly and transplanting – moving them away from the stones they are obscuring.

Turf

Turfgrass should be an important concern of cemeteries, although rarely is it given adequate attention. With an appropriate turfgrass, mowing frequency is reduced. This reduces labor costs, pollution, equipment expenditures, and perhaps most importantly for historic properties, damage to the stones.

The cemetery lacks a defined type of turf and what is present has been described as “mixed grass.” Where solid stands of a turfgrass exist, it is either centipede or Bermuda. Much of the cemetery, however, is dominated by broad leaf “weeds” – undesirable species that cause the grounds to look unkempt and require frequent mowing to keep them in check. We identified areas of bare ground, as well as areas of dense moss.

It is clear that the cemetery turf has received little attention beyond mowing. This has lead to an overall decline in appearance and an increase in maintenance costs.

Mowing

Mowing at the cemetery is conducted by three mowers. At the time of this assessment there three Toro zero turn radius riding mowers. Two are reportedly 52-inch decks and one is a 44-inch deck. Toro does not currently manufacture a 42-inch deck (they do have a 42-inch deck in their homeowner series and a 48-inch deck in their professional series), so we are not certain if this is an old model or the deck size in incorrect. Also present is a single push mower, although the brand and size was not specified.

Although these deck sizes are at the low end of commercial equipment (Toro manufactures 60 and 72-inch deck models in their professional line), the use of riding or large walk behind mowers can be problematical, especially in a setting such as Oconee Hill Cemetery where monuments and coping present significant obstacles.

It would be far better to abandon riding mowers and convert mowing at Oconee Hill Cemetery to the use of walk behind mowers with decks no larger than 21-inches. While we are told that one such walk behind mower is used in the old section, two or three mowers of that size could be used in East Hill, West Hill, Valley, and River Road very productively.

Stones in the cemetery clearly reveal the damage that can be done by large equipment and less than perfect handling. In fact, mower damage was observed in every single section of the cemetery and is the single most ubiquitous monument issue we observed. While some of this damage has been attributed to previous workers, what we observed was largely recent.

The Sexton initially reported that mowing is conducted during the growing season “as

Figure 76. Damage to stones resulting from inappropriate mowing techniques. The upper left photo shows blade damage to a marble ledger. The upper right photo shows edge damage to a marble base. The middle left photo shows tire tracks across a marble ledger. The middle right photo shows a scalped marble footstone. The lower left photo shows scraping of polished granite. The lower right photo shows blade damage to a marble ledger.

Figure 77. Damage to stones resulting from inappropriate mowing techniques. The upper left photo shows edge damage of a granite stone from mowing. The upper right photo shows marble damage from heavy nylon trimmer line and staff inattention. The middle left photo shows scraping damage to a marble stone from trying to mow too close to stones in order to minimize trimming. The middle right photo shows trimmer line damage. The lower left photo shows scraping of a marble stone from the mower deck. The lower right photo shows scraping of a granite stone from a mower deck.

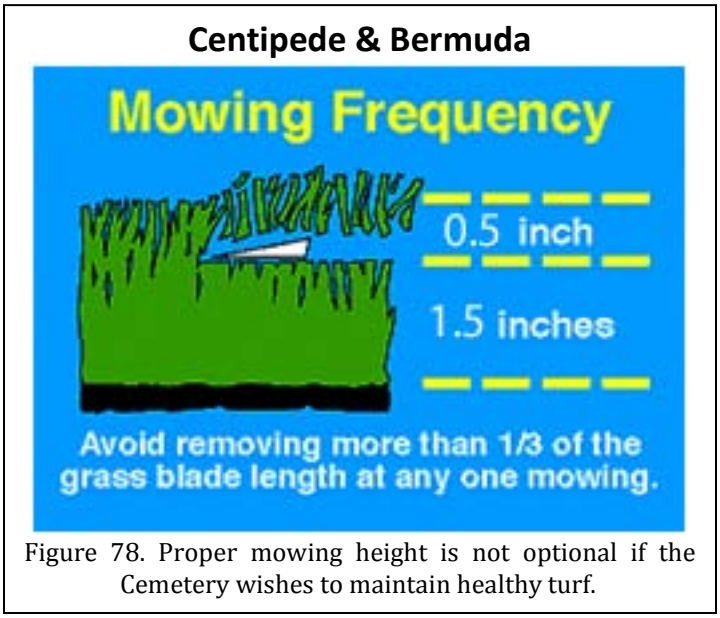


Figure 78. Proper mowing height is not optional if the Cemetery wishes to maintain healthy turf.

needed and as often as the staff can manage." This answer is of course contradictory. Generally weedy turf must be mowed twice a month during the growing season in order to keep it looking decent, but this is clearly beyond the capabilities of so limited a staff.

With additional questioning we were informed that the old section is mowed once every 1.5 months (6 weeks), while the new section is mowed once every 2.5 months (11 weeks).

This mowing schedule is unacceptable and fails to meet the most minimum cemetery standards. It accounts for the frequent visitor comments regarding the overall appearance of the cemetery.

In general centipede should be mowed to a height of 1½-inches. Since the rule is that only one-third of a grass plant should be removed in one mowing, this means that if you intend to properly mow centipede turf at a height of 1½-inches, you can allow it to grow to a height of no more than about 2-inches. If you allow the grass to get taller than 3 inches you'll mow down into the stems that have grown tall. This will produce poor looking turf, stress the grass, and may cause disease.

In addition, if the grass is allowed to become too high, the removal of grass adjacent to monuments becomes more difficult with longer and thicker grass blades – and this in turn will lead to more damage to the stones.

For those areas with Bermuda, the proper mowing height is between 1 and 1½-inches. While mowing with a rotary mower (which is all that Oconee Hill has) is possible, Bermuda tends to look significantly better if mowed with a reel-type mower.

There are some exceptions to these rules. For example, it is good practice to increase the mowing height for grass growing in the shade. This allows for more leaf area to intercept as much available light as possible. In addition, leaf blades in shaded areas will be longer and narrower and a lower cutting height will cause an excessive reduction in leaf length.

It is also appropriate to raise the height of the cut during stress periods, such as summer heat. Research reveals that grasses maintained at higher mowing heights have deeper root systems and improved drought tolerance. In addition, raising the mowing height of warm-season grasses as fall approaches will help the grass better over-winter.

Bermuda is somewhat more complex to maintain, requiring more fertilization, thatch control, and more frequent mowing. It is a poor choice for a cemetery with limited resources such as Oconee Hill.

We perceive that some plot owners have installed Bermuda, liking how it looks. Allowing the introduction of this grass has created islands of Bermuda surrounded by centipede. We recommend that the Trustees not allow lot owners to plant any grass other than centipede.

We identified numerous areas where scalping of the grass has occurred. Many of these areas are the result of grass being relaid very high

Figure 79. Grass found on monuments throughout the cemetery. The middle left photo shows grass clippings splattered against the die, probably from using a nylon trimmer in very dense, wet grass.

Figure 80. Other turf problems observed at Oconee Hill Cemetery. Upper left photo shows badly torn grass blades. This indicates that the mower blade was not sharp when the grass was mowed. Upper right photo shows bare, heavily compacted soil that requires aeration and seeding. Middle left photo shows an areas of heavy moss, suggesting compacted, infertile, and acidic soil. Middle right photo shows an area of dense broadleaf weeds. Lower left photo shows dense leaves and many branches that should be collected. Lower right photo shows scalped grass over a grave that had not been properly backfilled and replanted.

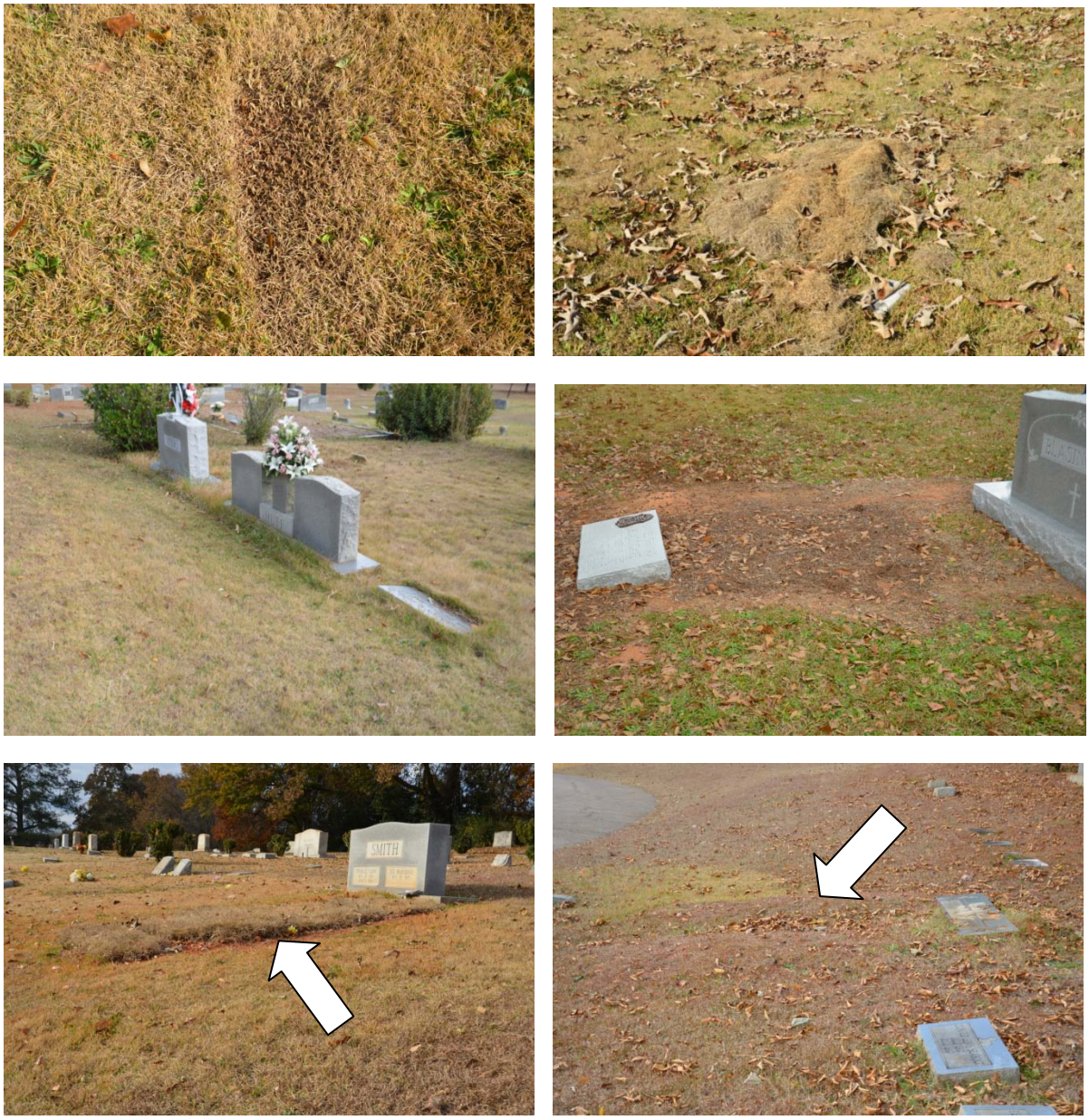


Figure 81. Other turf problems observed at Oconee Hill Cemetery. Upper left photo shows dense Bermuda grass that has been scalped. Note also the invasion of broadleaf weeds. Upper right photo shows a mass of grass clippings piled up on Bermuda grass. Middle left, grass not trimmed adjacent to a row of monuments. Middle right photo shows a month old burial with no grass or effort to seed. Lower left photo shows a recent grave where the soil has not been adequately compacted and the grass has been placed too high. This will result in the grass being scalped during future mowings. Lower right photo shows a grave that been allowed to slump. This, too, will result in scalping when the grass is cut; the grave should be refilled.

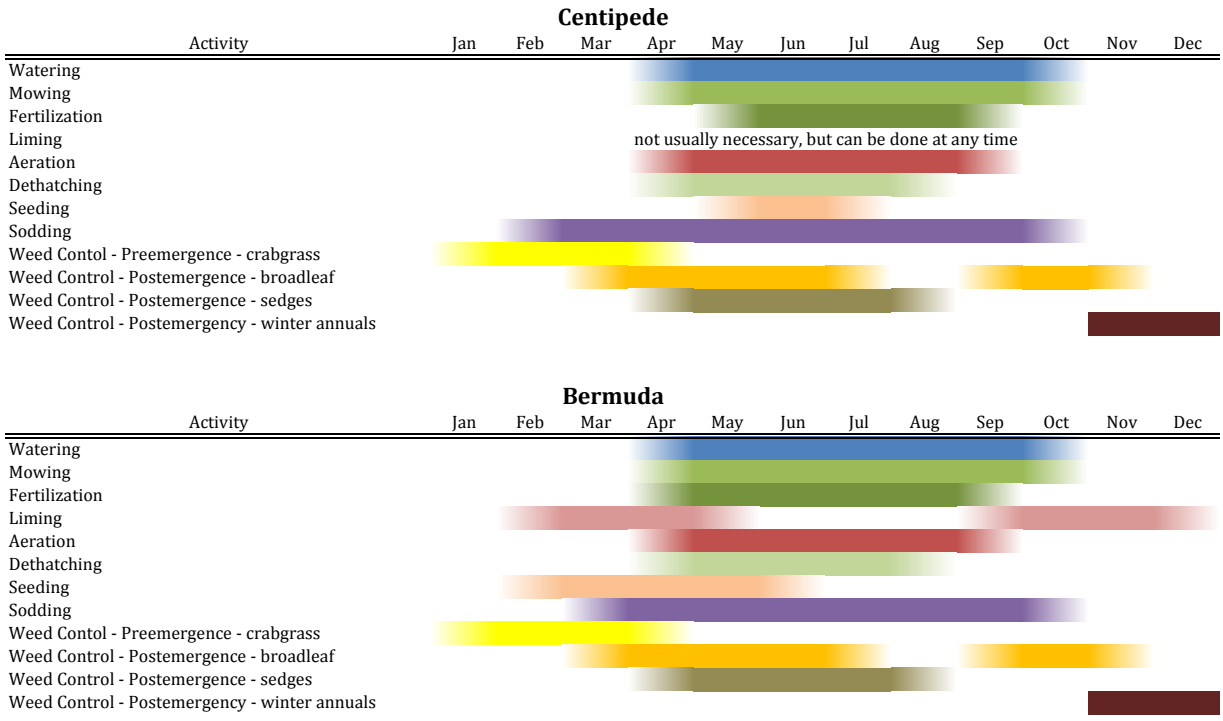


Figure 82. Maintenance calendars for centipede and Bermuda grass.

over graves, mounding too much soil on graves, or allowing graves to sink.

Scalping causes severe visual damage. More importantly, scalping shocks the grass plants and growth slows or stops, limiting the vigor of the turf. A scalped lawn may dry out quickly from drought, or may develop unusual weed and disease problems.

It is unclear if the grass is replaced by the one firm allowed to dig graves, Master Grave, or by the Cemetery staff. In either event it is critical that the job be performed more precisely in order to avoid turf damage and the resulting poor aesthetics.

In addition to mowing, nylon trimmers are used around monuments, coping, fencing, and plantings. This is an acceptable practice, but it is critical that a very light weight line be used – along with worker attention – to minimize damage to soft stone such as marble.

The Cemetery has no fewer than seven Toro trimmers and we understand that all are in working order. This is a very large number of trimmers for such a small staff.

We are also told that the line weight used is 0.130-inch, the heaviest made by Toro. Samples collected in the cemetery confirm that this is the only size being used. Lines this thick can cause extensive, and unnecessary, damage to stones. We recommend a line diameter no greater than 0.065-inch – half the diameter of what currently is being used.

Figures 76 and 77 reveal a variety of mower and trimmer damage done to both marble and granite markers throughout the cemetery. There was no section which failed to evidence recent mower damage including mower impact, mower scalping of the stone, mower blade damage, and trimmer line damage.

We understand that one plot owner has complained. The Trustees are very fortunate that

more plot owners haven't complained. It is critical that there be significant improvements in the care and attention to detail that mowing requires.

This damage is the result of several factors, including (1) using mowers that are too large for navigation among the stone, (2) carelessness or inattention, and (3) laziness by trying to minimize trimming time by getting as close to the stones as possible.

Workers must be trained in the appropriate use of both mowers and trimmers (most manufacturers have training videos; videos are also available from The Training Network). "Common sense" is clearly insufficient given the level of damage we observed.

There are several additional steps that can be taken to minimize this problem. We recommend that the edges and sides of each mower be painted a different color. This will transfer when stones are hit and it will be possible to determine who caused the damage. A second step that can be taken is to install closed cell foam pad attached to the sides and front edges. This bumper will help to minimize accidental damage and its damage will also provide evidence of impacts.

Finally, the Cemetery Landscape Manager must establish a clear rule that no monuments in the cemetery should be mowed over. Oconee Hill Cemetery is not a lawn park cemetery and its monuments are not meant to be driven over. This includes driving over ledgers – on which we observed many tire tracks. This is not only hazardous since not all of these ledgers are well supported, but it is disrespectful to the plot owners.

We were informed that all grass clippings were blown off stones and this is certainly the expected practice. It demonstrates pride in work, attention to detail, and respect for the monuments and families.

In spite of what we were told, we found grass on multiple monuments in virtually every section of the cemetery. In all cases the grass was brown and coated on the monument, suggesting it had been there for weeks.

We also found that in some areas the grass was poorly mowed, leaving broad areas unmowed or untrimmed.

Although we were told that all of the mowers have mulching blades, in many areas we found large patches of dense cut grass clippings. This grass disfigures the turf and will promote disease in the grass underneath. Its presence indicates that either mulching blades are not being used or that the grass was allowed to grow so high it was impossible for the blades to adequately mulch the cuttings.

Throughout the cemetery we observed either bare spots, areas of heavily compacted clay, and patches of thick moss. These areas require renovation as discussed below.

Fertilization and Weed Control

We understand that the cemetery is not using any pre- or post-emergent herbicides on the turfgrass. Good lawn management, which includes proper fertilization, mowing and watering, will produce a healthy dense turf which is difficult for weeds to invade. The Oconee Hill turf, however, has received poor treatment and many areas exhibit dense weeds. Weed treatments coupled with better turf management practices can make a significant difference in the overall appearance of the grass.

Centipede

Centipede is often referred to as "lazy man's grass" due to its infrequent mowing and fertilization requirements. This makes it an excellent choice for cemeteries with minimal maintenance capabilities. Nevertheless, it still requires some care and attention. For example, centipede prefers some acidity (pH less than 6.5). It is intolerant of compaction, low potassium, excessive thatch, drought, or heavy shade. The shade issue is best dealt with by mulching under

dense shade trees and not attempting to grow grass. Otherwise, we have previously recommended soil modifications.

The current soils are slightly acidic for other plants and trees, so the goal is to raise the soil pH to a level that will encourage the health of other plants, while maintaining the acidity for centipede. Thus, a once-time liming may be sufficient. In a year additional soil tests should be conducted to determine if a fertilization program will be necessary.

We anticipate it will and centipede can be fertilized in June, July, and August. Centipede should not have nitrogen applied. Chelated iron can be sprayed to improve the turf color.

We observed strong stands of broadleaf weeds. Treatment for this problem should occur from late March through June, but can be repeated in October. Centipede is sensitive to certain herbicides such as 2,4-D and MSMA, so it is critical to follow label directions and use caution. Manor or Blade (metsulfuron) are good broadleaf herbicides that will not damage centipede when used as directed. These are not, however, typically available without a pesticide license and their use will require the Trustees to ensure that at least one employee has a Georgia private pesticide license.

SedgeHammer (halosulfuron) may be used for sedge control; Vantage (sethoxydim) is safe for postemergence weedy grass control.

Bermuda

Bermudagrass desires a soil pH between 6.5 and 8.0. Otherwise, the use of the turf and its desired appearance (in addition to the soil test) will dictate the amount of fertilization. For minimal appearance complete fertilizer (such as 16-4-8) applied at rate of 1 lb. of nitrogen per 1,000 square feet is appropriate in May and July.

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

Apply preemergence herbicides to control crabgrass in late February or early March. Apply postemergence herbicides in May as needed to control summer annual and perennial broadleaf weeds such as knotweed, spurge and lespedeza. Products containing two or three broadleaf herbicides usually control several different broadleaf weeds in a lawn more effectively. Be sure the product is labeled for use on bermudagrass. Apply postemergence herbicides only when weeds are present. Apply broadleaf herbicides three weeks after the lawn becomes green to avoid damaging the grass.

Irrigation

Oconee Hill does not have an irrigation system and, in general, we do not recommend them – they use very large quantities of water, their placement can interfere with markers and graves, and their operation can cause erosion to stones.

Unfortunately, Oconee Hill also lacks functional hose bibs. We are told that the original water lines were laid in 1909 by Kevin Bridges using cast iron pipes. Water was cut off in the old section as a result of a rupture between Sections B and C in 1993. Water was subsequently cut off in the new sections in 1997, although somehow we understand that water was provided for Bull Dog Haven. Today only two bibs are still working – both in the vicinity of the Sexton's Cottage and likely tied into the water lines for the kitchen and bathrooms.

In 1999 an estimate was provided for replacing the existing system using about 15,000 linear feet of 2-inch PCV, 14 2-inch cut-off valves, and 83 ¾-inch frost free hydrants by Maxey Brothers, Inc. in Bishop, Georgia. The cost for this work nearly 15 years ago was nearly $30,000. The cost will only have escalated since that time.

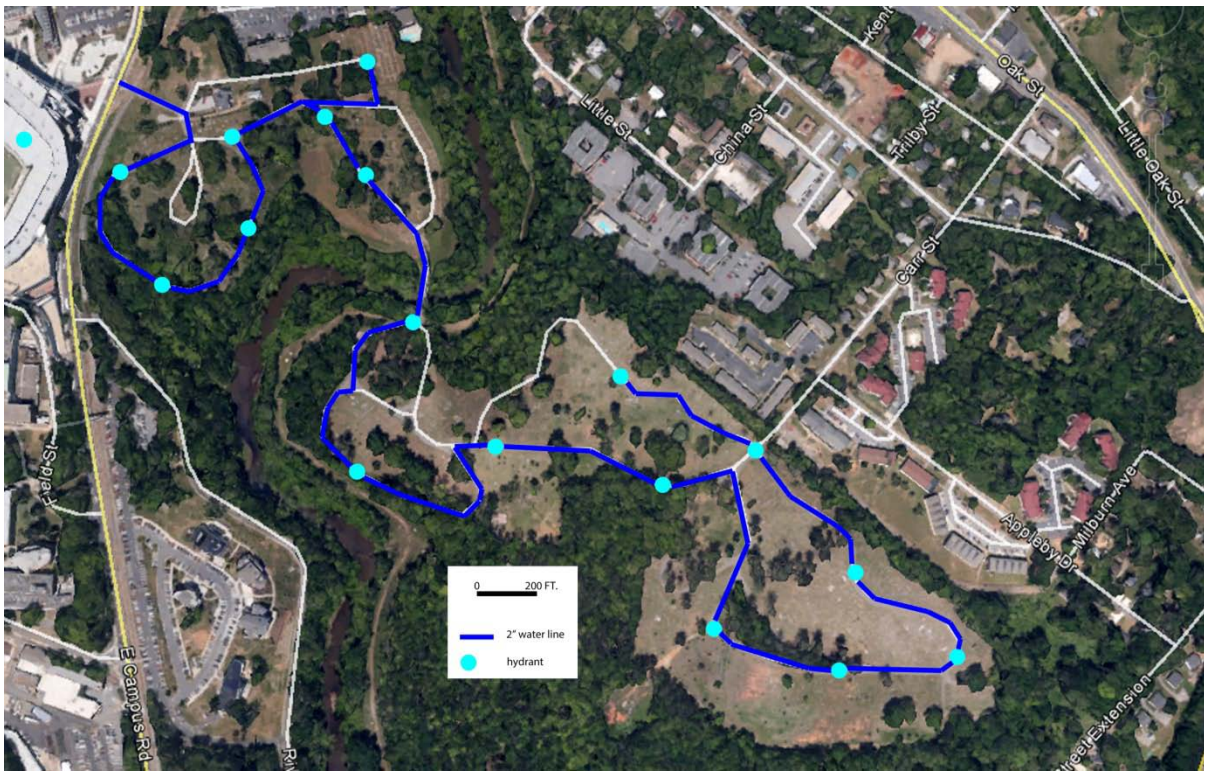


Figure 83. Water plan for Oconee Hill Cemetery.

The absence of water in the cemetery poses a variety of problems. It severely limits the potential for landscape modifications, new plantings, and irrigation of stressed areas. It limits the ability to clean stones. Families must bring water to their plots for flowers and plants.

Beyond severely limiting critical landscape functions, the absence of water is yet another feature that limits the ability of the Trustees to aggressively promote this cemetery over others in the Athens area.

Consequently, we recommend that water lines be installed. If it is possible to lay the lines adjacent to roads this will prevent the need to open and repair the roads, reducing the cost.

Figure 83 shows a layout following roads that would involve the use of only 17 frost free hydrants. Such a system would limit water locations and require the use of 200 foot hoses to provide spot watering. This is certainly not an ideal solution, but with adequate water pressure it would be useable and might solve the problem in a more affordable manner.

Of course, most of the cost is tied up in both labor and the pipe costs itself. This particular layout would require about 8,700 linear feet, reducing both labor and material costs.

We recommend the use of Woodward sanitary hydrants, which would provide back flow prevention, frost proofing to a depth of 2-3 feet, and would hoses to remain on during the winter and still prevent freezing. Although more expensive than conventional hydrants, these would eliminate the need for winterizing the system.

While originally PVC was priced for the project, the Trustees should obtain costs for both PVC and HDPE pipe (the latter sometimes called simply polyethylene pipe).

HDPE is increasingly being used since it

can be manufactured in rolls up to 500 feet in length, reducing the number of couplings required. The pipe can also be easily laid.

The comparison of these products, however, should consider all of the factors, including pressure ratings, expected velocities. Calculate long-term costs, not simply initial costs. Both systems will work as long as they are correctly designed and installed.

Renovation

We recommend that the cemetery implement a renovation program in order to establish a good stand of a single grass type. This work can be accomplished section by section, gradually implementing the efforts throughout the cemetery.

A warm season grass, such as centipede, is probably a good choice, as long as its use is coupled with mulching under trees and shady areas where almost no grass will grow. The publication *Lawns in Georgia* (http://www.caes.uga.edu/applications/publications/files/pdf/B%20773_2.PDF) provides information on renovation of existing turfgrass areas.

Bare areas can be replanted in late May using sod or, less desirable, plugs on 6-inch centers. Centipede can be seeded at ½ pound per 1,000 square feet if no preemergence herbicide has been applied within two months of planting.

Should areas of Bermuda require renovation, we recommend they be converted to centipede. If this is not possible, then areas can be replanted in a manner similar to centipede, with either sod or plugs at 6-inch centers. Applying a preemergence herbicide that does not interfere with root growth after plugging helps prevent weed encroachment.

Core Aeration

There are many compacted areas of the cemetery that would be significantly improved with core aeration. As in the case of mowing, bigger is not necessarily better. Relatively small hand operated equipment will be needed to prevent damage to monuments. The equipment should use hollow tines or spoons so that soil cores 2 to 3 inches deep and ½ to ¾ inch in diameter will be removed. Aeration is best accomplished during periods of active plant growth and when the soil is moist enough to allow deep penetration.

We do not recommend this as a routine activity, but it will benefit the vegetation every 3 to 5 years.

Pest Control Practices

An issue of considerable concern is the presence of fire ants. One survey done in 1998 concluded that 33,000 people in the state of South Carolina sought medical attention as a result of fire ant stings. Of those 15% had severe localized allergic reactions and 2% had severe systemic reactions resulting in anaphylactic shock. Thus, fire ants are not simply an aesthetic nuisance, but they can pose a significant threat to the health of cemetery visitors.

Our work in the cemetery found fire ant mounds with alarming regularity. It is clear that no effort is being made to control the problem and this poses a significant liability to the Trustees.

An exceptional resources is the document, *Managing Imported Fire Ants in Urban Areas* (http://www.caes.uga.edu/applications/publications/files/pdf/B%201191_3.PDF).

While individual mounds can be treated, this approach is best used in small areas. At Oconee Hill Cemetery a far better approach is to once or twice a year, typically in April or May and again in September or October, broadcast a hydramethylnon bait such as Amdro at the rate of 1 to 2 pounds per acre. These applications will provide about 90% suppression rates, with maximum control about 2 to 4 weeks after application.

After 10-14 days the Amdro should be used as an individual mound treatment on any

Figure 84. Examples of fire ants across the Cemetery.

mounds that continue to be a problem or that remain in high traffic areas.

This treatment can be applied over the entire plotted cemetery at a cost of only $920 per treatment or about $24/acre.

Fire ants are not, however, the only pest problem at the cemetery. In the Factory section we observed frequent mole activity, creating tunnels and soft earth that pose a hazard to the public. Similar ground burrowing animals were found, albeit in lower densities, in other sections of the cemetery. It is difficult to discourage moles, which are insectivorous and thrive on grubs, earthworms, beetles, and even ants. Cultural treatments include packing the soil down to collapse tunnels or pest control practices such as the use of milky spore disease to control white grubs. If these steps are unsuccessful it may be necessary to begin a trapping program, which is usually the most effective control mechanism.

Figure 85. Trash, leaves, and limbs dumped at the edge of the Cemetery. Upper left photo shows dump at the edge of the New Pauper Section. Upper right photos shows a dump at the edge of Section B. Middle left photo shows a dump at the edge of Section D. Middle right photo shows a dump at the edge of Section New G. Lower left photo shows a dump pile at the edge of Section Old G. Lower right photo shows a dump pile at the edge of Section H. These are not isolated examples, trash piles ring the cemetery, where staff has failed to properly dispose of debris. All must be collected and, where under 4-inches, mulched.

Figure 86. Dump area at Oconee Hill Cemetery. The upper left photo shows a pile of brick that could be used to rebuild walls. The upper right photo shows granite essential for repair of walls. The middle left photo shows a trailer abandoned in the dump filled with debris. The middle right shows soil left over from graves. The lower left photo shows one of many small piles of debris. Elsewhere are numerous large logs. The lower right photo shows some of the monuments and bases dumped in this location.

Figure 87. Two of the stones identified in the dump area. On the left is the Vason stone. On the right is the Collins stone.

Landscape Debris

Through the years the various cemetery staffs got in the habit of discarding debris at the edge of the woodsline, often within mere feet of roads and even plots. This has created a buffer of dump piles across the cemetery, disfiguring the landscape and giving the impression that the Cemetery simply does not care. It is a practice that must not only cease, but must be rectified.

This means that the debris dumped in the woods must be pulled out, pile by pile. Doing so will significantly improve the landscape and, in addition, will provide the cemetery with much need mulch for under trees.

We recommend that the debris be mulched on-site, using a mulcher/shredder capable of handing debris up to 4-inches. The mulched material can be stored at the dump area, discussed below.

The Dump Area

It is impossible to understand why staff continues to pile debris along the edge of Cemetery sections when there is a designated area for storage. This dump area, southeast of Section F-2, measures about 0.64 acre in size, but has been very poorly utilized. Trash is dumped in piles throughout this area, with no effort to organize or use any of the materials.

For example, there is a pile of granite rock that would be critical for rebuilding walls. There is another pile of brick, also critical for wall repair. In both cases, however, these critical materials are treated like trash and simply dumped in this area.

There is a great deal of vegetative debris, including many logs as well as light brush. There is even a trailer filled with debris that appears to simply have been abandoned in the dump area, still filled with debris.

There are also several piles of soil, intermixed with vegetation. The soil should be carefully stored separately since it, too, may be critical in the repair of various erosion areas.

Finally, there are several broken stones and bases discarded in this area with no effort at repair or salvage.

While the dump area is not generally viewed by the public, it reflects poorly on cemetery management, giving the appearance that no one really cares. This area requires immediate efforts to clean it up and make it functional.

Light brush (under 4-inches in diameter) should be mulched and a large mulch pile begun from this material and the debris gathered up

Figure 88. The current mulching operations are ineffective and an effort should be made to improve the process.

along the Cemetery edges.

Another pile should be created of neatly stacked bricks and neatly piled granite stone. Monument remains should be carefully stored until it can be determined why they are in this area.

The large logs in this area should also be chipped to produce mulch. We recommend that an effort be made to obtain a landscape chipper for two or three days to allow all of these materials to be readily converted into useable material.

With effort this space can be converted into a functional and useable space that reflects proudly on the cemetery.

Other Landscape Issues

Leaves

During our assessment we discovered that landscape technicians were manually blowing leaves to the edge of the road, where a mower was being use to mulch the leaves. It also appeared that the mower itself was being used to blow leaves. Once mulched it appears that the leaves are being dumped in the woods. This is a very labor intensive means of dealing with the Cemetery's leaves and is adding considerable wear and tear on mowers.

It is true that many cemeteries deal with leaves by using power equipment to create rows that are then either mechanically bagged or, just as often, mulched using mowers with micro mulch blades. The latter approach not only eliminates the work of gathering and removing leaves, but it also adds nutrients back into the soil.

For example, a Lexington, Kentucky cemetery deals with 130 acres of leaves with a crew of seven employees using blowers to blow all the leaves to the driveways. Next, a crew of three picks up the leaves using a large vacuum, which shreds and shoots them into a covered dump wagon. The shredded leaves can then be composted.

The process at Spring Grove Cemetery and Arboretum in Cincinnati, Ohio is even simpler. There, on 430 acres, they blow the leaves away from markers and flower beds, then mulch them with riding mowers. The mulch is sufficiently fine that there is no need to gather any of the debris – everything is simply mulched back into the soil.

While we are told that the mowers at Oconee Hill Cemetery have mulching blades, we did not verify this and the efforts we saw did not suggest a particularly effective program. Mulching blades are specially designed blades that pulverize clippings. For example, some blades have jagged teeth instead of a traditional-looking cutting edge. Others have multiple cutting edges. Many mulching mowers employ kickers or tails that force blades upward for repeated chopping. Mulched leaves contain less nutritional value than green clippings, so the main value is in reducing the need to dispose of huge volumes of leaves in the fall and the addition of organic matter to the


Figure 89. Graveled plot covered with weeds.

clay soil.

We strongly recommend that the Cemetery look into alternative means of handling leaves that would be more cost effective and benefit the cemetery.

Graveled Plots

A few lot owners have chosen to use gravel, retained by coping, rather than allow the plots to be grassed. Often lot owners do this thinking that it will reduce maintenance. Unfortunately, as shown by Figure 89, this is rarely the case. In fact, these graveled lots almost always present a variety of long-term maintenance problems and the Trustees should discourage the practice whenever possible.

Too often the lots, once laid, receive no additional maintenance by the families. As a result, the gravel thins through time, ultraviolet light breaks down the underlying weed block, exposing it and allowing further deterioration. In addition, weeds will often begin to grow through the weed block and gravel. The typical solution to this, rather than laborious hand weeding, is to apply herbicides. Since there is rarely an effort made to prevent future weeds, chemical control becomes a routine practice – causing long-term damage to the memorials. In addition, the weeds killed by the herbicide create a disheveled appearance that detracts from the overall cemetery aesthetics.

Where families have chosen this practice and are unwilling to allow grass, they should be informed that it is their responsibility to replace weed block and periodically infill plots with additional gravel in order to keep them maintained. With the realization of that gravel is not a "silver bullet," but will require long-term maintenance, families may be willing to allow plots to be converted to grass which is more historically appropriate and dramatically softens the cemetery landscape.

Sinking and Collapsing Graves

Oconee Hill Cemetery has an unfortunate number of sinking or collapsing graves. Some of these problems can be resolved by ensuring better compaction during the backfilling process, occasional infilling of depressions, and resodding the gravesite. These are simple, routine maintenance practices and all graves should be examined on a monthly basis to determine those that require attention. It is only when the problem is ignored that it escalates to a more serious situation.

If Oconee Hill Cemetery does not currently require all burials to be placed in either concrete or fiberglass vaults, it should. This step is standard in the cemetery industry and would dramatically reduce long-term maintenance needs at the cemetery. Failing to make this standard practice will simply heap more maintenance activities on an already overtaxed staff.

Further Activities in the Colored and Pauper Sections

We have previously recommended that

both of these sections have all trees that are dead, unhealthy, or under 4-inch caliper removed. This would further open the areas, removing scrub vegetation that is unlikely to ever thrive. It will, however, still maintain sufficient overstory to prevent dense understory vegetation. A particular effort should be made to maintain and enhance the ferns that are found in the Colored Section. The presence of these ferns requires that maintenance activities avoid the use of herbicides, as well as mowing. Only light use of nylon trimmers is appropriate.

We doubt that it will be necessary to plant additional trees and discourage any plantings since it will add yet more maintenance.

We also do not believe that funding GPR activities is necessary for maintenance, public interpretation, or long-term preservation. There are far more significant needs in the cemetery.

It would be appropriate to map all of the grave depressions in both areas. This would then allow the slumps to be filled in order to enhance public safety and ease of visitation.

Special care must be exercised not to dislodge or remove any of the fieldstones in these sections as it appears that many mark graves.

The Erosion Problem

Erosion is a significant issue in two sections of Oconee Hill Cemetery and requires immediate attention. It seems clear that the problem has been ongoing and the only response has been to throw down pine straw which, of course, immediately erodes away. We are not referring to generalized erosion resulting from collapsing walls – this problem can be resolved by the repair of the various retaining walls. Rather, we are referring to the significant erosional problems along the road at the south edge of Factory Cemetery and along the west and south edges of West Hill on the outer road.

Had the problem been tackled earlier, some of the issues might have been resolved using reed-trench terracing. This consists of a series of wooden barriers, or checkboards, that are staked out along the contours, with a trench dug behind them (upslope). This trench is then filled with reed grass (*Phragmites communis*) and then covered with good topsoil. The series of terraces tends to arrest downward movement of soil and also provides areas for vegetation to become established. The reeds serve important functions in this process — preventing the soil from drifting under the checkboards, reducing gullying, serving as an underground reservoir of water, and providing nutrients. Plantings on these terraces tend to establish very deep root systems.

Unfortunately, all of the erosional areas are today too steep and fail to allow sufficient room for terracing. In addition, the soil is so poor it is unlikely that any planting would be able to take root. The only alternative is the construction of complex, and expensive, retaining walls.

Factory Cemetery

Erosion occurs along two sections of road, one for about 120 feet and the other for about 140 feet. These areas tend to correspond to areas of thick tree cover that precludes grass. The bank in both areas is approximately 6 feet in height and the slope ranges from nearly vertical to about 20°. From the base of the slope to the road edge there is 3 feet at the most.

In several areas stones and walls are close to the edge or being actively undermined. In several areas very large tree roots are exposed.

West Hill

Erosion occurs in multiple areas on the west and south sides of this section, on the interior of the outer road loop. One area measures about 180 feet in length, the other about 220 feet in length, for a total of about 400 feet. The bank on the west side is about 10 to 12 feet in height, while on the south side it is about 4 feet in height. Slopes on the west side are close to vertical, while on the south side the slope is more gradual, perhaps about 45°. Vegetation was previously attempting to hold the west back, but it has recently been

Figure 90. Erosion issues at Oconee Hill Cemetery. The upper left photo show erosion along the road at Factory Hill. The upper right photo shows the loss of a plot in the Factory Section. Additional erosion will begin to expose graves. The middle left photo shows tree roots and erosion along the Factory Section road. The middle right photo shows erosion along the west bank of West Hill. The lower left photo shows the recently cleared slope of West Hill. This will promote additional erosion. The lower right photo shows the south edge of West Hill where the bank is not as high, but erosion is still a concern.

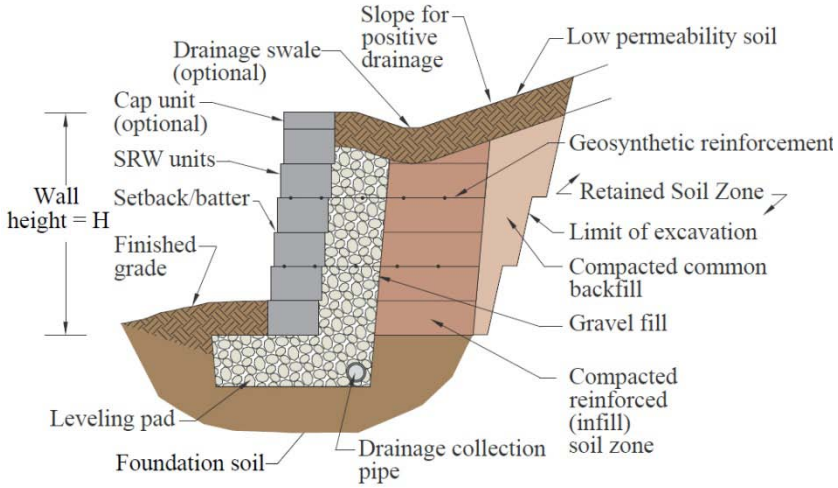


Figure 91. Cross section of the Everloc retaining wall system.

entirely cut and this will worsen erosion in the area. From the base of the slope to the road edge on the western side there is very little room, about 1 to 2 feet at the most. On the south side where the slope is less severe, there are up to 3 feet of space between the toe of the slope and the road. At least one plot wall is being undermined by the erosion on the west side.

Erosion Control Options

While mortared granite retaining walls would be the most attractive and historically appropriate walls, their construction would be at least $75 per square feet, so the needed walls would easily amount to $345,000. This is likely unaffordable and the walls on West Hill will not be readily seen by many visitors.

A better – and certainly more affordable – choice may be an interlocking segmental wall where the cost might be $92,000 or less. One example is the EverLoc Retaining Wall (http://www.everlocretainingwalls.com/). The modular system combines lightweight units with an easy to use lug-and-groove interlocking mechanism. Everloc typically has relatively low labor costs and relatively quick installation.

For heights over 4 feet – essentially all of the walls at Oconee Hill – it is necessary to have the walls engineered to ensure their stability. The walls will likely require the installation of a geogrid. This is a high-tensile-strength polymeric material that is placed between the units and extended into the soil. This creates a composite gravity mass structure. This mechanically stabilized wall system, comprised of the interlocking units and a reinforced soil mass, is designed to offer the required resistance to external forces associated with taller walls.

The Cemetery should evaluate the costs of resolving these erosion issues before the problem becomes more severe and leads to the loss of graves and exposure of human remains.

Needed Equipment

This evaluation has revealed that not only is staffing insufficient at Oconee Hill Cemetery, but the available equipment is also inadequate (and in some cases inappropriate). To assist, we are briefly outlining the variety of equipment that must be budgeted for in the immediate future.

We anticipate the staff will be expanded, so it may be necessary to also increase the quantities of items discussed below.

It should go without saying, but all equipment purchased for the Cemetery should be commercial grade. Avoid all homeowner products.

Utility Vehicles

Automobiles and/or trucks are overused by the Cemetery staff, increasing reimbursement costs, adding additional wear to cemetery roads, and exposing the public to speeding. It would be far more productive for the Cemetery to acquire two utility vehicles. There are a variety of well respected name brands including John Deere, Bobcat, and Kubota. The Bobcat's Rapidlink system allows a number of front-end attachments.

The Kubota Mule has an accessory that diverts hydraulic pressure from the transmission to a fitting at the back of the vehicle, allowing the operation of tools such as pole saws.

While we understand the decision will likely come down to cost and dealer incentives, there are a few issues that should be used to establish a base. Gasoline is a better choice than diesel in terms of economy, convenience, and noise. Routine maintenance and oil changes can be done on-site.

If the equipment were only being used on the roads or in flat open cemetery grounds, a 2-wheel drive would be sufficient and would be less expensive. However, we believe this would be a poor decision. Given that some areas are steep, access to the recently cleared Pauper or Colored sections can be rough and muddy, and the need to carry heavy loads, a 4-wheel-drive machine is needed. We believe that the Cemetery would quickly outgrow a 2-wheel drive and regret the decision.

Other essential features include manual dump beds for hauling soil, mulch, and for use on other landscape projects.

We have used utility vehicles both with and without windshields and strongly recommend the extra money for a windshield. It dramatically improves visibility in thick fog or light rain.

While a cab may seem like a luxury, it provides comfort and protection from sun, wind, rain, and cold weather. Since the vehicles will be used year round, cab enclosures become essential.

A tow ball should also be included, since this gives crews the ability to tow a small flatbed trailer, chipper, drag, or other equipment typically weighing up to 1,200 pounds.

While not critical, it would be useful for one of the two utility vehicles to have a sprayer unit attachment. This is a pump that draws off the engine. It can be used to operate a power sprayer in the rear bed. This would be very useful for various cemetery applications.

Costs vary depending on the manufacturer, and model. However, the Cemetery should anticipate about $12,000 per unit.

Golf Cart

It may eventually be useful to acquire a golf cart to allow the office manager to show prospective clients plot locations. A used cart should cost about $3,000. This should be a secondary priority, however.

Water Tank

The cemetery currently has a small tractor. This should be sufficient to pull a small, single axle 500 gallon tank or tank and pump (depending on whether spraying is needed or gravity flow will work). One site offering these is http://www.abiattachments.com/products/innovation/kiser_water_trailer.html.

21-inch Mowers

We are told that the Cemetery currently has only one 21-inch push mower. Only this size should be used in the historic sections (East Hill, West Hill, Factory, North Slope, and Valley) and one mower is insufficient. We recommend acquiring at least one, and preferably two, more 21-inch mowers.

It appears there is a preference for Toro products and this company makes a very good 21-inch Heavy Duty Recycler commercial mower. The cost is about $2,100 per mower.

We strongly recommend against using the 30-inch commercial Toro mower. It is more difficult to maneuver, making it a poor choice in tight cemetery settings. The 21-inch deck, while smaller, is much less likely to cause damage, which after all is the reason for using a push mower.

Backpack Blowers

The Cemetery currently has only one blower, with another being borrowed. One blower is insufficient and we recommend the purchase of two additional blowers.

Stihl appears to be the preferred brand, although the current model, BR340 is no longer produced.

We recommend either the BR430 or the BR600. Air velocity is similar, although the BR600 has significantly greater air volume. Weight is similar, although the BR430 offers slight greater fuel capacity. Engine capacity and displacement are similar, as is the decibel rating for each. Both models would work well for the Cemetery and selection may come down to cost. Regardless, about $500 per blower should be budgeted.

Walk Behind Blower

Rather than use a riding mower to blow leaves, we recommend acquiring one walk behind blower. There are tractor units, such as the Toro Pro Force Debris Blower that can be towed by a utility vehicle or tractor. It is questionable whether such a large piece of equipment (48-inches in width) would be maneuverable in the Cemetery.

Common commercial grade brands include Billy Goat, Parker, Little Wonder, and Gravely. Costs range from about $1,400 to $2,500.

Aerator

Recognizing the preference for Toro, this company makes a good 21-inch walk behind aerator, the 21-inch Single Hydro. The equipment has the advantage of a slim width and the ability to aerate in reverse in order to back out of tight areas. The cost is typically about $4,000. Given that this is equipment that will not be used on a continuous basis, it may be possible to either rent the equipment or contract out for the work as a more affordable alternative.

Chipper

There is, and will continue to be, a great deal of tree limbs and debris that should be chipped to produce ready mulch. We recommend that the Cemetery acquire one commercial chipper.

A competent professional model such as the DR 16.50 pro model will handle limbs to 4½-inches in diameter. It can be towed by a utility vehicle or tractor and has a top-discharge chute for easy collection of chips into a cart. An optional extended discharge chute will allow the debris to be deposited in a pick-up truck bed or into woodlots. The cost of this item is about $3,000. A DR model that can handle limbs up to 5½-inches (the 30.00 commercial model) costs about $4,300.

Walk Behind Edger

One walk behind edger is essential for upkeep on the nearly 3 miles of roads in Oconee Hill Cemetery. This will allow the roads to be edged to present a neat appearance and reduce damage from the grass growing into the asphalt.

Commercial grades include brands such as Gravely, Tanaka, and Husquarna. A 4-cycle engine is preferably to a 2-cycle in power, ease of repair, and overall convenience. Costs can range from $400 to $1,700. As with all equipment, avoid consumer or home owner models that will not withstand the wear and tear of miles of roads.

By-pass Pruners

All staff members should be expected to have in their possession, on a daily basis, a pair of bypass clippers. The Cemetery may wish to make this a job requirement (such as steel toed boots), although we recommend that the first pair be provided free, with any additional pairs the responsibility of the staff member.

We recommend Felco pruners, not only because of their quality, but also because of their variety. This brand offers right and left handed models, ergonomic models, models that are easy on the wrist, and so forth.

Regardless of the model, anticipate paying and average of $55 per pair, plus an additional $15 for a holster (http://www.felcostore.com/pruners; http://www.felcostore.com/itemaccessories/f19).

Radios

With a larger crew it will become essential that the Cemetery Landscape Manager can locate crews and direct activities. This is best accomplished by the use of portable radios. Available as both UHF and VHF models, generally VHF signals travel farther, absent obstructions, and tend to "hug" the earth better, providing better performance outdoors or in hilly terrain. With the cemetery being less than a mile from front to back, a 1 watt radio should be adequate, although higher wattage would help ensure clear communication.

A lot cost radio such as the Motorola BPR40 VHF 8 Channel 5W radio should be adequate and can be obtained in bulk for as little as $160.

Gasoline Cans

The plastic cans being used are not OSHA approved and should be replaced with metal safety cans. Type II 5 gallon cans may be acquired on-line and from local safety suppliers. The cost will be about $70 per can.

While the Cemetery currently has a great many cans, it may be appropriate to reduce the amount of storage at any one time, even if this means that gas must be purchased every few days rather than once a week.

Regardless, the switch to these cans should be made immediately.

Personal Safety Equipment

Employers are required by OSHA to provide employees with essential personal safety equipment. In the landscaping trade this minimally includes gloves, eye protection, and hearing protection. For ease of discussions, we are providing examples and costs using the current Ben Meadows catalog (http://www.benmeadows.com). There are many additional suppliers and brands; these discussions provide some minimum standards and representative costs. Other equipment may be required based on employee tasks; this discussion is intended to only provide some general guidance.

Gloves should be durable, non-slip, and abrasion-resistant construction. One example is the Pro-XT Glove (165776) available in S-XXL at a cost of about $26.00/pair.

Nitrile gloves should be provided for any work involving general chemicals. An example is the Ansell Touch-N-Tuff powder free gloves (35529) in S-XL sizes at about $20/box 100.

Eye protection must meet the ANSI Z87.1-2003 High Impact standard. These come in a great variety of styles and often employees are more inclined to wear safety equipment if they select it themselves. Individuals who must wear corrective lens may require safety glasses that will fit over their regular eye wear. However, a basic clear, antifog, and scratch-resistant style is the Inertia Protective Eyewear 174141 with a cost of $7 per pair.

When using chemicals, goggles rather than safety glasses will be required. As with safety glasses there are a great many options, depending not only on style and comfort, but also the nature of the chemical and whether side vents are allowed or not. A style such as the MCR Safety PGX-1 Goggles (162341) may be appropriate and cost $31 per pair.

There are also many styles of ear protection and several should be tried to ensure comfort and ease of use. Ear plugs are disposable and should be replaced on a daily basis. A corded style with a noise reduction of 31 dB when used correctly is the EARsoft Grippers (105953) at a cost of $66 per 200 pair.

OSHA requires that the workplace has a first aid kit. We recommend that one be provided in each utility vehicle, so it is always readily available at the job site. Assuming two utility vehicles and the office, we recommend the purchase of three kits (83684) at a cost of $70 per kit.

Sunscreen and insect repellant should also be provided to field crews. Deep Woods Off with 25% DEET (55634) is generally effective and available by the case (of six) for $54. And industrial SPF 30 sunscreen (84054) is available in 32 ounce containers for $40.

When crews are removing poison ivy we recommend that the Cemetery provide Tecnu Poison Oak-N-Ivy Skin Cleanser (130223) available in 32 ounce sized for $17. Used after exposure this will remove the oils and dramatically reduce workers' comp claims.

Every mower and utility vehicle should be equipped with a small, portable fire extinguisher. A small 2 pound, 5B:C extinguisher (143218) is available for $22. With 3 riding mowers and 2 utility vehicles the Cemetery will want to acquire and mount five.

Every employee using a chain saw (either normally or even occasionally) must be provided with chainsaw chaps and a safety helmet. Chaps protect the legs against accidental chainsaw strikes and must comply with ASTM F1897-08. Since we anticipate rather infrequent use a moderate price is the SwedePro Chain Saw Chaps available in three sizes (32-inch length, 130795; 36-inch length, 130796; and 40-inch length, 130797) with costs ranging from $94 to $102 depending on the size.

The Tasco Woodsman Hart Hat System includes ear muffs for hearing protection and a face shield to protect against eye impact by wood chips (67629). The cost is about $46.

Recommendations

- The position of Sexton should be discontinued, replaced with a Cemetery Landscape Manager and an Office Manager. Detailed job descriptions are provided for both positions.

- The base starting salary for the Cemetery Landscape Manager should be about $40,000.

- The Trustees should explore how the Affordable Care Act will affect their provision of health care to employees.

- We do not recommend a set monthly mileage payment. These funds should be diverted into the purchase of two utility vehicles for the Cemetery.

- If the Cemetery Landscape Manager is an exempt employee, which we anticipate he or she will be, then Saturday pay is not appropriate.

- We do not believe it is appropriate to offer employees of the Cemetery referral fees. The practice should be discontinued.

- We recommend that the Cemetery employ six full-time landscape technicians, two as crew leaders and four as technicians. Detailed job descriptions are provided in our report.

- The pay scale for landscape technicians should be minimally $9.70, with crew leaders paid minimally $10.70.

- Landscape technician activities require more oversight than is currently provided. Crew leaders should be held accountable for performance with careful oversight of the Cemetery Landscape Manager.

- The Trustees should make weekly or minimally monthly independent evaluations of the Cemetery landscape. We have provided a form that may assist.

- The Trustees should require a monthly report from the Cemetery Landscape Manager. We have provided a simple report format that may assist.

- The Trustees must establish annual performance reviews for all employees, with the results tied to both retention and pay increases. Policies must be

established to prevent nepotism.

- The Cemetery Landscape Manager must exhibit interest in continuing education. We recommend membership in the International Society of Arboriculture (ISA), as well as landcare organizations such as PLANET or the Georgia Green Industry Association.

- The Trustees should not only provide educational opportunities to its employees to become certified in landscape areas, but must insist on continuing education as a condition of continuing employment.

- At least one Cemetery employee must receive Level 1a training under Georgia's Erosion and Sedimentation Control certification program.

- All employees must undergo rigorous OSHA health and safety training. This is a fundamental requirement of the employer's obligation to provide a safe work environment.

- The Trustees must provide safety equipment such as eye protection, hearing protection, and gloves. Employees must be required to provide steel toed boots, although the Trustees should reimburse a percentage of the purchase after a set period of employment.

- We recommend that all staff be provided uniforms through a rental program that will clean and repair uniforms on a weekly basis.

- If uniforms are not provided, the Trustees must establish a stringent dress code to ensure the dignity of Cemetery employees. Recommendations include long pants, t-shirts with no writing or pictures, in order to maintain a professional appearance.

- The Trustees should establish an employee code of conduct that focuses on absolute decorum, courtesy, and respect to all individuals in the Cemetery at all times.

- Soil tests reveal that many plant nutrients are being affected by the low soil pH and we recommend that the Cemetery grounds be limed with dolomitic lime, broadcast prior to a rainfall.

- Additional soil tests should be conducted in 2014, after liming, to determine if additional treatments or fertilization are needed.

- Trees to be planted on Cemetery grounds must be carefully identified to be historically appropriate and to avoid significant issues such as surface roots, excessive litter, or weak structure. A list of potential plantings is provided.

- Every tree removed should be replaced by a new tree. It is also appropriate to plant replacement trees in anticipation of their need.

- All replacement trees or new plantings should be at least 1-inch caliper and meet the minimum requirements of the American Nursery and Landscape Association's American Standard for Nursery Stock (ANSI Z60.1-2004). All nursery stock should be carefully inspected prior to acceptance and planting.

- All new plantings should have water bags and rigid tree guards installed.

- Older, mature trees in the Cemetery should have turf removed from under their drip lines and 3-inches of mulch installed.

- The Trustees have engaged in a program of deferred tree maintenance that has

caused significant damage to monuments and the loss of critical overstory trees. This practice must cease. About 45 hazardous and dead trees have been identified in the Cemetery. These require removal (and replacement).

- At least 47 stumps are present in the cemetery. These require cutting to ground level.

- Stump grinding is a poor practice in cemeteries and the Trustees should prohibit such activity in the future.

- There are a large number of trees in all sections that require pruning for either thinning or cleaning. Pruning should preserve the natural character of the tree. All pruning must meet the ANSI A300(Part 1) – 2001 standards.

- All pruning within the Cemetery grounds should be performed by an ISA Certified Arborist, preferably one who is also an ISA Certified Tree Worker/Climber Specialist. We have provide a list of ISA Certified Arborists for the Trustees to use.

- All ivy growing on trees in the Cemetery must be removed.

- The Cemetery must remove fallen trees within a reasonable time, completely cleaning the grounds after the work is performed.

- All trees must be inspected by an ISA Certified Arborist on a yearly basis and after any significant wind storm.

- All Cemetery trees must be pruned to remove dead wood at no greater than five year intervals.

- Plantings, whether voluntary or intentional, that interfere with stones or fences must be evaluated on a case-by-case basis to determine appropriate remedies.

- When shrubs require replacement, they should be replaced in kind. All plantings should meet the minimum requirements of the American Nursery and Landscape Association's American Standard for Nursery Stock (ANSI Z60.1-2004). All nursery stock should be carefully inspected prior to acceptance and planting.

- All weedy plants and vines must be removed from Cemetery shrubs. These shrubs must be inspected on at least a yearly basis to ensure they remain clear of intrusive vegetation.

- All shrubs must be pruned by hand. Shearing must not be allowed.

- Boxwoods, in particular, throughout the Cemetery require annual thinning. Some are in such poor condition that they require renewal pruning.

- All landscape technicians must be trained on appropriate pruning techniques for the common shrubs in the Cemetery.

- The use of large deck mowers in Oconee Hill Cemetery is problematical and in the old sections only 21-inch walk behind mowers should be used.

- Many stones in the Cemetery are being needlessly damaged by the use of mowers that are too large, and staff that is poorly trained and inattentive. These problems are exacerbated by a lack of adequate supervision. We have been told that this is "old damage." It is true that some damage is at least several years old. But much of the damage we observed has occurred within the past year.

- All mowers must have closed cell foam bumpers installed. These must be replaced as needed. Operators with

excessive wear on the bumpers should be given remedial training and instruction.

- No mowers are to be ridden or pushed over stones, especially ledgers, coping, or walls.

- Mowing must be conducted with sufficient frequency to maintain turf at a height of 1½-inches. This typically requires mowing at two-week intervals during the growing season.

- Scalping of the grass must be prevented by more careful grave filling and compacting, combined with more careful replacement of sod.

- Sunken graves must be infilled on an annual basis.

- The line weight used on the Toro trimmers is too heavy. All 0.130-inch line must be replaced by a line no greater than 0.065-inch.

- No training in the use of mowers or trimmers is currently provided. Workers require training in the use of this equipment, as well as safe work practices.

- Grass clippings must be blown off all monuments after every mowing or trimming. The Crew Leaders and Cemetery Landscape Manager must conduct inspections to make certain this is being done.

- All mowers should have mulching blades installed. All blades must be sharpened weekly.

- Both the centipede and Bermuda turfs exhibit extensive weed invasion. The Cemetery should institute a weed control program, using pre- and post-emergent herbicides.

- Whenever possible Bermuda grass should be abandoned in favor of centipede, which is more easily maintained.

- The Cemetery requires the installation of hose bibs with sufficient frequency that no more than 200 feet of hose would be required for spot watering. This will allow resodding of graves and seeding of bare spots.
- Lawn renovation should be undertaken in areas of bare soil, moss, and compacted soil.

- Core aeration should be conducted in selected areas of the Cemetery, focusing on compacted areas, bare soil areas, and moss covered areas. This should be following by reseeding.

- The Cemetery exhibits a severe infestation of fire ants. We recommend a two-step program consisting of broadcast Amdro bait, followed in about 10-14 days by mound treatments where necessary. This treatment should be conducted once or twice per year.

- For years debris have been dumped at the edges of the Cemetery in the woods. This has created large areas of dense, unsightly debris. These debris must be pulled out of the woods and shredded or mulched. This material may either be collected, or returned into the woods.

- The Cemetery operates a dump area that is poorly maintained. Immediate steps must be taken to improve its condition. Granite stone and brick should be neatly stacked in individual piles. Broken or discarded stones should be collected in one area. Soil piles should be combined. The large quantities of vegetative debris should be shredded or mulched into a large pile that can be used to mulch under trees in the Cemetery.

- Leaf management in the Cemetery must be improved. The Cemetery should

explore whether the Atomic Replacement Blade can be used on the current mower models. This is an especially sharp blade designed to work with the Toro Recycler Cutting System, chopping clippings into find mulch and returning them to the ground.

- Where mowing not an option, a walk behind blower will more quickly and efficiently move leaves than the current use of mowers and backpack blowers.

- The Trustees should prohibit the creation of graveled plots and an effort should be made to convert currently graveled plots to grass.

- Additional small trees (under 4-inch caliper) in the Colored and Pauper Sections should be removed and shredded on-site to provide mulch to those areas.

- We do not recommend any additional plantings in the Colored or Pauper sections.

- Erosion is a significant issue along the roads of the Factory Cemetery and West Hill. In these two areas we recommend the construction of interlocking segmental retaining walls.

- The Cemetery requires additional equipment. We recommend the purchase of two (2) utility vehicles, one (1) golf cart, one (1) water tank, two (2) 21-inch commercial mowers, two (2) backpack blowers, one (1) walk behind blower, one (1) commercial 4-inch chipper, one (1) walk behind edger, a supply of by-pass pruners for staff, a supply of VHF radios for crew communication, five (5) Type II 5-gallon gasoline cans, and appropriate safety equipment for employees.

Other Maintenance Issues

This section briefly explores other cemetery maintenance concerns exclusive of the landscape. We will briefly discuss signage issues, trash, flowers and grave decorations, policies dealing with orphan stones and replacement stones, drain cleaning, grave preparation and closure issues, and monument setting.

Signage

This issue of signage was briefly discussed in the "Administrative Issues" section in the context of current rules and recommended changes. Here these issues will be dealt with in more detail.

At the present time Oconee Hill Cemetery does not have effective signage. It is scattered, poorly located, and is all different with no unifying theme.

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.

The last two types of signage are informational (for example, directional signs) and interpretative (information on historic people buried in the cemetery). While these are excellent and improve the visitor experience, only a few are recommended at this point. Additional signage may be added in the future.

The Cemetery must strive to develop effective and well-designed signage. Signage should combine good and consistent design, and meet the needs of visitors.

Specifically, the signage should provide

Figure 92. Current and proposed identification signage.

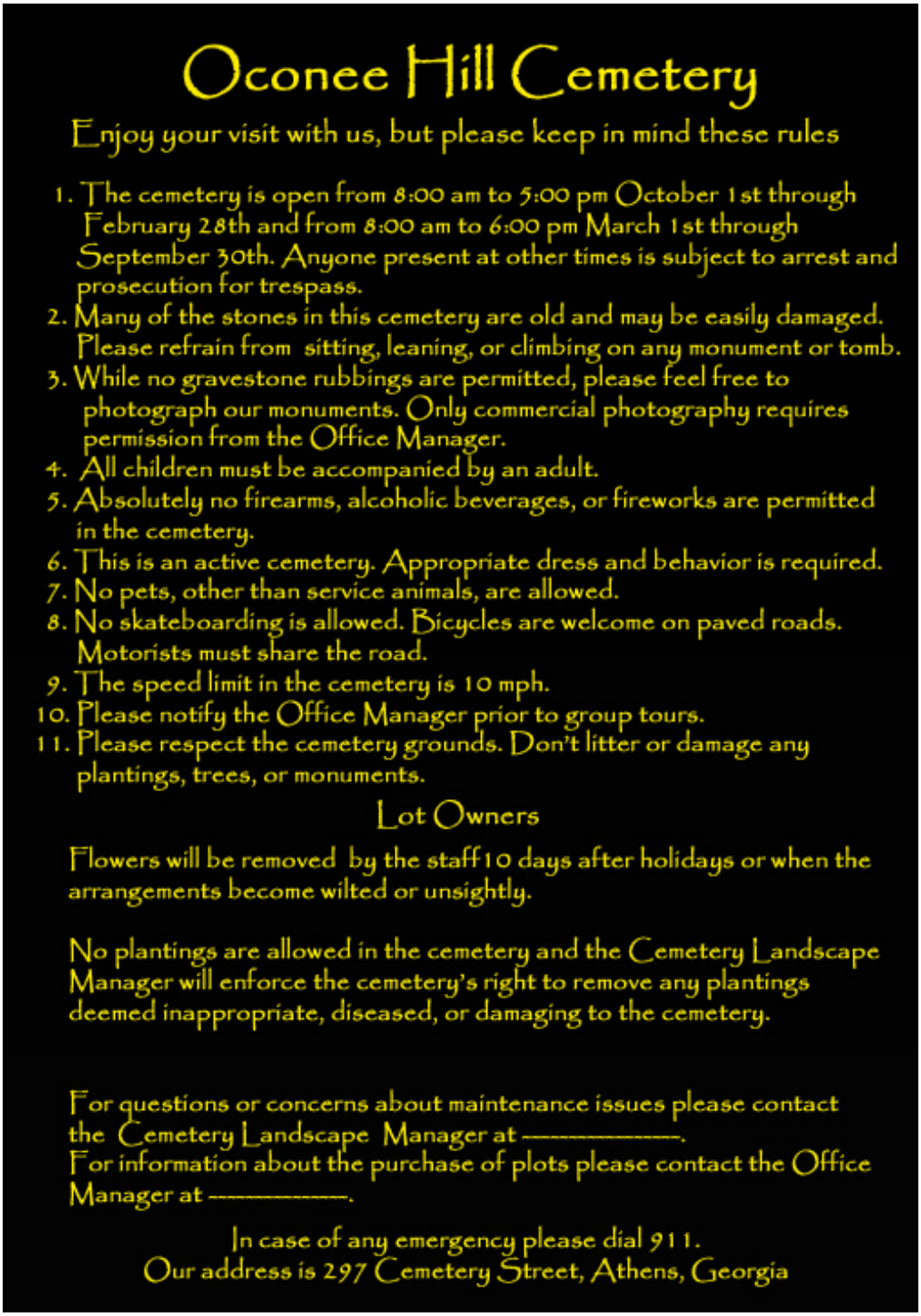


Figure 93. Recommended front and rear gate regulatory signage for Oconee Hill Cemetery.

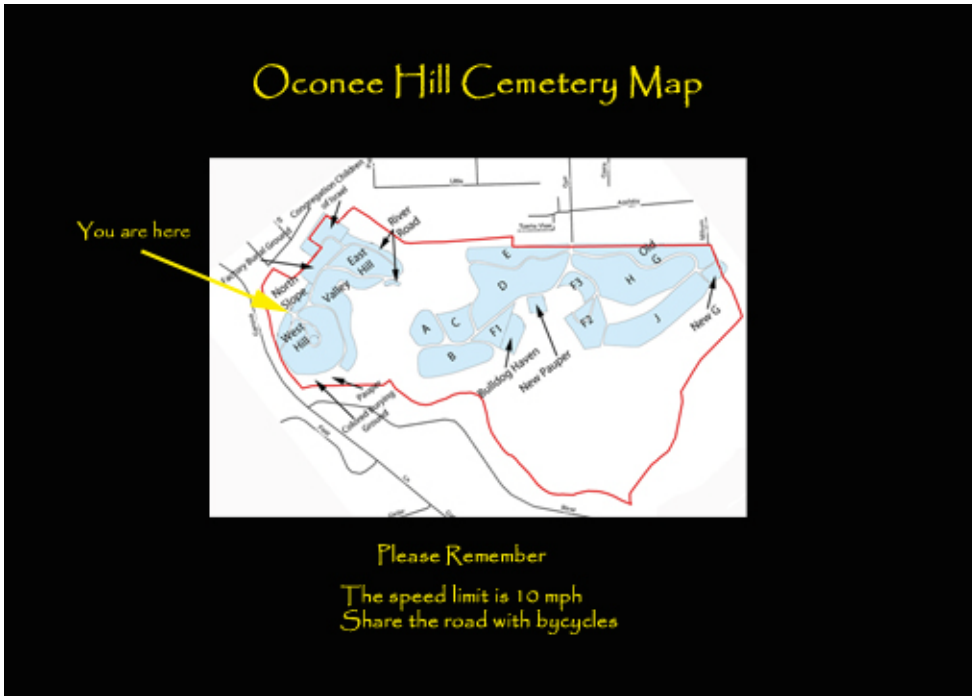


Figure 94. Recommended informational signage for the front entrance. This provides a map of the cemetery for new visitors.

consistent information; should be universally accessible; viewable by several people at once; and be very durable and able to withstand abuse or constant touching. Signage should be located near entrances and at major circulation intersections.

Identification Signage

The current identification sign is non-descript and fails to alert visitors to the cemetery access or encourage them to visit (Figure 92).

We proposed a new sign in classic black with rich gold lettering using a contemporary, but easily read typeface. The new sign should be located outside the gates, pointing the way into the cemetery, beckoning visitors.

Regulatory Signage

The current regulatory signage is virtually hidden by being mounted on a stone post, well within the cemetery. In addition, it includes regulations that are counter-productive to encouraging public support and lacks regulations critical to good cemetery management. Figure 93 provides an example of the new regulatory signage.

This sign should be located inside the front gates, where it should be posted perpendicular to the road for ease of viewing. An identical sign should be posted at the rear entrance, although there it should be erected parallel to the road, making it readable not only to those entering through this gate, but also clearly visible to visitors who have entered through the front gate as well.

Informational Signage

Only two general categories of informational signs are recommended at this time. The first is a cemetery map, which should be located either at the Well House or within the second set of gate posts. Since most visitors drive, it should be mounted to be viewed from an automobile. In the future it would be beneficial to

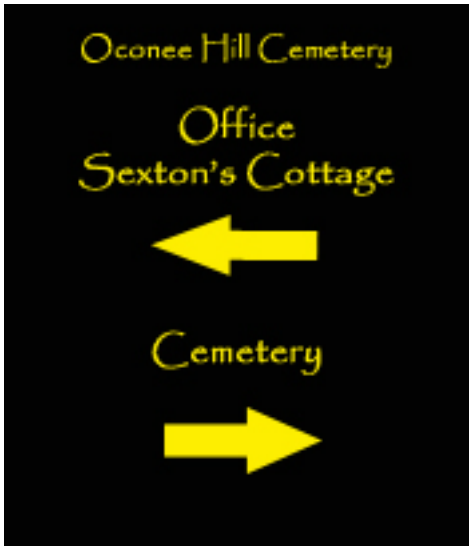


Figure 95. Informational signage that provides directions and more modern section information. The historic section markers should not be removed.

have at least one additional sign placed in the new section of the cemetery, perhaps at the rear gate.

The second type of informational signage involves directional signs for major features, as well as current signage for all of the various cemetery sections. The existing signage is historic and should not be removed, but the new signage will be more visible, appealing to visitors, and continue with signage theme.

There is a historical marker just inside the cemetery gates, providing a brief history of the cemetery. As a roadside-type marker, this sign should be moved to outside the cemetery gates, where it can be viewed by more people and perhaps encourage additional visitation.

If the Cemetery uses "Funeral Procession" signage to direct mourners, these signs should be consistent with the sign theme established for the cemetery.

Other Signage

There is additional signage in Oconee Hill, including several interpretative signs. Since these are not consistent in either appearance or location they are easily overlooked. All appear to have been privately installed and we don't recommend removing them. We do, however, recommend their locations perhaps be added to the cemetery map and be included in any brochures produced for the cemetery. This would help better integrate them into the overall interpretative program and make them more useful to the public.

Signage to be Removed

There are examples of either extraneous or ill-conceived signage that should be removed from the cemetery.

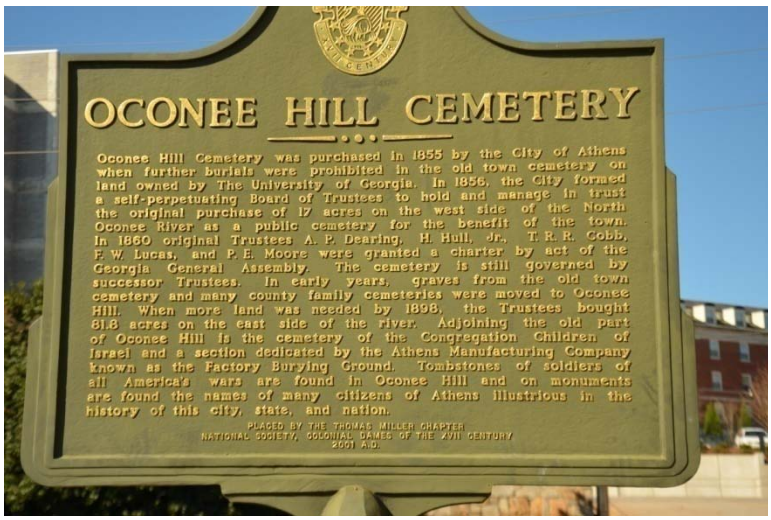


Figure 96. Historic marker that should be placed outside the cemetery gates to attract more visitors.

The existing rules signage should be removed as soon as the new signage is erected. Our concerns with the existing rules have already been clearly stated. In addition, its placement required damage to one of the historic gate posts at the cemetery. This is contrary to the Secretary of Interior's Standards for Preservation and an example of why greater care is needed in all cemetery actions.

The existing cemetery name sign and the various open and closing hours signs should be removed as soon as the new signage is in place.

Figure 97 shows several signs that have no place in the cemetery. One is a poorly (and illiterately) stenciled sign regarding bicycles on a cemetery road. This is needless and gives an industrial appearance to the Cemetery. It should be blacked out immediately.

Another inappropriate sign involves the threat of towing cars that is erected inside the gates. If this is documented to be essential, it should be moved to the parking area. Where it is erected makes the Cemetery appear unwelcoming.

Finally, throughout the cemetery at every chained woods road there is a "Posted – Keep Out" sign on the chain. This makes the Cemetery feel needlessly restrictive and unwelcoming. The chain, coupled with either a reflective strip or a simple sign saying something like, "Road Closed" is entirely adequate. These signs should be

Figure 97. Inappropriate cemetery signage. All of these should be removed.

removed immediately. It is also appropriate to remove the various "No Dumping" and "No Trespassing" signs that we observed in different locations. All are faded, unattractive, and inappropriate in a cemetery setting.

Flowers and Other Grave Decorations

We have identified no flower regulations at all in Oconee Hill Cemetery. While Figure 93 provides our simple recommendation, this issue deserves additional discussion. Many of the graves throughout the cemetery, especially in the newer sections, have a wide variety of primarily plastic or silk floral arrangements.

Many of these are set in front of monuments. 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 given the maintenance needs of Oconee Hill Cemetery.

In addition, we found more than a few arrangements that were long-past their prime. In one case we identified a floral arrangement from Christmas 2012 – over 11 months ago. 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 Trustees adopt a flower policy that will 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 holidays, and so forth.

This is an extremely liberal policy, since some cemeteries limit the use of plastic flowers to only those months when fresh flowers are not routinely available. Fresh flowers are preferred since they mulch readily and do not cause litter if mowed over.

Second, we recommend that the Trustees establish a regulation that all floral displays must be placed in vases integral to the stone or that a mounted vase holder be used. 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 Friends and sold directly (see http://monumate.com/).

Grave decorations are not as common at Oconee Hill as they are at many cemeteries, but they are found occasionally throughout the property. Many cemeteries are beginning to struggle with the increasing tendency for the public to load graves with personal items. This problem is not unique to the United States, but has also been documented in Great Britain, where solar-powered lights, statues and windmills have appeared.

Some cemeteries have established rules based entirely on appearances. At times these are intentionally vague, for instance referring to "adornments considered offensive or otherwise inconsistent with the dignity of the cemetery." In other cases a fairly detailed list of objectionable items has been devised: "Toys, stuffed or otherwise manufactured or sculptured animals, statues or statuettes, personal items and/or other unsightly objects."

Although aesthetics may reasonably be considered to suffer, most cemeteries attempt to control the proliferation on the grounds of the potential hazard to workers – a legitimate concern considering the use of mowers and trimmers on a routine basis.

Many cemeteries enact provisions that allow staff to remove such objects ("temporary objects") when they become withered, unsightly, or an obstruction to maintenance. Other cemeteries exclude all objects made of concrete,

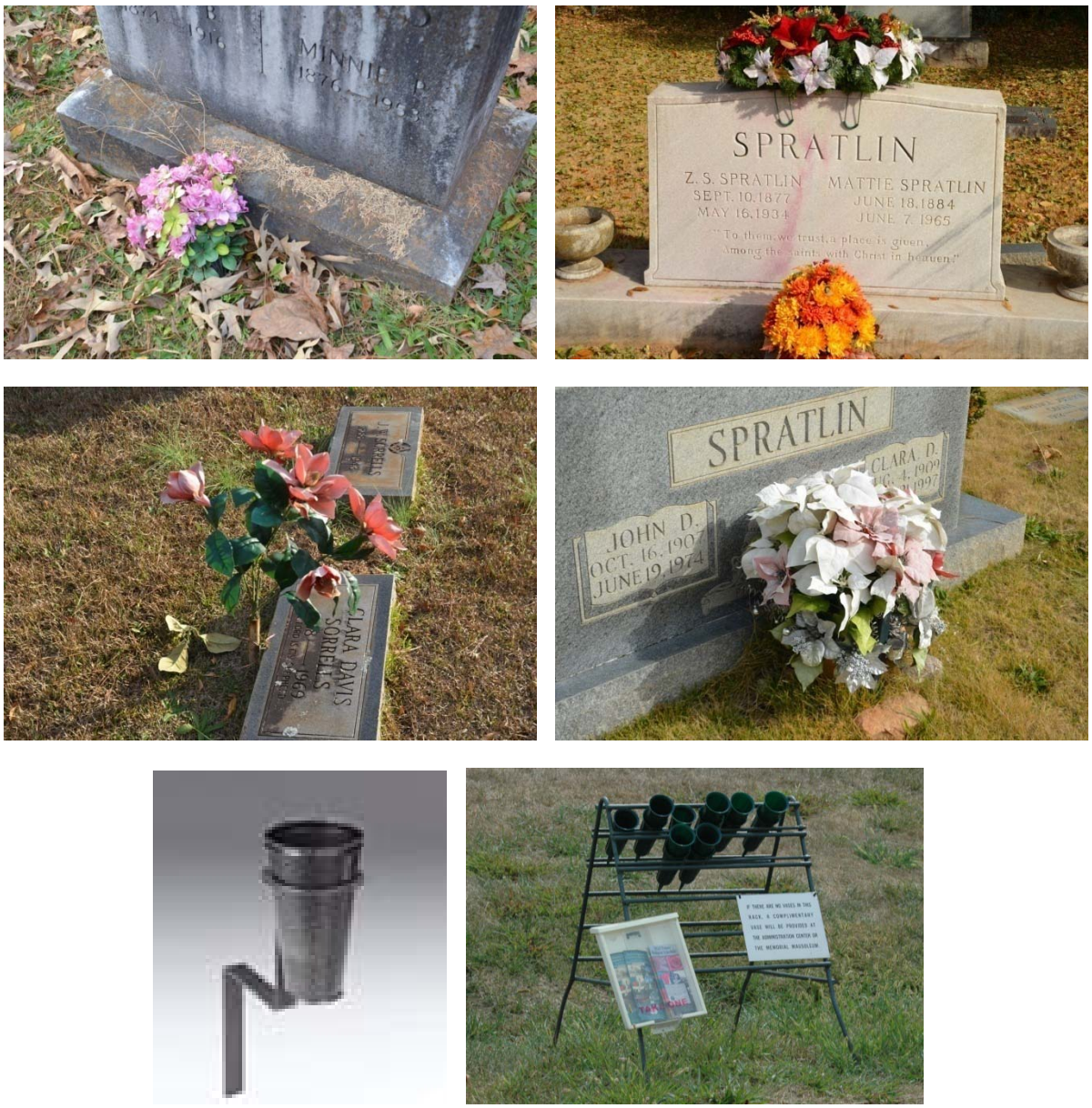


Figure 98. Flower concerns at Oconee Hill Cemetery. The upper photos show flowers stuck in the ground in the way of maintenance. The upper right photo also shows an arrangement placed on top of the monument where the dye has stained the marble. The middle row shows faded flowers long past their prime. The arrangement on the right is from Christmas 2012 and has never been picked up by Cemetery staff. The lower right photo shows one style of flower holder that inexpensively allows the display of flowers while keeping the arrangement out of the way of maintenance. The lower right photo shows a stand and sign used by Spring Grove Cemetery that encourages lot owners to use plastic flower holders as needed. These can be periodically collected by the staff for re-use.

Figure 99. Example of grave decorations that are beginning to appear in Oconee Hill Cemetery.

glass, plastic, fiberglass, metal, ceramic, and wood, again with the justification of safety. And additional cemeteries prohibit objects that tend to increase maintenance efforts, such as bird feeders, statuary, and concrete pots.

While wishing to be sensitive to those who have lost loved ones, there must still be a middle ground that helps control the abundance of materials beginning to appear on graves in Oconee Hill.

Trash

Although trash is not as significant a problem at Oconee Hill as it is in many city cemeteries, we did observe trash in a variety of locations, including West Hill, Valley, F-2, and J sections.

These problems are the result of several factors, the most significant being that the Cemetery is 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 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.

Given the age of some trash, it appears that it has been in the Cemetery for a very long time. This means that repeated mowings have occurred and staff has not picked this trash up. In one case it appears that the trash had been mowed around. This suggests a lack of supervision.

The only trash containers are those by the grape arbor at the Sexton's Cottage. Thus, families may be unaware of where to dispose of trash.

Although public use of the Cemetery is limited, it may be appropriate to place several vandal resistant containers in the cemetery, adjacent to roads. One location may be on the road prior to West Hill, with another located at the bridge, and a third in the new section of the Cemetery. Emptying these few containers on a regular basis should not tax the Cemetery staff and may assist in keeping the cemetery clean.

The chosen containers should blend in with the surroundings, but it is not necessary to purchase "historic replicas" since they would likely appear out of place. The chosen containers should be durable and long lasting. Concrete, stainless steel, or powder coated steel are good options. They should have locking lids to keep trash in and minimize loss. The containers should be permanently mounted to prevent theft and damage.

Lost and Orphan Stones

Every cemetery has stones that are no longer associated with their grave. Good management requires that these stones be documented, collected and an effort made to return them to their proper locations. Long-term storage or simply ignoring them is inappropriate.

Figure 100. Examples of trash observed in Oconee Hill Cemetery.

Stones should never be allowed to removed from their original location without full documentation – where was the stone found, why is it being removed, where is it being stored, what should be done to reset the stone, what action is being taken to resolve the issue. Staff must understand that once a stone is separated from the grave, the potential that the grave will become lost – regardless of the quality of the cemetery records – dramatically increases. Thus, every effort should be made to ensure that stones remain on their grave.

A form that can be used to document fragments or orphans is provided as Figure 102.

Cemeteries should also develop a clear policy on replacement stones. Every effort should be made to ensure that historic stones are repaired, not replaced. Where replacement is essential, the new stone should be consistent with the dominant style in that section. For example, where marble dominates, the replacement stone should be marble.

Where a new stone is desired to improve legibility, it is good practice to maintain the historic stone and inscribe an exact transcription on a granite stone to be laid flat in front of the old stone. This retains the historic fabric and ensures that the three-dimensional appearance of the plot is not altered, while allowing the family to ensure the grave is made legible.

Drainage

Like many cemeteries with no detailed plans, there is considerable uncertainty regarding both above and below grade drains. Where below grade drains originate and the direction of their flow is largely unknown.

Moreover, although we are told that drains are cleaned by hand on a yearly basis, this

Figure 101. Orphan and lost stones. The upper left photo shows a variety of markers in the New Pauper Section. Upper right photo shows an orphan footstone in the Factory Section. Lower left shows an orphan stone in Section B. Lower right photo shows an orphan stone laid behind another monument.

seems limited to the removal of obvious trash at inlets or catch basins. Catch basin sumps need periodic cleaning. Sediment and heavy debris can collect in the sump over long periods of time. The sediment can accumulate to the level where it restricts the outlet flow. These sumps should be cleaned at least once a year.

There is no evidence that any of the below grade drains have ever been cleaned of debris or obstructions. Many evidence considerable deposits, suggesting that they are essentially non-functioning.

Like other critical infrastructure, after years of being ignored, the drainage system in Oconee Hill Cemetery is in need of renovation. Surface drainage ditches should be kept clear of weeds and heavy grass growth. The one ditch lined with granite requires repair to ensure it remains functional.

More difficult are the below grade drains, most of which appear to be very clogged. These will require snaking or the use of a high pressure water jetting device (with pressures of up to 4,000 psi and the capability to extend up to 500 feet) by a company that specializes in this work. Clean out snakes are not recommended for corrugated pipe and extreme care will be necessary to prevent breakage of the drain pipes. It may also be necessary to use an inspection camera to obtain a better idea of the degree and nature of the clogs.

Chicora Foundation, Inc.
PO Box 8664
Columbia, SC 29202
803-787-6910

MONUMENT FRAGMENT AND REMOVAL RECORD

Cemetery: **Date:** **Fragment ID#:**

Origin, if known: Grave #: **Section #:** **Lot #:**

Type: ☐ Headstone/primary monument ☐ Footstone ☐ Other: ☐ Unknown

Stone: ☐ marble ☐ slate ☐ granite ☐ sandstone ☐ concrete ☐ other:

Dimensions (inches): x **Thickness:**

Visible Inscription:

Visible Design:

Location of Find:

How Found:

Storage Location & How Stored/Wrapped:

Comments:

Surveyor:

Photograph and/or Sketch:

Figure 102. Monument Fragment and Removal Record to document orphan and broken stones.

Figure 103. Cemetery surface drain problems. The upper left photo shows drainage ditch and culvert along the road of Factory Section that is not maintained. The upper right photo shows a surface drainage ditch that runs from off the cemetery property through Old G Section to a below grade drain. This drain requires cleaning and repair of the rock facing.

As this is being done it will be worthwhile to also roughly plot the location of the buried drains. The drain cleaners should snake the drainpipes until the snake won't go any farther. Using an underground pipe or metal detector it should be possible to trace the location of the snake – and the drain.

The location of the drains and the associated runs should be included in the Cemetery's GIS mapping layers for future reference.

Grave Opening and Closing Issues

We are told that only one firm, Master Grave Services, is allowed to open graves at Oconee Hill Cemetery. We are told this is a long-standing agreement and the firm is supervised by Cemetery staff. We assume that the firm opening the graves is also responsible for backfilling and compacting the grave, as well as disposal of spoil as this is the standard practice.

During our assessment we discovered that the Cemetery staff apparently opens graves for cremains, probably because the effort is rather

Figure 104. Cemetery below grade drain problems. Upper left photo shows a below grade drain along River Road. Upper right photo shows a below grade drain at the edge of the road in Section H. Middle left photo is a below grade drain in the middle of Section H. Middle right photo is another below grade drain in Section H. Lower left photo is a below grade drain in the Valley Section, largely obscured by a set of stairs. This drain is at least 75% clogged. The lower right photo shows a below grade drain in the West Hill Section that is at least 90% clogged.

Figure 105. Preparation for cremains. The upper photo shows that four staff were required to dig the 1-square foot hole. The lower photo shows the appearance after the work was completed.

minor. It should require no more than two individuals to pull tapes in order to set the location and one individual to dig the hole. Nevertheless, the one cremains opening we observed, required four staff for about 45 minutes. This is excessive.

The resulting spoil and hole was covered with a piece of green carpeting. The result was not particularly satisfying, although the hole itself was covered with plywood. The area could be made more attractive by removing the very small quantity of spoil until the end of the service.

The opening and closing of in-ground burials also poses some significant maintenance issues. Generally spoil from burials is handled by the firm responsible for the opening and closing. Depending on the cemetery there may be a local spoil pile or the firm may be required to remove the unused soil from the cemetery.

There are spoil piles in the Cemetery dump which appear to represent unneeded soil after the casket or vault has been set. Nevertheless, we observed several spoil piles at the edge of woods, suggesting that at times the firm (or the Cemetery staff) are simply dumping left-over soil in the woods.

This practice must stop immediately. In addition, all of this spoil must be collected, taken to the Cemetery dump, and the woods areas restored.

We also identified significant problems with the refilling, compacting, and resodding of graves. There are multiple graves that have either been overfilled or where the compaction is inadequate, leaving the grave mounded. Grass has then been replaced on the mounded grave. This results in much scalping of the grass during mowing, as well as a landscape that appears unkempt.

Graves must be filled in and compacted in multiple layers until the soil is even with the existing ground level. This is easiest to accomplish if the burial used a vault, allowing for greater compaction of the soil and significantly less settling. One cemetarian has noted that,

> The installation of a modern concrete crypt [vault] means a firm lasting base for the grave. It will remain this way and reduces the need for constant filling and repair work on the ground level of the grave. Mowing and trimming care to keep the gravesite in its original beauty is much easier and the costs can be kept at a minimum (Anonymous 1963:21).

Since the Trustees do not require vaults,

Figure 106. Problems with grave opening and closing. The upper left photo shows a recent grave (in foreground) and the remnant spoil tossed back into the shrubbery and woods (shown by arrow). Upper right and middle left photos show additional spoil piles dumped at the edge of the cemetery. Each pile is very recent, as evidenced by the lack of accumulated leaves. Middle right photo shows a recent grave, mounded, with no effort to seed or sod. Lower left photo shows a mounded grave that has been repeatedly scalped by mowing. The only solution is to reduce the mound and resod the grave. The lower right photo shows two mounded graves – one from 1997 and the other from 2012. The 1997 grave was never reseeded or sodded and the more recent grave has grass mounded so high it will die and be scalped by mowing.

landscape maintenance is made more difficult and staff must understand that graves, as they settle, will require additional soil. Staff cannot mound soil, hoping this will relieve them of having to go back to the grave and top-off soil.

In addition, it is unacceptable to leave bare soil on graves as this is not only poor customer service, but it serves to diminish the appearance of the cemetery and reduce interest in purchasing lots. Klupar notes that,

> the supervisor can make a lasting impression on this point [of customer service] by asking all personnel to perform every interment with the same consideration they would give to the burial of a member of their own family (Klupar 1962:189).

If this work is being performed by Master Grave Services, it is appropriate to demand better performance or select a new firm for opening and closing graves.

Setting Monuments

Oconee Hill currently has no written specifications regarding the setting of monuments by local monument companies. The cemetery does charge an $80 fee per lot per appointment to supervise the setting. We are informed that the current setting practice is to pour 3-inches of dry concrete with the monument then laid on top. This practice exhibits several significant problems.

First, a 3-inch foundation fails to penetrate the frost line in the Athens area and no matter how stable the concrete, it will be subject to damage from frost action, specifically heaving and thaw weakening. This is a particularly significant problem when the soils are silty – such as the red clays in the cemetery. The minimum depth of foundations at Oconee Hill Cemetery should be 12-inches, based on an air-freezing index of less than 250 F-Days.

Second, regardless of the foundation depth, dry pours without added water will result in a mix with low compressive strength and high porosity. The low compressive strength will result in the footing being more easily damaged by frost heave or thawing, as well as by tree roots or animal burrowing. In other words, it will crack and deteriorate, causing the monument to sink or tilt – creating future preservation concerns. The higher porosity will result in additional moisture wicking into the monument which in turn will increase the potential for damage to the monument from freeze-thaw or salt intake.

Third, the described setting practice is specifically contradicted by the Elberton Granite Association in its publication, *Techniques for Erecting Granite Monuments*. The monument association identified multiple problems with the technique being used at Oconee Hill. The most significant problem is the impact the approach has on the granite itself,

> Cement is alkaline in nature, and

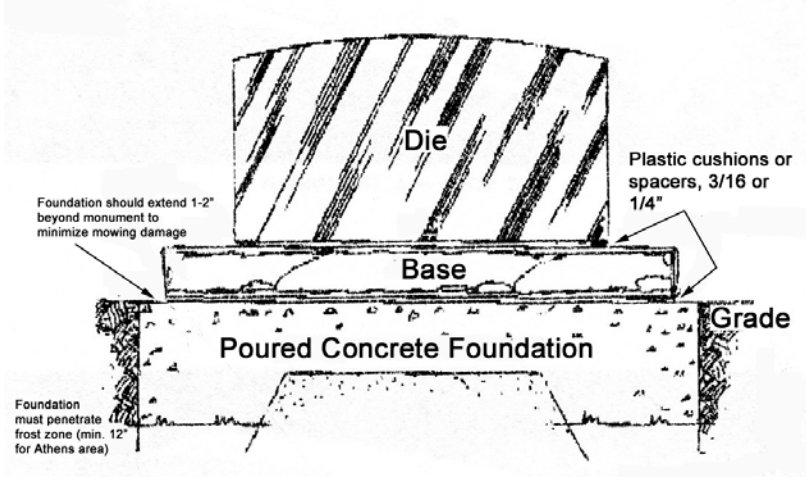


Figure 107. Proper setting of a monument (adapted from *Techniques for Erecting Granite Monuments*).

Figure 108. Monument set in 2013 showing virtually no concrete foundation – only clay soil. Scale is in tenths of feet on the left and inches on the right.

> the stone alkalis present in cement can be as harsh as strong acids to a porous material like granite. Portland cement, before treatment with water, consists of a mixture of calcium silicates and calcium aluminate. When treated with water, the calcium aluminate hydrolyzes, forming calcium hydroxide and aluminum hydroxide. These hydroxides can have corrosive effects such as the familiar Red Devil lye, which is a sodium hydroxide (E.G.A. Certified Memorials Program n.d.:2)

The report also notes that porous cements will "transmit ground water, along with water-soluble acids and other impurities from the soil, through its pores by capillary action into the granite itself." This will cause "darkening of the granite."

Figure 107 illustrates the foundation suggested by the association – clearly establishing an adequate footing below the frost line.

However, when we examined a monument set in 2013 we found that not even 3 inches of concrete was present. At most ½-inch was present and the bulk of the monument was setting on backfilled soil (Figure 108).

The current monument setting practices are a problem for the Cemetery. Not only are monuments not being set as recommended by the leading granite monument association, but even the practices supposed to be followed are not being routinely practiced. Moreover, Oconee Hill Cemetery is charging families for "supervision" which clearly either does not exist or which is entirely ineffective, essentially denying families the opportunity to ensure that their monuments are properly set for future generations.

If all of this weren't serious enough, the ineffective foundations being used will cause monuments to tilt – resulting in significant future maintenance for the Cemetery.

The Oconee Hill Trustees should establish meaningful standards for foundations and the supervision provided by the cemetery of settings should carefully ensure that these standards are consistently met. The standards document should incorporate the following critical elements:

1. The foundation shall be centered in relationship to the grave or lot. The

gravesite lot shall be physically probed, marked, and laid out in order to make this determination.

2. Where a single marker or headstone is to be used to commemorate two or more gravesites, the foundation shall be centered between the gravesites to the extent possible.

3. All foundations shall be laid out so that the markers or headstones, including the visual presentation of inscriptions, will be in alignment with other foundations or markers or headstones in the same lot row.

4. The measurements of the foundation excavation shall be four-inches (4") wider than the width of the marker or headstone and four-inches (4") longer than the length of the marker or headstone in order that a foundation border of two-inches (2") will extend beyond the entire length and width of the marker or headstone after it has been installed.

5. Excavation for the foundations of markers or headstones that lie flat with the ground surface shall be dug at a depth of at least twelve-inches (12") to penetrate below the frost line. The burden of proof for compliance with different standards shall be on the party responsible for each installation and must be approved by the Trustees on a case-by-case basis.

6. Preparation of the foundation for any marker or headstone to be placed on any gravesite in Oconee Hill Cemetery and the subsequent installation shall be scheduled by email, writing, or fax with the proper Cemetery representative.

7. Scheduling of foundation preparation and installation for any marker or headstone shall be based on weather and ground conditions, other burial services in Oconee Hill Cemetery and the availability of personnel to inspect the foundation preparation and installation of a marker or headstone.

8. The completion of a foundation shall be two-inches (2") above ground level and not detract from the appearance of gravesites in Oconee Hill Cemetery. Removal of excavated dirt and clean up of the gravesite shall be performed promptly by the party preparing the foundation and installing the marker or headstone.

9. No marker may be set into wet concrete. All foundations must be cured at least two-weeks (14-days) prior to setting of monuments.

10. Markers will be required to have the section and site engraved on the headstone for easy site placement, and identification. The cost of the inscription will be borne by the proprietor - owner of the headstone.

Interactions with Outside Contractors

Our discussions of stump grinding, grave opening and closing, and monument setting have each suggested that outside contractors are not performing to the standards that Oconee Hill Cemetery must demand. Perhaps more importantly, it does not seem that necessary oversight and supervision is being provided, even when families are charged for that supervision.

In the case of the stump grinding that we observed, the lots and roads were not properly cleaned (all contractors should be expected to leave the Cemetery is the same – or better – condition as found). In addition, Cemetery staff was used to clean up the debris left by the private contractor – a practice the Cemetery cannot afford and should not tolerate.

In the case of grave opening and closing,

left-over spoil was not removed from the Cemetery, but rather was tossed into adjacent woods or shrubs. We are told that "the sexton always supervises the work."

In the case of monument setting, the monuments are not being set as specified and even the specifications fail to meet the recommended industry standards. Again we are told that, "the sexton is there when monuments are set."

We have been repeatedly told how the Cemetery requires contractors to carry liability insurance (as well as being bonded). Yet it appears from this evidence that the level of service is poor at best, regardless of the presence of an insurance certificate. While insurance is certainly important, so too is proper supervision and clearly defined specifications of work. It may be that the Cemetery has become too familiar with some contractors and there is inadequate oversight coupled with allowing the contractor to establish standards of operation.

There also appears to be a misunderstanding on the part of staff concerning insurance. The failure of a contractor to hold insurance results in no legal penalty to cemetery, other than the potential liability that ensues. There is a financial penalty when the Cemetery's insurance company audits the account and discovers that contractors have been essentially operating under the Cemetery's coverage. Thus, it is good practice for the Cemetery to require a current insurance certificate. The Cemetery should also establish reasonable minimal standards, for example, $500,000 general liability, statutory requirements for workers' compensation, and $500,000 for automobile liability.

Often we were told during the assessment that contractors must also "be bonded." This seems unreasonable and provides the Cemetery with no real protection.

A surety bond is a promise to pay one party (the Cemetery) a certain amount if a second party (the contractor) fails to meet some obligation, such as fulfilling the terms of a contract. The surety bond protects the Cemetery against losses resulting from the contractor's failure to meet the specified task.

In most cases, the failure of a contractor to perform is not likely to cause the Cemetery great financial loss – especially when compared to a contractor performing in a negligent fashion. Of course, we are not attorneys and do not offer these observations as legal advice. It does seem reasonable for the Cemetery to obtain additional information and for the Trustees to establish a formal policy.

Plot Curbs or Coping

When we inquired about the condition, repair, and resetting of plot curbs or coping in the cemetery, we were informed that "coping and plot curbs are not allowed in the cemetery." This may be correct in terms of future development, but virtually all sections of the cemetery exhibit plot curbs of marble, granite, and concrete. There are situations were curbs blend almost imperceptibly into walls. These discussions focus on more traditional curbs or low surrounds around at least a portion of a plot.

Many of these curbs are in poor condition and require routine maintenance. Marble and granite curbs are sinking or have been displaced. Some concrete curbs, not being reinforced, are broken as the ground sinks under them. In one case a portion of the curb has eroded off the side of East Hill and, while still present, has never been replaced.

Infilling of depressed areas and resetting of curbs should be a routine maintenance operation. The use of a curb setting tool would be of assistance, but is not essential and the job can be done by hand.

We identified several wooded curbs, all of which are in poor condition and should be removed by the cemetery since they pose a hazard to the public.

Figure 109. Plot curb issues in the Cemetery. The upper left photo shows displaced marble coping sinking into a grave. The upper right photo shows badly deteriorated wooden railroad tie curbs. The middle left photo shows broken and sinking concrete curbing. The middle right photo shows the loss of curbs over the side of a slope due to unrestrained erosion. The lower left photo shows a wood board, held by pipes that is apparently being used to control sheet erosion. The lower right photo shows a similar situation where metal skirting or siding panels have been similarly used.

We identified two plots where materials such as wood planks and metal siding are being used in an effort to stop very minimal sheet erosion. These are particularly unattractive and it is difficult to understand why they are being allowed by the Trustees. It would be far better to remove these materials, recontour the plots, and apply new sod. This would allow an immediate correction of the problem in both cases for only about $400 in materials. The work would dramatically improve the appearance of these areas.

Recommendations

- A sign theme should be developed for the Cemetery using consistent colors and type faces.

- The current entrance sign should be replaced with a new sign located outside the gates, allowing visitors to more easily identify the cemetery.

- The current regulation sign requires replacement using a unified them and new, appropriate regulations. This new signage should be located immediately within the front gates perpendicular to the road. A second regulatory sign should be located parallel to the road at the rear Cemetery entrance.

- The current roadside historical marker for the cemetery should be removed to East Campus Road, allowing it to be accessed by more individuals.

- A map of the cemetery should be installed either in the vicinity of the Well House or at the toe of the slope of East Hill. It should be mounted to be viewable from an automobile. Eventually a second map should be located in the new section of the Cemetery.

- Themed directional signage should be installed, as well as themed Section signage. The old (and historic) Section signage should remain.

- Other signs, such as the towing sign, the road stenciled sign, and the numerous "No Trespassing" signs should all be removed as inappropriate for a cemetery setting.

- The Trustees should establish a policy that all flowers or arrangements will be removed by the Cemetery staff 10 days after holidays or when the arrangements become unsightly. In addition, the policy should require that all floral displays must be placed in vases integral to the stone or that a mounted vase holder be used in order to reduce maintenance issues.

- The Trustees should establish a policy that allows staff to remove all "temporary objects" on graves or in plots when they become withered, unsightly, or an obstruction to maintenance.

- Staff must be responsible for collecting and disposing of trash prior to mowing.

- The Cemetery would benefit from two or three vandal resistant trash receptacles.

- "Orphan" stones should be documented using a form and collected for short-term safe keeping until their appropriate location is identified through research. In so far as possible, stones should not be allowed to become disassociated with their graves as this effectively loses the grave location.

- The Trustees should help preserve the historic context of the Cemetery by ensuring stones are repaired rather than being replaced. Where a new stone is desired to improve legibility, it is good practice to maintain the historic stone and inscribe an exact transcription on a granite stone to be laid flat in front of the old stone.

- Drainage sumps or collection basins should be cleaned of trash, leaves, and silt yearly. Above grade ditches should be carefully mowed on a regular basis. Stone-line ditches should be periodically repaired to ensure that they function properly and maintain their historic integrity.

- Below grade drains have never been cleaned and many are badly clogged with sediment. These require cleaning using a snake or a high pressure water jetting device. During this operation the drain line locations should be documented using a metal detector so the lines can be added to a GIS-based Cemetery map.

- The opening of graves for cremains is currently requiring too many staff and the work must be expedited.

- The opening and closing of graves is resulting in spoil being dumped along the edges of the Cemetery. This practice must cease immediately and all spoil piles must be collected and taken to the Cemetery dump.

- The closing of graves is depositing too much fill and failing to adequately compact the fill, resulting in mounded graves. These are causing poor grass growth. All grave fill must be level with the existing grade. All graves must have sod or seed placed on them to restore vegetation.

- The specifications for setting of monuments are failing to follow the recommendations of the leading industry organization. We have proposed new specifications that will ensure monuments are correctly set and the Cemetery will not be burdened with future sinking and tilting problems.

- There is inadequate supervision by Cemetery staff of grave opening and closing, and monument setting. Staff must do a better job ensuring that the interests of the Cemetery and the families that are placing their trust in Oconee Hill Cemetery are protected.

- The Trustees must take a more pro-active role in overseeing Cemetery staff and outside contractors to ensure that their interests are protected.

- The Trustees should establish minimum insurance requirements for general liability, automobile liability, and workers' compensation.

- The requirement for a surety bond does not seem necessary and should no longer be required.

- Plot curbs or coping throughout the cemetery are in deteriorating condition, posing a hazard to the public and detracting from the beauty of the Cemetery. The repair of these curbs must be viewed as routine maintenance and must be integrated into the maintenance plan.

- In several areas wood curbs are badly deteriorated and should be removed by the Cemetery staff.

- In other areas unattractive and potentially hazardous wood and metal walls have been added to control very minimal sheet erosion. These plots should have these features removed, be contoured, and new sod installed to rectify the problems.

Cemetery Records

Paper-Based Records

It is reported that "fire destroyed early cemetery records about a hundred years ago," although we have not identified any clear information concerning the nature of that fire or the materials actually lost ("A Copying Machine," *Friends of Oconee Hill Cemetery*, Spring 2004, pg. 4).

Table 12.
Oconee Hill Cemetery Records
Photocopied and Scanned

Index	D1	E1-G1	H3
B1	D2	G2	J
B2	E	G3	O
C1	E2	H1	
C2	F	H2	

The records that remain are apparently stored in the Sexton's Office, in a fire-proof safe. We have not examined the safe, those records, or their storage conditions.

In 2004 some – but not all – of those records were photocopied onto "high quality cotton rag paper" through funding and volunteer labor provided by the Friends. Table 12 lists those documents; we do not have a list of those documents not duplicated.

In addition to the books indicated, there are apparently additional records that were copied, and we assume, scanned. These other records include: Annual Care agreements; Grave Digger Books 1, 2 ,and 3; Lot Sales and Perpetual Care Books 1, 2, and 3; 1897; 1897 Annex; Trustee Minutes; Monthly Reports and Financials; Correspondence; CPA Reports; Financials; Tax Forms; and a few other record groups.

The photocopies were then scanned, creating PDF documents. Those PDFs, however, were never converted into searchable PDF files using OCR and thus are not searchable. We have been unable to obtain information concerning the type of PDF file used (specifically whether they were saved as PDF/a files).

The paper copies and digital files were donated by the Friends to the Heritage Room at the Athens-Clarke County Library where they are now made available to researchers.

This was an excellent first step, but the efforts to preserve the records of the Cemetery should not stop here.

All of the records not yet copied should be as quickly as possible. We understand why cotton rag paper was used. For years it has been a standard for university theses and dissertations because it has considerably greater longevity than most pulp-based paper. Even cotton rag paper, however, can contain acids. A better guide to paper longevity would be whether it meets the ANSI/NISO Z39.48-1992, *Permanence of Paper for Printed Library Materials*, standards. In general these require the paper to be neutral or slightly alkaline (pH of 7 or greater), have the active acid pulp eliminated, and be lignin and sulfate free. All future copying should ensure that the chosen paper meets these standards, whether rag or not.

It would also be appropriate to donate the original records to the University of Georgia Hargrett Rare Book and Manuscript Library. This institution is far better equipped to maintain these records under the strict temperature and humidity conditions they require for long-term

preservation.

Oconee Hill Cemetery could create a duplicate set of paper-based records for their own use, although the PDF records would actually be more easily used by the Cemetery staff.

The Friends should also take the simple step of rendering the PDF scans searchable by using the OCR Text Recognition feature of Adobe Acrobat Pro versions. This takes scanned images and "reads" the file to create searchable documents. Of course this works only for typed or printed records – there is currently no automated means of rendering hand-written records searchable without transcription.

Files should also be saved in PDF/a format. PDF/a is an ISO-standardized version of the Portable Document Format (PDF) specialized for the digital preservation of electronic documents. This format differs from "regular" PDF by omitting features ill-suited to long-term archiving, such as font linking. The ISO 19005-3:2012 requirements for PDF/A file viewers include color management guidelines, support for embedded fonts, and a user interface for reading embedded annotations. This process can also be achieved relatively easily using Adobe Acrobat Pro versions.

Records Held By Trustees

There are apparently additional records held by the Trustees. Not all records have archival value and without looking at the referenced collections it is impossible to speculate on their value.

Archival value is different than intrinsic value. The former means the records can, for example, address significant historical questions. These records can, however, be maintained as copies, microfilm, or digital documents. Intrinsic value, on the other hand, relates to the physical nature of the records, their prospective uses, and the information they contain. These documents should be retained in their original form if possible, although copies may improve public access. Examples of intrinsically valuable materials might include aesthetic or artistic quality, unique or curious physical features, or strong association with particularly significant historic figures.

A more important consideration for Oconee Hill Cemetery is whether the records have archival value. In other words, do they possess enduring historical or other value that warrants the continued preservation of records beyond the period required to transact the business of the Cemetery? Records determined to have archival value should be maintained permanently.

For example, audit reports and financial statements probably have archival value; monthly bank statements probably do not. Correspondence files likely have archival value, lists of supplies to purchase would likely not have archival value.

Those records deemed to be of archival value should be transferred to a facility capable of providing long-term care, such as the University of Georgia Hargrett Rare Book and Manuscript Library. It is likely appropriate to scan these documents, creating PDF/a files that are searchable to enhance accessibility and use.

Digital Archives

It should be clearly understood that digital formats are typically not considered archival. For example, while PDF/a offers relative stability and permanence, it is not the preferred document of the Library of Congress (see http://www.digitalpreservation.gov/formats/fdd/fdd000360.shtml for additional discussion).

The media used for digital materials are vulnerable to deterioration and catastrophic loss, and even under ideal conditions they are short lived relative to traditional format materials such as permanent paper and archival microforms.

There is also the problem of obsolescence in retrieval and playback technologies. Another challenge is the absence of established standards, protocols, and proven methods for preserving

digital information.

Generally digital preservation is based on the periodic migration of data to promote preservation. Thus, before the CD plastic deteriorates, the data is placed on a new CD. As file formats or operating systems change, the data is migrated from the old system to the new. These are both costly strategies that demand great attention to technological details – a challenge often beyond many institutions.

Photographic Collections

There is apparently a very large collection of primarily digital photographs for Oconee Hill Cemetery. All of the concerns previously described for the long-term stability of digital collections also apply to digital photography.

There are, of course, archival inks and papers suitable for the long-term preservation of digital photographs. Unfortunately, it is usually far more affordable to print paper copies of records than paper copies of color digital photographs.

There are some general recommendations for digital photography. The camera selected should have a minimum of 6 megapixel or greater. Resolution should provide a 2000 by 3000 pixel image at 300 dpi. This is today not typically a problem.

JPEGs are a lossy compression format and while useful for access (for example on web sites), they are not suitable for long-term preservation.

The preferred file format is TIFF (Tagged Image File Format). This is a stable, well-documented, widely adopted, uncompressed file format widely used for master files in the digital imaging community. Ideally the files should be saved in the TIFF format. If this is not possible, it is acceptable to convert JPEGs to TIFFs using a computer conversion process. Ideally, the JPEGs should not be altered (other than renaming) prior to the conversion.

In terms of storage, the best choice is a CD-R Archival Gold or DVD-R Archival Gold disk. These have a gold reflective layer, naturally resistant to corrosion that prevents oxygen from corroding the silver reflective layer, a common factor in limiting the life of CD and DVD media. One consistent source is University Products (http://www.universityproducts.com/cart.php?m=product_list&c=261).

These should be stored in sleeves that provide additional corrosion protection through a special coating. These are also available from a variety of suppliers, including University Products (http://www.universityproducts.com/cart.php?m=product_list&c=1507).

Labels may be applied either by directly printing on the disk by a laser printer or by hand-labeling using a CD/DVD safe marker. It is best to keep the hand labeling on the clear hub area.

If prints are to be made, a high quality paper reported by the manufacturer to be of archival quality should be used. Examples include Epson Premium Glossy Paper. Kodak Ultra Photo Premium, HP Professional Satin Photo Paper or Premium Plus Photo Paper, and Matte Epson Ultra Premium Glossy Photo Paper. These papers should be combined with manufacturer recommended ink for photograph printing, such as Epson UltraChrome K3, Kodak No. 10 Pigmented Inks, HP Vivera Pigment Inks, and Epson DuraBrite Ultra Pigmented Inks.

Recommendations

- The Oconee Hill Cemetery records not yet photocopied and scanned should be as soon as practical.
- Photocopying of records should be done on paper that meets the ANSI/NISO Z39.48-1992, *Permanence of Paper for Printed Library Materials*, standards. This is not necessarily cotton rag paper.
- Files created by scanning should be saved

in the PDF/a format and where possible, rendered searchable using OCR.

- Copies of the documents should continue to be donated to the Heritage Room at the Athens-Clarke County Library.

- The original Oconee Hill Cemetery documents should be donated by The Trustees to the University of Georgia Hargrett Rare Book and Manuscript Library. The Cemetery should retain only those records currently being actively used; other records can be accessed using the scanned PDF files.

- Records held by the Trustees should be evaluated for archival significance and, if preservation is warranted, we recommend donation to the University of Georgia Hargrett Rare Book and Manuscript Library.

- In all cases, Trustees and Friends must understand that while digital files offer enhanced public access, they are not typically considered archival or permanent. Thus, original paper records should be retained whenever possible.

- Digital photographic preservation involves many of the same issues. Long-term preservation can, however, be achieved using the TIFF format and Archival Gold Disks stored in corrosion intercept enclosures.

Conservation Issues

In the introduction to this plan we briefly discussed a variety of preservation issues, tackling the question of why it is important to preserve sites like Oconee Hill Cemetery, as well as how preservation and restoration differ, and introducing the reader to the Secretary of Interior's Standards for Preservation. Readers may want to refer back to those discussions since they form a foundation for our discussion of the conservation needs at Oconee Hill.

Standards for Conservation Work

The Trustees are the stewards of this Cemetery, holding what belonged to past generations in trust for future generations. As such these individuals bear a great responsibility for ensuring that no harm comes to the property during their watch.

One way to ensure the long-term preservation of the cemetery is to ensure that all work meets or exceeds the Secretary of the Interior's Standards for Preservation, discussed on pages 5-7 of this study.

Another critical requirement is that Trustees ensure that any work performed in the cemetery be conducted by a trained conservator who subscribes to the Guidelines for Practice and Code of Ethics of the American Institute for Conservation of Historic and Artistic Works (AIC) (http://www.nps.gov/training/tel/Guides/HPS1022_AIC_Code_of_Ethics.pdf).

These standards cover such issues as:

- Respect the original fabric and retain as much as possible – don't replace it needlessly.
- Ensure that the treatment chosen is suitable for the object, recognizing that at times no treatment is the best option.
- Choose the gentlest and least invasive methods possible.
- Is the treatment reversible? Is retreatment possible?
- Don't use a chemical without understanding its effect 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 and Guidelines also require 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 methods – judging and evaluating the multitude of possible treatment options to arrive at the best recommendation for a particular object.

These Guidelines of Practice and Code of Ethics place a much higher standard on AIC conservators than individuals or commercial monument companies that offer "restoration

services." This higher standard, however, helps ensure that Oconee Hill Cemetery receives the very best possible care and that the treatments conducted are appropriate and safe.

The Responsibility of the Trustees

Repeatedly in our questionnaire and during discussions we were told that the Trustees assume no responsibility for monuments, walls, or fences, in each case shifting that responsibility to plot owners.

This represents faulty reasoning and, we fear, is motivated more by finances than any legalistic concern. It is a mindset that must change if this Cemetery is to survive the 21st century and be passed to future generations.

It is reasonable to expect, even demand, that extant families with still active plots in the newest sections of the Cemetery take responsibility for the maintenance of their monuments, coping, and other lot features. Of course, this presupposes that actions or inactions by the Trustees have not contributed to the failures and deteriorations of the plots. For example, if the problems were caused by a falling tree that was clearly unhealthy or even dead, then the Trustees are clearly responsible. If the problem is caused by the Trustees and their staff failing to adequately specify and inspect monument foundations, then the Trustees are clearly responsible. If the problem is caused by the Trustees and their staff failing to operate equipment safely and properly, causing damage to monuments, then the Trustees are clearly responsible.

This should provide the Trustees with ample reasons to improve maintenance, provide better oversight of staff, and establish clear maintenance and training policies.

There are, however, many plots where families can no longer be located or may not even exist. What then? Is it reasonable to ignore these plots and monuments, allowing them to deteriorate, causing hazards and liability for the Cemetery? Is it reasonable to allow portions of the Cemetery to appear abandoned and uncared for? Will such a policy encourage future families to purchase lots, fearing that their loved ones will receive this same sort of treatment in the future?

Ignoring deterioration, whether it represents failing walls, falling fences, or broken monuments, affects the entire Cemetery, making it a less attractive place and reducing the potential for sales. Moreover, it ignores that the Trustees are stewards of the Cemetery, holding and maintaining it for future generations.

Simply put, after years of ignoring problems and deferring preservation activities, the Trustees must take responsibility for the maintenance of the entire Cemetery.

Past Conservation Efforts

Review of the newsletter, *Friends of Oconee Hill Cemetery*, reveals that multiple conservation efforts have been undertaken in the cemetery.

In 2000 a brick wall on the Joyce Lot was rebuilt using stone ("Infant Grave Site Restored," *Friends of Oconee Hill Cemetery*, Spring 2000, pg. 1). In 2002 an iron fence in the vicinity of the well house was "repaired and reinforced" ("Iron Work Installation and Renovation," *Friends of Oconee Hill Cemetery*, Spring 2002, pg. 1, 3). In 2003 the wall on the Center Lot was rebuilt ("Projects Update," *Friends of Oconee Hill Cemetery*, Fall 2003, pg. 1, 4), with the note that "the resulting granite wall . . . closely matches the original stonework."

In 2005 the Fear obelisk in section B was "restored," as was the fence around the Baxter plot ("Projects Update," *Friends of Oconee Hill Cemetery*, Spring 2005, pg. 5). In 2007 the Taylor mausoleum door was replaced and the steps to the Morris plot were rebuilt ("Projects Completed," *Friends of Oconee Hill Cemetery*, Spring 2007, pg. 1). In 2009 Chicora reset the John White monument ("John White Monument

Standing Tall," *Friends of Oconee Hill Cemetery*, Summer 2009, pg. 5). Cleaning was conducted at the Cobb/Lumpkin/Hull plots in 2010 ("Cobb/Lumpkin/Hull Family Cleanup Day!," *Friends of Oconee Hill Cemetery*, Summer 2010, pg. 3).

Of the conservation work on the monuments and fences, only the White monument was conducted by an AIC conservator and it is for only this project that conservation treatment records were submitted.

We have identified that other repair efforts have been undertaken in at least 10 plots. It appears that none of this work was done by a trained conservator and the materials used include Portland cement and various caulks.

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 Oconee Hill Cemetery. These discussions provide general observations that will help place the recommendations in a broader context. Table 13 identifies problem by section and it is worth noting that the most prevalent damage, found in every section, consists of mower damage. These are scrapes, gouges, and chips removed from stones through lack of care on the part of the landscape technicians. This particular problem has been discussed at length in the "Landscape Issues" of this study.

Sinking and Tilted Monuments

Beyond mowing, the single greatest problem in Oconee Hill Cemetery is the inadequacy of monument foundations. This is a problem found in nearly every section and at least 642 cases are documented from the Cemetery. This is a significant, long-term problem for the Cemetery since as stones sink they become more likely to topple. As they topple not only is the appearance of the Cemetery dramatically altered, but the monuments can present a significant liability to the Trustees. In addition, as monuments topple they are very likely to hit coping, walls, or other stones, causing damage to themselves or the objects they hit. This dramatically increases repair costs.

In general, these stones are being displaced because there was no adequate foundation and as the graves collapsed, the monuments also began to sink or tilt. The problem could have been prevented by requiring carefully laid foundations.

In fact, at meetings of the Association of American Cemetery Superintendents going back to the early 20th century included numerous discussions of why deep foundations were essential. One member expressed the sentiment,

> The principal thing in all foundations is not width or length, but depth. One of the greatest curses of the Memorial industry today is the cut-price man who sells Memorials, and Markers especially, and then puts under a foundation from 6" to 12" deep. Memorials placed on such a foundation will never stand. Therefore, our suggestion would be have all monument foundations at least 5'0" deep, and no less; length and width is merely a matter of opinion (John Merkle and Sons 1917:473).

Other authorities demanded foundations be placed to the depth of the grave itself, thereby ensuring that monuments would not tip, tilt, or sink into collapsing graves.

Nevertheless, the Trustees of Oconee Hill Cemetery failed to make similar reasonable requirements (in fact, no reasonable foundation requirements are made yet today), so the Cemetery has inherited a significant problem.

The solution involves the resetting of

Table 13.
Monument Problems in Oconee Hill Cemetery

Section	Dominant Material	Dominant Type	Broken	Ferrous Pin/Iron Jacking	Sinking	Loose on Base	Fallen/ Displaced	Severely Tilted	Shifted off Base	Missing Die	Collapsed Bradle Grave	Aggressive/Improper Cleaning	Previous Repair	Evidence of Mower Damage
B	marble, granite	die on base	2	1	26	21	2	19			5		no	yes
C	marble, granite	die on base		2	20	13		8			6		no	yes
D	granite, marble	die on base	7	1	48	19	11	39	1		22		yes	yes
E	granite, marble	die on base			6	3		5					no	yes
East Hill	marble, granite	tablet	1	1				11				4	yes	yes
Factory	marble, granite	tab in socket		1	1	2	14	10					yes	yes
F-1	marble	die on base	1	1	22	11		16			2		yes	yes
F-2	granite, marble	die on base				6		7			1		no	yes
G, New	granite	die on base			3								no	yes
G, Old	granite	die on base			25	4	4	6					no	yes
J	granite	die on base			4	4		2			3		no	yes
H	granite, marble	die on base	1	1	10	3		1				2	yes	yes
North Slope	marble, granite	die on base		1	4				2				yes	yes
Pauper, New	concrete	tablet				6	5	83			1		yes	yes
River Road	marble, granite	die on base			2			1		1	4		yes	yes
Valley	marble	die on base	4	6	2	6	4	25			11		yes	yes
West Hill	marble, granite	die on base	5	5		2	2	32		3	7	1	yes	yes

these monuments, prior to their further collapse.

Simple Resetting

A large number of stones in the cemetery require resetting. Many of these are flush-to-ground lawn markers or tablets that have sunk and are now either tilted or being covered with soil and grass. Resetting is generally simple and a suitable task for volunteers.

The stone should be excavated, being careful to avoid shovel damage. There are some monuments that have been set in concrete and the removal of this material may require a conservator to ensure that the stone itself isn't damaged. Otherwise, the hole can be deepened and filled with pea gravel or decomposed granite as bedding. The lawn marker should be reset about 1 inch above the ground level – tall enough to prevent being covered by soil and grass, but not so tall that it will be damaged by mowing. Tablets

Figure 110. Examples of incorrect and poor repair practices at Oconee Hill Cemetery. Upper left shows a stone with a simple epoxy repair. The epoxy has been used as infill and has yellowed through UV exposure. Upper right is a repair using some type of mortar that has been smeared across the face and sides of the stone. There is also loss along the edge. The lower left photo shows a table tomb with a sunken leg that has been "fixed" by inserting a brick fragment in an effort to level it. The lower right photo shows a damaged marble monument repaired using some type of caulk.

Figure 111. Tilted monuments. All of these are hazardous to other monuments, themselves, or the visiting public and require resetting. Many will also require drilling and pinning to reduce liability and improve their stability.

Figure 112. Displaced or sunken monuments. The upper left photo shows a die on base that has fallen off and requires resetting. The existing pins may need to be replaced. The upper right photo shows a granite ledger displaced off its base, probably by a mower. The middle left and right photos show monuments sinking into their graves for lack of a good foundation. The lower left photo shows a very large granite ledger sinking into a grave. The lower right photo shows what appears to be a brick box tomb that has sunk out of sight at one end, while the other is still partially supported by remnant bricks.

Figure 113. Cradle grave problems. These photos show a range of cradle graves that are tilting and collapsing. Some, such as the lower left example, have clearly visible pins connecting the side rails to the headstone. All require disassembly and resetting to repair their appearance. Some may also require repair of broken side rails.

should be set with about 25 to 33% of the stone below grade. Additional pea gravel should be packed in around the stone as it is being leveled. The upper inch of backfill should be soil to allow for revegetation.

It is critical that Portland cement never be used to reset stones since it removes their ability to shift if they are accidently hit by mowing or other landscape activities.

Resetting Die on Base Stones

The cemetery has a number of granite die on base stones that were originally set using setting compound. This is a commercial product typically consisting of calcium carbonate, talc, and occasionally calcium silicate in linseed oil or a similar material. It is designed to be applied under a granite monument to help seal it to base and prevent water intrusion. Because it contains oil it may leave a halo on marble and should only be used for setting granite monuments. Setting compound is not an adhesive and will eventually dry out. It also does not prevent a monument from being tipped over, so care must be taken when the monument being set is top heavy, very tall, or is in a setting where vandalism is likely. In such cases it is good practice to set the monument not only with setting compound, but also with one or more fiberglass pins.

Marble stones were typically set with a mortar rather than setting compound, although this too is not an adhesive and will often fail.

In order to reset a die on base that is loose or shifted, it is first necessary to remove the die and set it aside. The base then must be checked to determine if it is both stable and level. In many cases it will be necessary to remove the base, establish a new foundation with pea gravel or decomposed granite.

All old mortar or setting compound must be removed from the base and the die. This can usually be accomplished using plastic spatulas or a small chisel. Care must be taken not to disfigure the stone during this cleaning process.

If pins are to be installed holes must be drilled and cleaned in both the die and base. Either fiberglass or stainless steel pins should be inserted that are slightly shorter and smaller than the holes. While they may be set using epoxy or lime mortar, it is often acceptable to leave them loose.

The purpose of these pins is to help secure the base and die, making it more difficult to accidently (or intentionally) tip a monument over.

If setting compound is being used on granite markers, it should be rolled between your hands to create “strings” 1-2 feet in length and about ½ inch in diameter. These strings should be set about ½ inch inside the edge of where the die will make contact with the base. Poly cushion spaces should be used at the four corners to prevent the setting compound from being expelled when the die is reset.

If the monument is marble, then a lime based mortar (never Portland cement mortar) should be used rather than setting compound.

The stone is then reset and appropriately centered – there are special monument setting devices to assist in this. Setting compound that is pushed out can be cut off using a plastic spatula for later reuse. Excess mortar can be manually removed and then the monument can be cleaned off using a barely damp sponge and fresh water. If there are any gaps, additional setting compound or mortar will need to be used to fill these gaps.

Cradle Graves

Cradle graves, also called bedstead monuments, are combinations of headstones and footstones connected by side rails, giving the appearance of a bed. Historically these were often planted in flowers or groundcover.

Resetting cradle graves is more difficult and time consuming then other monument types, but involves essentially the same techniques. The individual parts were typically connected by ferrous or brass pins. These fail as the grave shaft

Figure 114. Examples of loose or fallen monuments. The upper left photo shows a monument twisted on its base and ready to collapse. The upper right photo shows a ledger loose and displaced on its box tomb. The middle left photo shows how easy it is to tip over a monument that is not pinned to its base. The middle right photo shows an unpinned monument that has fallen in the Cemetery. The lower left photo shows a lamb decoration loose on its stone. This could be easily stolen and is the type of monument sought for garden decoration. The lower right photo shows a monument that has lost its urn already. Note the pin is still in place.

collapses and individual components begin sinking or tilting.

The first step is removal of the individual components and infilling the grave with decomposed granite in order to establish a good foundation for rebuilding the monument. If all of the parts are intact, they are simply reset as described in the above sections.

If the side rails are broken, which is unfortunately common once they are exposed, then the monument requires conservation treatment.

Loose Monuments

There are at least 100 loose monuments (likely many more since we did not examine every monument). These are typically die on base markers where the monument company failed to insert a pin to stabilize the two parts (the die and the base). These monuments remain upright through gravity and consequently pose a significant threat to the public, other monuments, and themselves.

For such monuments we recommend drilling and pining as described earlier to improve stability and reduce the Cemetery's liability.

Large Monuments

There are, unfortunately, some large monuments that are severely tilted or fallen. Depending on their size, these will require the use of a tripod, small equipment, or even a crane to facilitate resetting. These should be reset by a conservator trained in rigging and using the equipment needed for large, heavy monuments.

Broken Stones

There are at least 21 examples of broken stones. Leaving these stones laying on the ground or leaning against other stones subjects them to additional damage, increasing the eventual cost of appropriate repair. Stones on the ground are walked on, may have mowers run over them, and if they are marble, are subject to greater acid rain damage. It is always critical to erect fallen stones and this simple resetting is an activity that volunteers could undertake.

This cemetery is quite fortunate that there have relatively few past repair efforts using inappropriate repair techniques or materials. It is always far easier to conduct an appropriate conservation treatment than to "undo" inappropriate actions, such as the use of "simple epoxy" repairs – where stone fragments are joined using a continuous bead of epoxy. Experience indicates that for a long-lasting repair, particularly in structural applications, use of pins is 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.

Appropriate conservation treatment requires a blind pin repair. This drilling and pinning is a process that involves carefully aligning the fragments, drilling the stones, and setting fiberglass, or occasionally threaded 316 stainless steel rod, using a structural epoxy in the drill holes.

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. The choice of epoxy depends on the required strength, among other factors.

Since there is also usually some loss of fabric along the break, this treatment will also involve infilling areas of loss with a compatible mortar. This consists of 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.

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.

Figure 115. Examples of broken monuments. The upper left photo shows a marble tab in socket stone with a badly broken die. The upper right photo shows a variant of marble pillow monument that is shattered. The middle left photo shows a marble ledger that is both undermined and broken. The middle right photo shows a broken cross. The lower left photo shows a broken marble tablet. The lower right photo shows a badly shattered marble ledger. All of these stones require a conservation treatment involving drilling and pinning the broken fragments back together.

Figure 116. Examples of damage caused by ferrous pins. The upper left photo shows iron jacking that has broken the base and cracked the die. The upper right photo shows loss and spalling on the die resulting from iron jacking. The middle left photo shows iron jacking damage with an unsuccessful effort to repair the damage using ordinary Portland cement. The middle right photo shows a broken base. The lower left photo shows extensive damage to both the base and the die, with iron staining on the marble. The lower right photo show loss of the die and staining of the base.

Table 14.
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 15 years.	No special precautions required for use, handling, or storage.

More suitable materials include 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.

Drilling stones is a complex treatment that should only be conducted by a trained conservator. Infill is similarly complex and the Jahn products require certification in their use through Cathedral Stone.

Ferrous Pins

Nearly as many die on base stones were observed that had been set using ferrous pins to join the die and base as already broken stones. These stones should be given a high treatment priority since, left untreated, the corrosion of the ferrous pin will cause significant spalling, cracking, and breakage of the stones – a process known as "iron jacking." The corrosion products of these ferrous pins have a greater volume than the original pin and as the corrosion products expand, they crack the stone. Many of these stones already exhibit corrosion staining and cracking.

It is necessary to use diamond core drills to remove the corroded ferrous pins and replace them with either fiberglass or, rarely, stainless steel. Afterwards it is necessary to fill the voids with a natural cementitious composite stone material such as that previously described for infill repairs.

In some cases the iron pins have already caused the stone to spall. Treatment is similar, except that the replacement pins must often be longer and inserted into stone that is still capable of bearing the weight of the monument. Such repairs also necessitate major reproduction of lost stone and therefore are more time consuming and expensive.

Cleaning

Many of the stones exhibit relatively dense deposits of lichen (a symbiotic association typically between fungus and green algae) or algae alone. While sometimes viewed as only an aesthetic issue, there are many stones in Oconee Hill Cemetery were the biologicals have become so thick that the carving on the stone is today illegible. These biologicals may damage stone in a

Figure 117. Cleaning issues at Oconee Hill Cemetery. The upper left photo shows dense lichen obscuring monument details. The upper right photo shows moss on a stone. The middle left photo shows dense biologicals that are found throughout the cemetery. The middle right photo shows an acid cleaned marble monument. The lower row photos all show improper cleaning using bleach only in the area of the inscription. This is typical of genealogists.

variety of additional ways. As lichen and other plants grow, they can exert pressure on the mineral grains, weakening the intergranular structure. Some organisms produce acid compounds that dissolve the calcium carbonate. Some can even etch granite. Many of the lichen and algae allow water to migrate into cracks and crevices of the stone, leading to freeze-thaw damage.

While cleaning is often recommended, inappropriate cleaning can result in a significant amount of damage. We observed at least seven situations at Oconee Hill where inappropriate acid cleaning had been used. This suggests that families are taking very poor advice from local monument dealers who are both unfamiliar with antique stones and untrained in appropriate cleaning methods. Acid cleaning is very damaging to marble stones and should never be allowed. We have a simple handout that the Cemetery could begin offering to lot holders that provide good instructions on proper cleaning.

Table 14 lists problems with a variety of "common" stone cleaning processes widely used by commercial firms and the public. This information is important to FOTC and should also be made available to any families that may inquire about cleaning their specific monuments.

A suitable biocide for cleaning stones is D/2 Biological Solution (http://d2bio.com/) available from a variety of conservation suppliers. Stones should always be prewetted prior to application of D/2 and after dwelling for a few minutes followed by gentle scrubbing, should be flushed from the stone.

Walls

Approximately 175 plot walls were identified in the Cemetery, found in eight sections. Most (92) are identified in the West Hill Section, followed by Valley (35), and East Hill (31). These are enumerated in Table 15, along with their materials and conditions.

It should be noted that walls merge with coping and at times it was difficult to distinguish very tall coping from a very low wall. In general, we identified a feature as coping when it consisted of a single height of material. Where multiple levels exist, the feature was defined as a wall.

Walls identified as "satisfactory condition" are stable, but may require maintenance, such as pointing. Thus, the assessment should not be viewed as license to ignore these walls. Overall, the bulk of the walls (111 or 63%) fall into this category.

Those identified as being in "poor condition" are unstable, tilted, spalling, potentially missing elements, but still standing. They require immediate intervention before they fail. We found that 31% of the walls were in poor condition, with the largest proportion of poor walls in East Hill.

The final assessment was "in failure." These walls are actively collapsing or have collapsed. About 19% of the walls (33) are placed in this category, with most of these found in the West Hill.

We also identified walls by the material(s) used in their construction, including brick, brick and granite (granite often being the coping), fieldstone, granite, concrete, and concrete block.

Virtually none of the walls appeared to be engineered. That is, none exhibit evidence of weep holes, French drains, or soil anchors. Some of the walls represent nothing more than an effort to crudely stack stones to control erosion. It was not possible to identify footings with any accuracy, although many of the walls appear to have little or no footers. Thus, while failure is often precipitated by trees or ground pressure, these failures were, in essence, inevitable. As with monument foundations, had earlier Trustees established clear wall construction requirements virtually all of today's problems could have been avoided. Once again, the Cemetery today is paying the price for a failure to insist on appropriate decisions in the past.

Table 15.
Condition of Walls at Oconee Hill Cemetery

	B	D	E	East Hill	Factory	F-2	North Slope	Valley	West Hill
Brick									
Satisfactory Condition							1		10
Poor Condition				1	1				1
In Failure					1				5
Brick & Granite									
Satisfactory Condition									
Poor Condition								2	1
In Failure									
Field Stone									
Satisfactory Condition			1			1		24	12
Poor Condition								4	1
In Failure		2						5	8
Granite									
Satisfactory Condition	1			21	1				31
Poor Condition				5	3				5
In Failure					2				7
Concrete									
Satisfactory Condition				3					5
Poor Condition					1				2
In Failure									
Concrete Block									
Satisfactory Condition									
Poor Condition					2				2
In Failure				1					2

Wall Variations

Very few of the walls are either concrete or concrete block and both are relatively new materials. The concrete walls are in satisfactory condition and no immediate intervention is required. Three concrete block walls, in East Hill and West Hill, are in failure. This material is especially unattractive and a late introduction to these areas. While replacement in-kind is typically the appropriate preservation philosophy, these walls could be removed and replaced with either brick or granite.

The most traditional materials are brick, granite, and field stone. In those cases replacement and repair should be in-kind.

Figure 118 shows a few variations in the walls observed in Oconee Hill Cemetery. *Squared rubble walls* have the stones squared up, more or less roughly, according to the quality of the work, to about the same height in each course.

Pitched face walling is also found. These walls are similar to squared rubble walls, except the stones have sawn beds and joints.

There are also a few stone walls that in the past would have been called *block-in-course*. Here large blocks of masonry are squared and brought into fair joints. While historically the faces were usually rock-faced, those in Oconee Hill Cemetery are typically sawn or otherwise finished. These are distinguished from squared rubble walls by the much larger stones used.

In *coursed rubble walls* the stones are laid more or less straight, with the stones selected to give approximately the same height in each course, although there can be considerable variation between courses and individual courses may taper with distance.

Random rubble walls are laid as the stones come to hand, with little or no attention paid to coursing. Joints and thicknesses are extremely variable. Where the stones are laid to level up to a horizontal course at intervals, it is known as *random rubble built to courses.*

Brick walls appear to have been built using running bond, sometimes called a stretcher bond. It consists of stretchers for the whole of each course.

Some of the walls show a variation of common bond. The true common bond consists of three courses of stretchers to one course of headers, repeating itself throughout the height of the wall. Variations are four, five, or six courses of stretchers to one course of headers. The bond has the benefit of providing a quick lateral spread of load. The headers also tied a 2-brick wall together,

Figure 118. Variation in wall designs. Upper left photo shows a dry laid wall of pitched-face granite in Factory Cemetery (wall is in failure). Upper right is a coursed rubble granite mortared wall in Factory Cemetery (in failure). Middle left photo shows a mortared random rubble wall in West Hill that is in good condition. Middle right photo shows a brick wall in West Hill laid up in running bond, although there are two courses of headers at irregular intervals. This wall is in poor condition. The lower left photo shows a mortared coursed rubble wall (bottom) in West Hill (wall is in good condition). Lower right photo shows a squared rubble wall laid in mortar in West Hill (wall is in good condition).

providing additional strength. These walls were often used in chimney construction for those reasons. At Oconee Hill we discerned no pattern, just random courses of headers.

Much of mortar appears to be a very hard Portland cement mix, suggestive of walls built post-1871 (likely post-1890). Earlier walls may have used natural cement. We did not identify mortar clearly suggestive of lime putty, but we did not closely examine any of the walls.

In sum, there is considerable variation in the walls at Oconee Hill, with some exhibiting considerably greater construction skill than others. None, however, are especially unique or well-crafted and few survive today in good condition.

Wall Repairs

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 work should be removed, stopping as soon as sound material is encountered.

Standards in Masonry Repair

A critical standard in pointing mortar joints is the National Park Service Preservation Brief 2, *Repointing Mortar Joints in Historic Masonry Buildings*, available online at http://www.nps.gov/hps/tps/briefs/brief02.htm. It is written by two of the foremost authorities in the United States.

Although *Preservation Brief* 2 was intended to direct repointing work, it also provides a useful basis for any efforts that involve rebuilding walls.

This document makes several critical points:

- the new mortars must match the historic mortar in color, texture and tooling;
- color of new mortar is largely controlled by the sand aggregate, thus matching aggregate is critical;
- the new mortar must have greater vapor permeability and be softer (measured in compressive strength) than the masonry units;
- the new mortar must be as vapor permeable and as soft or softer (measured in compressive strength) than the historic mortar; and
- mortar is designed to be – and must be – sacrificial.

If these five rules are followed, the mortar will comply with NPS standards, be appropriate for repair work on historic structures, and most importantly "will do no harm."

ASTM International, formerly known as the American Society for Testing and Materials (ASTM), is a globally recognized leader in the development and delivery of international voluntary consensus standards. The standard ASTM C1713, *Standard Specification for Mortars for the Repair of Historic Masonry*, covers both repair mortars used for both non-structural purposes such as repointing, as well as "for structural purposes such as, but not restricted to, reconstruction or repair of mortar joints that contribute to the structural integrity of the masonry."

The document requires that aggregates conform to ASTM C144, additions are strictly limited, pigments must confirm to ASTM C979 (pigments may not exceed 10% by weight of the binder, except for carbon black, which is limited to 2%), and binders are primarily non-hydraulic lime (e.g., lime putty, ASTM C1489) or hydraulic limes (ASTM C144).

The document also provides guidance on volume proportions, noting that they are typically combined with ratios ranging from 1 part total binder materials to 2 to 3½ parts aggregate, although a few may fall outside this range.

Other Standards or recommendations for work such as this include the Secretary of the

Interior's Standards for Preservation, as well as the AIC Code of Ethics and Guidelines for Practice, which have been previously discussed.

Finally, there are also widely recognized standards of performance for masonry work. Virtually all historic preservation specifications, for example, include a provision requiring the contractor to have demonstrated proficiency in restoration by previous successful performance of specific tasks within the past 10 years. The firm itself must generally be able to show at least 5 years of experience. The goal of such standards is to ensure that those performing the work have done so in the past and are not "learning" using your materials and site.

Generally mock-ups are required. These are panels, often about 16 ft^2 in a location on site selected by the client. The sample panels built by the prospective mason must match the existing masonry in coursing, bond pattern, and mortar joint configuration. The test panels may involve the construction of a wall, repointing, or other tasks required by the contract. When inspected and approved by the client (or more often the architect or conservator), the panels become the standard for quality, color range, size range, texture, and inclusions. All materials and performance must conform to the approved samples, subject to normal variation.

There is often a requirement that at least one skilled journeyman mason be on-site at all times to personally direct the work of other masons employed on the job.

There are typically requirements that all materials be delivered to the job site in new, unopened containers and that they be protected from wetting by rain, snow or ground water, and from staining or intermixture with earth or other types of materials

Strict weather condition limitations are also enforced. No work may be performed in wet weather. No masonry work is allowed when the surface temperature of masonry is below 40° F or air temperature is predicted to be below 40° F within 48 hours. Masonry must not be allowed to freeze until the mortar is thoroughly dry and hardening almost complete. No mortar work is typically permitted when the temperature rises above 100°F. The mason is also responsible to provide sun and wind protection, such as burlap sheeting to prevent "flash curing" of the mortar. The mason must also be able to periodically moisten the mortar after it has been installed.

In the mixing of mortar, good practice demands that ingredients (e.g., binder and aggregate) be measured by cubic volume using a uniform measure. Shovel measuring should never be permitted and is poor practice. It also matters whether constituents are measured dry or moist. For example, there is a significant increase in bulk volume of dry sand when water is added. If sand is measured dry, more sand is put into the mix than if the same volume of damp sand were used. Oversanding can result in gritty, hard-working, and when dried, weak mortars.

There are also widely recognized performance standards. Bricks should be laid with completely filled bed and head joints, ends should be buttered with sufficient mortar to fill head joints. Masonry must be laid plumb and true, following the coursing, patterns, and joint size of adjacent (or original) construction. Minor dabs of adherent mortar must be struck off the brick surfaces. Excess mortar must be brushed from surfaces frequently during the work. Existing surfaces must be protected from mortar dripping and splashing. Minor mortar marks must be removed by misting with water and brushing with a small, stiff bristle brush. After the mortar has set, the loose mortar and soil should be removed with clear, clean water. Acid cleaning should be strictly prohibited.

Much cleaning can be avoided by minimizing water use in mortar and pointing mortars, in particular, must be applied very dry (the consistency of damp brown sugar) to permit good compaction and prevent smearing .

Walls or repointing should be misted to ensure the slow curing of the mortar. This

Figure 119. Examples of walls requiring repair or replacement. Damage has resulted from foundation settling which causes diagonal cracking through masonry units or the bed joints; displacement of walls, at times by out-of-plane loading, but more often by pressure resulting from trees; or failure to maintain the walls (including a lack of pointing).

generally involves misting at least three times daily (more depending on weather conditions), usually for several weeks after the work is completed.

Mortar and Jointing

Stone, especially granite and fieldstone, tends to be quite hard and generally withstands the use of hard mortars. 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 than the brick (it should be sacrificial), since the mortar can be readily replaced through pointing.

Often masons use a Type S masonry cement field mixed with sand. Masonry cement is a prepackaged combination of Portland cement and plasticizers. The mix of these bagged mortar mixes is typically proprietary and is not required by ASTM standards to include hydrated lime (ground limestone is accepted). Great compressive strength is neither needed nor appropriate. The 28 day compressive strength of these mortars is 1,800 psi – far too hard for the historic bricks. Consequently, masonry cements are not recommended for use on preservation projects.

An alternative is the use of natural hydraulic lime (NHL) 3.5 which is moderately hydraulic, 5 which is eminently hydraulic. While not used historically, a benefit of these mortars is that they provide a quicker initial set while maintaining many of the other benefits of lime. The 28-day compressive strength of NHL 3.5 is about 200 psi, increasing to about 800 psi in a year. The 28-day compressive strength of NHL 5 is about 290 psi, increasing to 1,225 psi in a year.

Thus, NHL 3.5 is appropriate for the brickwork at Oconee Hill Cemetery, while NHL 5 is appropriate for the granite and fieldstone work.

An alternative – and we believe better choice - to field mixes are prebagged NHL mortar and sand mixes offered by a variety of companies, including Limeworks.us (http://www.limeworks.us/ecologic_more.html), Virginia Lime Works (http://www.virginialimeworks.com/mix-go.html), and U.S. Heritage (http://usheritage.com/repointing-mortars/).

Jointing or joint tooling is done for two reasons. The one most often mentioned is aesthetic – a means of finishing the mortar to appear neat and give a good visual impression. However, an equally important reason is structural. When a brick is laid on mortar it will absorb some of the moisture from the mix, resulting in partial dehydration of the joint toward the outer face. Water is also lost through evaporation. Jointing – the process of firmly pressing a tool against the mortar – consolidates the mortar near the surface, reducing the pore volume and closing up shrinkage cracks.

It is particularly important not to tool the joints too early since this will bring too much “fat” or fines to the surface, producing a slicked surface or skim coat that inhibits appropriate curing. Tooling involves several steps. First, any gaps must be filled, although good masons leave few such gaps. First perpendicular or head joints are tooled. The bed joints are then jointed. Finally, the joints should be brushed firmly with a soft brush. The goal of this action is to remove protruding mortar deposits on head and bed joints.

Nevertheless, not all masons are equally skilled at jointing, nor are all joints equally appropriate.

Good preservation practice mandates that whatever tooling was present originally, be replicated. Where no jointing evidence remains, which is often the case on very old walls, especially walls with deteriorating mortar, there is an appropriate option. A churn brush can be used when the mortar is thumbnail hard. The brush is pounded on the wall and its joints resulting in several simultaneous actions. The mortar is very effectively compacted in the joints, sealing any shrinkage cracks. The bristles open pores,

Figure 120. Three examples of retaining wall designs

promoting better carbonation of lime mortars. Any small smears of mortar are knocked off bricks. In addition, the resulting joints take on a weather-worn appearance that helps the brick work blend in (remember, we do not want attention drawn to new brick work – we want it to appear as though it has been there for years).

Churn brushes can be obtained from several sources (for example, http://store.limeworks.us/Churn_Brush_p/churnbr.htm).

Foundation Design

For a wall to be stable, the weight of the wall components must exceed the force of the soil behind the wall. As moisture in the soil behind the wall increases, the force attempting to push the wall forward increases. Important considerations in constructing retaining walls are foundation, backfill, block size, and anchoring system. Figure 120 provides three examples of a typical retaining wall design. All incorporate a footer, some form of geotextile, drainage, and some form of select backfill to promote drainage.

The situation at Oconee Hill Cemetery is made more difficult since in many cases excavation for foundations, replacement of backfill, and soil anchoring must be limited because of existing burials.

Retaining walls over 3 feet high should be designed by a structural engineer who is familiar with site and ground conditions, although some licensed contractors may have suitable experience.

Costs

While construction costs for stone walls begin at about $11 per square foot, this does not include the required demolition and additional care to avoid disturbance to burials that will be necessary at Oconee Hill.

Fences

Boundary Fence in North Slope

Between the North Slope Section and the Sexton's Cottage there is an ornate fence running 200 feet E10°N. We understand that the North Slope was established about 1909 when the Sexton's Cottage was moved north to its present location. It seems likely this fence was erected to establish a physical boundary between the living quarters and the new plots. The fence is consistent with those available in the late nineteenth and early twentieth centuries.

This fence was recently repaired with the addition of bracing and restoration of a finial ("Iron Work Installation and Renovation," *Friends of Oconee Hill Cemetery*, Spring 2000, pg. 1).

No additional information is available regarding these repairs. In general, however, we do not recommend restoration of decorative elements. This is expensive work and is not required to ensure the long-term preservation of fences.

In the case of this fence, more critical concerns involve painting and removing the soil that is covering the bottom rail and pickets. When soil is allowed to cover ironwork, the constant moisture will corrode the metal, causing significant cosmetic and structural damage.

The soil in this area should be removed, providing positive drainage away from the ironwork and ensuring that the bottom rail is at least 2-inches above the soil. If it is not possible to establish positive drainage, we recommend that sufficient soil be removed to create a swale or drainage area that will keep the ironwork above grade.

The fence is also exhibiting chalking and fading of the paint, flaking paint, and spot corrosion. The fence requires immediate cleaning and painting. In fact, painting is the single best long-term preservation mechanism for fences – and it is one of the least expensive options.

We do not recommend anything more than brushing of the fence to remove loose corrosion and flaking paint. Open joints and other areas where water can penetrate through capillary action should be carefully caulked with Sikaflex 1a, an elastomeric caulk that is often used in fence repair. Under no circumstance should a silicon caulk be used.

Figure 121. North Slope fence. Note that the bottom rails is covered in soil.

The entire fence should then receive one coat of an alkyd primer, such as Rust Oleum Professional High Performance Metal Primer 7769. After this has cured it should be followed by two top coats of flat black alkyd paint, such as Rust Oleum Professional High Performance Flat Black 7776402.

Plot Fences

Plot fences are confined to the West Hill, East Hill, and Valley sections and are characterized as being in good, fair, or poor condition in Table 16. Fences in good condition are those that, minimally, are painted

or have little corrosion and that are structurally stable. Fences listed in fair condition are structural stable, but are missing parts and not painted. Finally, those listed in poor condition are unstable, unpainted, and missing many parts or even entire fence sections.

Of the 28 identified fences in the cemetery, nearly half (46%) are characterized as being in poor condition. These fences will require more detailed assessments and treatment proposals with a focus not of restoration, but simple preservation. Thus, work will need to focus on issues such as removing fence parts from the soil; stabilizing line, corner, and gate posts; limiting water intrusion; and ensuring that the fences are painted.

Table 16.
Fences in Oconee Hill Cemetery

Section	Good Condition	Fair Condition	Poor Condition
East Hill	0	5	7
Factory	1	1	2
West Hill	3	3	3
Valley	0	2	1

The next priority will be those fences in fair condition, where treatment will most likely include limiting water intrusion, and painting. These account for about 40% of the Cemetery's fences.

The Friends have spent considerable effort attempting to restore or repair the Lumpkin/Cobb fence in East Hill. This fence is in a badly deteriorated condition and the cost of treatment is quite high. The Friends should not get bogged down on one fence when there are so many that require treatment – especially since many will likely require far less funding.

Galvanized Gas Pipe Fences

While many of the fences are ornate iron, some are more simple gas pipe fences, often set in granite posts. These fence elements were originally galvanized, but today much of that protection has worn off and corrosion is becoming more common.

Treatment of these galvanized pipe fences will involve mechanical brushing, ensuring they are clean, and then applying a cold galvanizing compound with at least 95% zinc solids. Examples of suitable paints are ZRC Cold Galvanizing High Zinc Compound (http://www.zrcworldwide.com/index.php/products/zrc-cold-galvanizing-compound) or Rust-Oleum 7000 System Cold Galvanizing Compound (http://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/IBG/High%20Performance/7000_System_RO65_206433.ashx).

Iron Fences

All fences receiving treatment should first be examined for open joints and other areas where water can penetrate through capillary action. These areas should be carefully caulked with Sikaflex 1a, an elastomeric caulk that is often used in fence repair. Under no circumstance should a silicon caulk be used.

Where fences exhibit remaining old paint, they will need to be treated in a manner similar to that described previously for the North Slope Boundary Fence. Many of the fences, however, show no remaining paint.

This is a perfect situation for light brushing to remove loose corrosion followed by the application of Rust-Oleum Rust Reformer®. This product has been tested by the Canadian Conservation Institute, including exposure to very harsh salt spray and was one of their top three best performers (it is, today, the only formulation still available). Rust Reformer® is a conversion process that stabilizes the corrosion products and serves as a primer. This product cures to a blue-black color.

It should be top coated with Rust-Oleum

Figure 122. Fence types and common problems at Oconee Hill Cemetery. The upper left photo shows an iron fence in East Hill that has made good use of a "ghost" section to provide support and enclose the lot with minimal expense. The arrows, however, point to areas where water is entering the fence and causing damage. The upper right photo shows a fence in poor condition with parts lying on the ground. The middle left photo shows an iron fence in fair condition. The middle right photo shows an iron fence that had been painted white, but is now in failing condition. The lower two photos show typical gas pipe fences with corrosion breaking through the galvanized coating.

High Performance Protective Enamel® in flat white followed by a final top coat of flat black 24 hours later. This is a quality assurance process since any areas missed by the flat white will immediately be identified by the undercoat of black Rust Reformer®. Similarly any areas missed by the application of final top coat of flat black will immediately be recognized by the underlying white paint.

Paint application should be by brush, producing initial dry coat of 1-2 mils (the wet build-up is typically twice this).

Other Fence Issues

It is worthwhile to briefly outline a few additional issues critical in fence repair. These concerns should be kept in mind for all ironwork treatments in Oconee Hill.

As mentioned for the North Slope fence, it is critical that fence bottom rails (or other elements) not be allowed to be covered by soil. Prior to any repair or painting it is essential that the ironwork be removed from ground contact. This will usually require re-sculpting or contouring the ground to allow exposure and ensure that water flows away from the fence.

Whenever possible, painting should be by brush. If airless sprayers must be used there will be much overspray, requiring much larger amounts of paint. In addition, all vegetation and all stones within the plot – and all immediately adjacent plots – must be fully wrapped in plastic to prevent damage from drift. The requirement for additional paint and the time required to wrap vegetation and monuments will significantly increase the cost of the work.

Welding is appropriate in some situations, but not all. Welding, if performed using continuous (not spot) welds that are ground smooth, is acceptable where little or no expansion or contraction of the iron is anticipated. Where there were originally slip joints, however, welding is inappropriate since it will create stresses that can cause additional damage. For these areas it is necessary to infill the fabric and recreate slip joints that allow movement.

Where welding is appropriate, it must be of very high quality. Appropriate welding processes may include gas tungsten arc welding (GTAW) and shielded metal arc welding (SMAW). Success in repair of cast iron has been achieved in the past using a nickel welding electrode called a NiRod Ni-99. This rod allows elasticity that eliminates the cracking in the transition zone characteristic of low carbon steel electrodes. It should be combined with peening the weld upon completion, reducing surface stress during cooling. The GTAW process uses silicon-bronze wire and stainless steel wire. These are selected for their compatibility and ductility.

As previously mentioned, we do not typically encourage restoration. It is very costly and funnels money away from preservation activities that have a much greater impact on a much larger assemblage. Where recasting is critical, we recommend Robinson Iron in Alexander City, Alabama (http://www.robinsoniron.com/). Castings are typically produced in Class 30 gray iron. After casting, the individual pieces should be machined as necessary and then primed with a two component epoxy primer.

We identified fence parts lying on the ground throughout the cemetery. All such parts should be collected and stored for possible repair, replacement, or replication. They should not be ignored and allowed to be stolen or destroyed.

As with many other aspects of the historic fabric, the Trustees have allowed fences to significantly deteriorate (as mentioned, nearly half of all ironwork is in poor condition). This has created a crisis. The cemetery must implement a preventative maintenance program and must fund repair of damages as they occur. If this is not done, much of the Oconee Hill ironwork will not survive for another generation.

It becomes critical when private individuals are maintaining fences that the Trustees provide this guidance and encourage private individuals to perform maintenance to the same standards. This will help prevent future problems that result when individuals are not aware of good ironwork practices.

Figure 123. Damage and improper resetting to the Cemetery's sole zinc monument.

Unusual Monuments

We identified one zinc (sometimes called a white bronze) monument in the Cemetery.

It appears that this monument has been struck by a tree or branch, crushing the left side of the base and breaking the corner. The monument is no longer attached to the marble base. The base is badly sinking into the grave and the monument has been propped up with a piece of debris to keep it from falling.

This is yet another example of damage done as a result of inattention by the Trustees to tree issues in the Cemetery.

These are uncommon monuments and this memorial requires careful conservation attention in order to repair the damage and allow it to be properly reset.

Recommendations

- The Trustees must require that all work performed in the cemetery on monuments, fences, or walls be conducted or overseen by a trained conservator who subscribes to the Guidelines for Practice and Code of Ethics of the American Institute for Conservation of Historic and Artistic Works (AIC).

- The Trustees must affirm their responsibility to care for all areas of the Cemetery.

- While a stone-by-stone assessment might further refine stone treatment priorities, high priority treatments include the nearly 650 stones at Oconee Hill

Cemetery that require resetting for the safety of the stone and the public.

- Monuments evidencing iron jacking are nearly as critical since, left untreated, these stones will rapidly join the ranks of those that are broken.

- The cleaning of the worst soiled stones in the Cemetery using D/2 Biological Solution should be undertaken by volunteers. This will dramatically improve overall appearance and provide a very visible improvement to the Cemetery landscape.

- The repair of broken stones is the least critical conservation concern. These stones are unlikely to deteriorate further in the course of a 5-year plan.

- The roughly 32 walls in failure should receive a high priority for rebuilding and it may be most cost-effective to let contracts for multiple walls at one time, with oversight by a conservator.

- Walls in poor condition should receive second priority repairs. Walls currently in satisfactory condition should be placed on a maintenance program with 10 evaluated and repaired as needed every year.

- The North Slope fence requires that the ground be cut back from contact with the bottom rail.

- The North Slope fence requires caulking, priming, and two top coats of an alkyd flat black paint.

- Ten plot fences in the Cemetery are structurally stable, but require caulking, priming, and painting. Gas pipe fences, in contrast, require the application of cold galvanizing. These should be given a very high priority to prevent further deterioration and increased costs of treatment.

- Eleven plot fences in the Cemetery are unstable and require extensive rehabilitation prior to painting. Each of these fences should receive detailed conservation assessments to determine appropriate treatments.

- The single zinc monument in the cemetery should receive a high treatment priority.

Funding and Priorities

Unfortunately, the current Trustees have inherited a property that is heavily burdened by poor choices, deferred maintenance, a lack of trained staff, and crumbling infrastructure. Simply put, Oconee Hill Cemetery has never been run as a business, financially crippling the future of the Cemetery and creating what can only be described as an extremely dire situation.

The Cemetery has also developed a culture of excuses focusing on funding. For every short-coming or deferred maintenance need, the response has been, "there isn't money." This is a truism; what the Cemetery requires is not doing less, but rather identifying and obtaining the funding to do what is necessary.

The long-term prognosis for the Cemetery is entirely dependent on the actions taken by the Trustees and Friends over the next decade. Those actions must be carefully formulated and designed to make substantive changes and promote long-term preservation. The Cemetery must abandon the excuse of not having money and begin aggressively soliciting the necessary funds from the local community. Failing this, business as usual will ensure the eventual failure of the Cemetery.

Without doubt the one extraordinarily bright spot in this situation is the formation of a Friends organization with a core of extremely dedicated individuals, coupled with evidence that the organization is very effective at raising funds for specific projects.

Recommended Priorities

When individuals familiar with Oconee Hill Cemetery are asked what the most critical issues facing the Cemetery are, different answers are received, depending on perspective. For example, in the Chicora questionnaire submitted prior to this assessment, Trustees and Friends responded, 1. Repair of monuments, retaining walls, and other masonry in historic sections; 2. Repair of ironwork in historic sections; and 3. Additional endowment funds to ensure perpetual care funds for all lots. In contrast, the Sexton responded, 1. Retaining walls and erosion prevent; 2. Tree removal, and 3. Water.

Of course, each group is at least partially correct and the reason for this assessment is to make sense of these divergent views and offer recommendations as an outside organization after looking at all of the issues identified during the project.

It is our professional view, based on the questionnaire responses, considerable research, three-days on-site, and multiple meetings that the five fundamental needs of Oconee Hill are:

1. Fund-raising, not only by the Friends, but also by the Trustees.

   Just as businesses must have adequate capital to succeed, so too must cemeteries. Oconee Hill is a business and funding is a critical responsibility of every member of the Trustees and every Friend.

   Preservation costs must be continuous. The Trustees cannot allocate funds based on availability. When adequate funds are not available to conduct critical maintenance activities, then the Trustees must go out and seek those funds. That is why the operation of the Cemetery is a <u>trust</u>. The Cemetery must receive constant, on-going care and preservation efforts. The central problem is that for years, critical needs have been deferred, creating cumulative problems that

now must be addressed or else the resource will be so degraded that its continued significance to the community will be doubtful.

2. Developing solid, professional, business and preservation oriented rules and procedures.

   Businesses must have clearly stated policies and procedures. There must be meaningful Cemetery rules that promote both preservation and public use, not discourage and alienate the community. There must be clear hiring practices and performance reviews.

   Without sound rules, policies, and procedures, businesses will flounder, mistakes will not be recognized, and unrecognized they cannot be corrected.

3. Hiring the trained staff to do the necessary work in the Cemetery and providing them with the tools to do that work.

   The needs of Oconee Hill are great and they can only be met by a professional, well-trained, and dedicated staff focusing on both office management and grounds management.

   The Cemetery requires a fundamental change in operation, with an adequate, full-time staff that is able to make substantive improvements.

4. Focusing on rehabilitation of the landscape, including tree care and more professional lawn care.

   The greatest needs of Oconee Hill are not necessarily associated with its monuments, but rather on the landscape itself; on the dying and dead trees, on the ignored shrubs, and on ending abusive mowing practices.

   It is in this area that the Cemetery will achieve its greatest "bang for the buck." Caring for the landscape will improve the overall appearance of the Cemetery. Caring for trees will reduce the potential for massive monument damage. Proper mowing will significantly reduce the wear and tear on monuments.

5. Ensuring the maintenance of infrastructure items such as roads, walls, stairs, the bridge, and erosion control.

   Infrastructure is extremely costly and when it is ignored, those costs escalate rapidly. It is easier – and less costly - to maintain a bridge than to replace it. It is easier to crack seal or even chip seal roads than to resurface them. It is easier to prevent erosion, than to explain to the public why graves were allowed to erode out and afterwards regain public trust and confidence.

But even if there is considerable agreement concerning what needs to be done, it is far more difficult to prioritize all of the actions necessary to achieve those goals.

It also appears that caregivers have had difficulty remaining focused. For example, we question the need for a flagpole as it does nothing to address the major problems and concerns at Oconee Hill. We also question the advisability of adding stair rails (which do not meet ADA requirements) when many of the stairs themselves are hazardous and require replacement. We further strongly recommend against diluting the focus on critical long-term needs by embracing the construction of an unneeded and underfunded chapel.

We recognize that it can be difficult to maintain focus and with this in mind, Table 17 lists the recommendations offered throughout this assessment, classifying them as an *organizational need, a first priority, a second priority, or a third priority*.

Organizational needs are rule, policy, or procedural issues that can be quickly resolved by a combined meeting of the Trustees and Friends, the formation of a few committees to iron out

details, and making the necessary changes. These organizational needs require little or no funding, but do demand a philosophical change in how the Cemetery is operated. They must be enacted as a foundation upon which other changes are constructed. We strongly believe that most cemetery projects fail through inadequate or inappropriate planning – thus, we recommend in the strongest possible terms that the Trustees and Friends engage in the necessary planning to help ensure success.

First priorities are those we recommend undertaking during the coming fiscal or calendar year (2014). Some are issues that have the potential to affect the public health and safety and consequently require immediate attention.

Second priorities are those that should be budgeted for over the next 2 to 3 years (2015-2016). They represent urgent issues that, if ignored, will result in both significant and noticeable deterioration of Oconee Hill Cemetery as a historic resource.

Third priorities are those that may be postponed for 4 to 5 years (2017-2018), or alternatively, may require 3 to 5 years to see fruition. They are issues that can wait for appropriations to build up to allow action. Some actions are also less significant undertakings that require other stages to be in place in order to make them feasible or likely to be successful. Although they are given this lower priority they should not be dismissed as trivial or unimportant.

Within these four categories, the individual items are not ranked, as all are essentially equal in importance.

It is likely that some of these recommendations will not be achievable in the five years allotted for this plan. That does not mean that the issues will no longer be of consequence or will not still be critical for the survival of the Cemetery. What it does mean is that after 5 years we recommend sitting down and re-evaluating what has been achieved, what still needs to be done, and determine how to move forward.

Where appropriate, we note that some actions may be suitable for volunteers. For others we provide budget estimates, but warn readers that we are not construction specifiers and these estimates are based on the best information that we have and are 2013FY cost.

Table 17.
Prioritization of Recommendations

Priority	Action	Cost Estimate/Notes
Organizational	0.1 A joint meeting between the Oconee Hill Trustees and the Friends of Oconee Hill should be devoted to a careful review of the Secretary of Interior Standards. The caregivers should focus on a fuller understanding of how daily operations affect the long-term preservation of the cemetery, making necessary adjustments to current policies and procedures. 0.2 Modifications of existing regulations include setting specific times the cemetery is open, better defining whether pets are allowed in the cemetery or not, and setting specific requirements for commercial tours and outings. 0.3 Several regulations should be immediately repealed, including the requirement that photography be permitted, and requiring visitors to obtain a permit or permission for picnics. 0.4 Additional regulations should be enacted, including a warning that the stones are fragile; that children must be accompanied by a responsible adult; a prohibition against alcohol, fireworks, and firearms; a specific notice of the flower policy; the requirement to obtain permission for plantings; and a clear notification of who to contact for maintenance or questions, as well as emergencies. 0.5 The Friends must not undertake any projects for which there is not also guaranteed funding for long-term sustainability. 0.6 The Friends, while maintaining close cooperation with the Trustees, should ensure their independence. 0.7 Future funding activities by the Friends should be driven by the priorities recommended in this assessment. 0.8 Staff must be explicitly instructed to abide by the 10 mph speed limit. 0.9 All future modifications at Oconee Hill should be evaluated for their impact on universal access. Universal access should be a goal whenever possible. 0.10 We do not recommend that a chapel be constructed at this time. There are too many critical needs to allow such funding or distraction from critical long-term preservation concerns. In addition, careful review of similar structures reveals that the proposed cost of $100,000 is too low and will not result in sound construction with reduced long-term maintenance. 0.11 Vandalism is not currently a significant issue at Oconee Hill. The Trustees and Friends should, however, review options to combat vandalism and determine which could be implemented to help harden the cemetery against vandalism.	

Table 17.
Prioritization of Recommendations, continued.

Priority	Action	Cost Estimate/ Notes
Organizational, continued	0.12 The Cemetery should begin using a form to identify and record evidence of vandalism.	Form provided
	0.13 Homelessness is not a crime and absent some specific infraction the Cemetery staff may not request the homeless to leave the Cemetery. If there are rule infractions (open alcohol, drunkenness, belligerent behavior, etc.), the incident should be reported to local law enforcement. Staff should no longer attempt to deal with the issue.	
	0.14 The Trustees should revise the rules to limit the introduction of additional benches on plots in the older sections of the cemetery. The Trustees should limit future benches to granite.	
	0.15 The Trustees should limit the introduction of additional vases or urns in the cemetery.	
	0.16 The Trustees should explore how the Affordable Care Act will affect their provision of health care to employees.	
	0.17 If the Cemetery Landscape Manager is an exempt employee, which we anticipate he or she will be, then Saturday pay is not appropriate.	
	0.18 We do not believe it is appropriate to offer employees of the Cemetery referral fees. The practice should be discontinued.	
	0.19 The Trustees should make weekly or minimally monthly independent evaluations of the Cemetery landscape.	Form provided
	0.20 The Trustees should establish an employee code of conduct that focuses on absolute decorum, courtesy, and respect to all individuals in the Cemetery at all times.	
	0.21 Trees to be planted on Cemetery grounds must be carefully identified to be historically appropriate and to avoid significant issues such as surface roots, excessive litter, or weak structure.	
	0.22 Every tree removed should be replaced by a new tree. It is also appropriate to plant replacement trees in anticipation of their need.	
	0.23 All replacement trees or new plantings should be at least 1-inch caliper and meet the minimum requirements of the American Nursery and Landscape Association's American Standard for Nursery Stock (ANSI Z60.1-2004). All nursery stock should be carefully inspected by a knowledgeable individual prior to acceptance and planting.	
	0.24 All new plantings should have water bags and rigid tree guards installed.	$25/tree

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
Organizational, continued	0.25 Stump grinding is a poor practice in cemeteries and the Trustees should prohibit such activity in the future.	
	0.26 All tree pruning and removal within the Cemetery grounds should be performed by an ISA Certified Arborist, preferably one who is also an ISA Certified Tree Worker/Climber Specialist.	List provided
	0.27 The Cemetery must remove fallen trees within a reasonable time, completely cleaning the grounds after the work is performed.	
	0.28 All trees must be inspected by an ISA Certified Arborist on a yearly basis and after any significant wind storm.	List provided
	0.29 All Cemetery trees must be pruned by an ISA Certified Arborist to remove dead wood at no greater than five year intervals.	List provided
	0.30 Plantings, whether voluntary or intentional, that interfere with stones or fences must be evaluated on a case-by-case basis to determine appropriate remedies.	
	0.31 When shrubs require replacement, they should be replaced in kind. All plantings should meet the minimum requirements of the American Nursery and Landscape Association's American Standard for Nursery Stock (ANSI Z60.1-2004). All nursery stock should be carefully inspected prior to acceptance and planting.	
	0.32 All shrubs must be pruned by hand. Shearing must not be allowed.	
	0.33 All landscape technicians must be trained on appropriate pruning techniques for the common shrubs in the Cemetery.	
	0.34 No mowers are to be ridden or pushed over stones, especially ledgers, coping, or walls.	
	0.35 Workers will be provided formal training in the use of mowers, trimmers, and other equipment, as well as safe work practices.	
	0.36 Whenever possible Bermuda grass will be abandoned in favor of centipede, which is more easily maintained.	
	0.37 The Trustees should prohibit the creation of graveled plots and an effort should be made to convert currently graveled plots to grass.	
	0.38 No additional plantings will be made in the Colored or Pauper sections.	
	0.39 A sign theme should be developed for the Cemetery using consistent colors and type faces.	

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
Organizational, continued	0.40 The Trustees should establish a policy that all flowers or arrangements will be removed by the Cemetery staff 10 days after holidays or when the arrangements become unsightly. In addition, the policy should require that all floral displays must be placed in vases integral to the stone or that a mounted vase holder be used in order to reduce maintenance issues. 0.41 The Trustees should establish a policy that allows staff to remove all "temporary objects" on graves or in plots when they become withered, unsightly, or an obstruction to maintenance. 0.42 Staff must be responsible for collecting and disposing of trash prior to mowing. 0.43 The Trustees should help preserve the historic context of the Cemetery by ensuring stones are repaired rather than being replaced. Where a new stone is desired to improve legibility, it is good practice to maintain the historic stone and inscribe an exact transcription on a granite stone to be laid flat in front of the old stone. 0.44 The opening of graves for cremains is currently requiring too many staff and the work must be expedited. 0.45 The closing of graves is depositing too much fill and failing to adequately compact the fill, resulting in mounded graves. These are causing poor grass growth. All grave fill must be level with the existing grade. All graves must have sod or seed placed on them to restore vegetation. 0.46 The specifications for setting of monuments are failing to follow the recommendations of the leading industry organization. We have proposed new specifications that will ensure monuments are correctly set and the Cemetery will not be burdened with future sinking and tilting problems. 0.47 The Trustees must take a more pro-active role in overseeing Cemetery staff and outside contractors to ensure that their interests are protected. 0.48 The Trustees should establish minimum insurance requirements for general liability, automobile liability, and workers' compensation. 0.49 The requirement for a surety bond does not seem necessary and should no longer be required. 0.50 Photocopying of records should be done on paper that meets the ANSI/NISO Z39.48-1992, *Permanence of Paper for Printed Library Materials*, standards. This is not necessarily cotton rag paper. 0.51 Files created by scanning should be saved in the PDF/a format and where possible, rendered searchable using OCR.	Specifications provided

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
Organizational, continued	0.52 Copies of the documents should continue to be donated to the Heritage Room at the Athens-Clarke County Library. 0.53 Trustees and Friends must understand that while digital files offer enhanced public access, they are not typically considered archival or permanent. Thus, original paper records should be retained whenever possible. 0.54 Digital photographic preservation involves many of the same issues. Long-term preservation can, however, be achieved using the TIFF format and Archival Gold Disks stored in corrosion intercept enclosures. 0.55 The Trustees must require that all work performed in the cemetery on monuments, fences, or walls be conducted or overseen by a trained conservator who subscribes to the Guidelines for Practice and Code of Ethics of the American Institute for Conservation of Historic and Artistic Works (AIC). 0.56 The Trustees must affirm their responsibility to care for all areas of the Cemetery.	
1st Priority (2014)	1.1 The Trustees should obtain a legal opinion regarding its ownership of the cemetery, as well as reasonable expectations from Athens-Clarke County. 1.2 The Trustees and Friends should begin contacting annual plot care families in an effort to convert them to perpetual care. Those who have dropped the annual care should also be contacted to win them back. 1.3 The Trustees and Friends should revamp the website to maximize it as a sales tool, including information on plot availability, locations, costs, payment plans, and pre-need options. 1.4 The Trustees and Friends should begin integrating community activities at Oconee Hill in order to increase visitation and support. Initially at least one activity a month should be planned and within two or three years several activities per month should be sustainable. 1.5 The cemetery office must be staffed with an individual who can answer consumer calls, provide assistance to visitors, and assume some of the paperwork duties of the sexton. This individual can be paid staff, although it may also be scheduled volunteers or even unpaid interns. Eventually this position must be a paid office manager with cemetery and cemetery sales experience. 1.6 Trustees should test the adequacy of their perpetual care funds. It may be necessary to increase perpetual care charges or else find additional funds to place into the endowment.	

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
1st Priority, continued	1.7 Signage should be erected in the Cemetery limiting the speed limit to 10 mph and warning motorists to "share the road" with bicycles.	$75/sign set
	1.8 Cones closing off the lower road around East Hill should be removed.	
	1.9 One or both of the pedestrian gates in the new section of the cemetery should be opened during the days and hours that the cemetery is open.	
	1.10 The single social trail identified in the office area should be closed by replanting the missing shrub. Staff should be directed to use only approved pathways.	$50
	1.11 All steps in the cemetery must be cleaned on a weekly basis throughout the year.	
	1.12 All steps should be immediately evaluated for ADA compliance. Many of the steps will require resetting or replacement.	$2,000
	1.13 The possibility of mold in the newly renovated Sexton's Cottage should be further evaluated by a certified inspector. If mold is present, it should be removed.	$1,000
	1.14 The Friends should establish an interest bearing maintenance account into which $2,000 a year is deposited for long-term maintenance needs of this and other structures in the cemetery.	$2,000/year
	1.15 The Friends should verify that the Sexton's House has door contacts, glass break, and smoke (fire) monitoring. This should include the basement and first floors.	
	1.16 The Friends should verify with Fire and Emergency Services that the hydrant to the west of the Sexton's Cottage is operational and provides suitable protection.	
	1.17 Materials stored under the Sexton's House porch are poorly organized. Old paint should be discarded; fence parts should be removed, photographed, and restacked neatly, in a more secure area of the basement; stones should also be photographed and inventoried. The stone not belonging at Oconee Hill Cemetery should be returned to law enforcement for disposition.	
	1.18 The interior of the Sexton's Office should be refurbished to provide a reception/work space for an office manager.	$1,000
	1.19 The Sexton's Office, if not already, should also receive intrusion and fire alarm protection, as well as a panic alarm for the office manager.	

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
1st Priority, continued	1.20 The grape arbor should be immediately pruned and integrated into a horticultural workshop series. Consideration should be given to selling cuttings from the arbor as a public relations tool.	Volunteers with experience
	1.21 The logs in the animal pen should be immediately removed.	
	1.22 The ATV in the maintenance building should be moved to the building in the new section of the cemetery, allowing additional floor space to store push mower(s).	
	1.23 Only OSHA approve metal gas cans with flash arresting screens, spring-closing lids and spout covers, and pressure releasing devices should be used by the Cemetery. The use of plastic containers should be immediately discontinued.	$65/can
	1.24 The maintenance building should receive security and fire protection.	
	1.25 If the flag pole is to remain and the flag flown 24/7, then it must be of an all-weather material and must be lighted at night.	$1,000
	1.26 The usefulness of the storage building on the far side of the river is not clear. The push mower in this building should be moved over to the maintenance building where it will be more convenient.	
	1.27 The ivy should be removed from the holding vault and the trees to the left of the tomb pruned to allow more air movement.	Volunteers with experience
	1.28 The iron door to the holding vault should receive immediate conservation treatment.	$5,500
	1.29 The bridge requires inspection every 3 years and the 2012/13 inspection was not made. This should be immediately scheduled.	$5,000
	1.30 The boundary fence should be cleared of all vegetation using a combination of brush killer and hand labor. Once cleared the fence should be inspected and repairs made as necessary.	$6,000 plus repairs TBD
	1.31 All plot gates should have stainless steel cabling used to attach the gate to the hinge post to reduce the potential for theft.	$400
	1.32 The Knox-Box® rapid entry system should be installed at the front and rear gates, and on the Sexton's Cottage and the Sexton's Office. To facilitate this process the structures should be keyed alike and the gates should be keyed alike.	$600

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
1st Priority, continued	1.33 Cemetery equipment should minimally have Owner Applied Numbers stenciled on all equipment in a highly visible location. These numbers and Oconee Hill Cemetery should be etched or stamped in one or more locations on the equipment. All Cemetery equipment should be inventoried and photographed. This inventory should be provided to the insurance carrier to determine that all equipment is covered in case of damage, loss, theft, or mysterious disappearance.	$200
	1.34 When the equipment is stored overnight, it should be chained or, preferably, cabled together to make it more difficult to quickly steal items.	$100
	1.35 Personal or non-owned equipment should not be stored on cemetery property.	
	1.36 All Cemetery keys and padlocks should be numbered. As many as possible should be replaced with keyed-alike padlocks. Duplicate keys should be made and stored in a lock box for which only one or two Trustees have access.	$200
	1.37 The position of Sexton should be discontinued, replaced with a Cemetery Landscape Manager and an Office Manager.	Job descriptions provided
	1.38 The base starting salary for the Cemetery Landscape Manager should be about $40,000.	$44,100/yearly
	1.39 We do not recommend a set monthly mileage payment. These funds should be diverted into the purchase of two utility vehicles for the Cemetery.	
	1.40 We recommend that the Cemetery employ six full-time landscape technicians, two as crew leaders and four as technicians. Detailed job descriptions are provided in our report. The pay scale for landscape technicians should be minimally $9.70, with crew leaders paid minimally $10.70.	Job descriptions provided $139,240/yearly
	1.41 Landscape technician activities require more oversight than is currently provided. Crew leaders should be held accountable for performance with careful oversight of the Cemetery Landscape Manager.	
	1.42 The Trustees should require a monthly report from the Cemetery Landscape Manager. We have provided a simple report format that may assist.	Form provided
	1.43 The Cemetery Landscape Manager must exhibit interest in continuing education. We recommend membership in the International Society of Arboriculture (ISA), as well as landcare organizations such as PLANET or the Georgia Green Industry Association.	

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
1st Priority, continued	1.44 The Trustees should not only provide educational opportunities to its employees to become certified in landscape areas, but must insist on continuing education as a condition of continuing employment.	$2,000/year
	1.45 All employees must undergo rigorous OSHA health and safety training. This is a fundamental requirement of the employer's obligation to provide a safe work environment.	$2,000
	1.46 The Trustees must provide safety equipment such as eye protection, hearing protection, and gloves. Employees must be required to provide steel toed boots, although the Trustees should reimburse a percentage of the purchase after a set period of employment.	$1,500 initial plus $500 annually
	1.47 If uniforms are not provided, the Trustees must establish a stringent dress code to ensure the dignity of Cemetery employees. Recommendations include long pants, t-shirts with no writing or pictures, in order to maintain a professional appearance.	
	1.48 The Trustees have engaged in a program of deferred tree maintenance that has caused significant damage to monuments and the loss of critical overstory trees. This practice must cease. About 45 hazardous and dead trees have been identified in the Cemetery. These require removal (and replacement).	$60,000
	1.49 There are a large number of trees in all sections that require pruning for either thinning or cleaning. Pruning should preserve the natural character of the tree. All pruning must meet the ANSI A300(Part 1) – 2001 standards.	$25,000
	1.50 All weedy plants and vines must be removed from Cemetery shrubs. These shrubs must be inspected on at least a yearly basis to ensure they remain clear of intrusive vegetation.	Volunteers
	1.51 Boxwoods, in particular, throughout the Cemetery require annual thinning. Some are in such poor condition that they require renewal pruning.	Volunteers
	1.52 The use of large deck mowers in Oconee Hill Cemetery is problematical and in the old sections only 21-inch walk behind mowers should be used.	
	1.53 All mowers must have closed cell foam bumpers installed. These must be replaced as needed. Operators with excessive wear on the bumpers should be given remedial training and instruction.	$50/mower
	1.54 Scalping of the grass must be prevented by more careful grave filling and compacting, combined with more careful replacement of sod.	
	1.55 The line weight used on the Toro trimmers is too heavy. All 0.130-inch line must be replaced by a line no greater than 0.065-inch.	

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
1st Priority, continued	1.56 The Cemetery exhibits a severe infestation of fire ants. We recommend a two-step program consisting of broadcast Amdro bait, followed in about 10-14 days by mound treatments where necessary. This treatment should be conducted once or twice per year.	$1,840/year
	1.57 For years debris have been dumped at the edges of the Cemetery in the woods. This has created large areas of dense, unsightly debris. These debris must be pulled out of the woods and shredded or mulched. This material may either be collected, or returned into the woods.	$8,000
	1.58 Erosion is a significant issue along the roads of the Factory Cemetery and West Hill. In these two areas we recommend the construction of interlocking segmental retaining walls.	$92,000
	1.59 The Cemetery requires additional equipment. We recommend the purchase of two (2) utility vehicles, one (1) golf cart, one (1) water tank, two (2) 21-inch commercial mowers, two (2) backpack blowers, one (1) walk behind blower, one (1) commercial 4-inch chipper, one (1) walk behind edger, a supply of by-pass pruners for staff, a supply of VHF radios for crew communication, five (5) Type II 5-gallon gasoline cans, and appropriate safety equipment for employees (the latter two items have already been itemized)	$82,800
	1.60 The current regulation sign requires replacement using a unified theme and new, appropriate regulations. This new signage should be located immediately within the front gates perpendicular to the road. A second regulatory sign should be located parallel to the road at the rear Cemetery entrance.	$3,000
	1.61 Other signs, such as the towing sign, the road stenciled sign, and the numerous “No Trespassing” signs should all be removed as inappropriate for a cemetery setting.	
	1.62 The opening and closing of graves is resulting in spoil being dumped along the edges of the Cemetery. This practice must cease immediately and all spoil piles must be collected and taken to the Cemetery dump.	$2,000
	1.63 There is inadequate supervision by Cemetery staff of grave opening and closing, and monument setting. Staff must do a better job ensuring that the interests of the Cemetery and the families that are placing their trust in Oconee Hill Cemetery are protected.	
	1.64 The original Oconee Hill Cemetery documents should be donated by The Trustees to the University of Georgia Hargrett Rare Book and Manuscript Library. The Cemetery should retain only those records currently being actively used; other records can be accessed using the scanned PDF files.	

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
1st Priority, continued	1.65 The worst soiled stones in the Cemetery should be cleaned using D/2 Biological Solution. This will dramatically improve overall appearance and provide a very visible improvement to the Cemetery landscape.	Volunteers + $2,000 for D/2
	1.66 The North Slope fence requires that the ground be cut back from contact with the bottom rail.	$1,500
	1.67 The North Slope fence requires caulking, priming, and two top coats of an alkyd flat black paint.	$6,500
	1.68 Ten plot fences in the Cemetery are structurally stable, but require caulking, priming, and painting. Gas pipe fences, in contrast, require the application of cold galvanizing. These should be given a very high priority to prevent further deterioration and increased costs of treatment.	$50,000
2nd Priority (2015-2016)	2.1 The Trustees and Friends should carefully review Judson Abbott's thesis, exploring options for improvement.	
	2.2 The Trustees and Friends should begin contacting annual plot care families in an effort to convert them to perpetual care. Those who have dropped the annual care should also be contacted to win them back.	
	2.3 Trustees and Friends should evaluate the size of the available parking area for various proposed events.	
	2.4 Many of the roads require the preventative maintenance of crack sealing/filling. The Athens-Clarke County Engineering Division of the Transportation and Public Works Department may be able to provide assistance procuring suitable contractors.	$10,000/ every 5 years
	2.5 Other roads in Oconee Hill require surface treatments, such as chip seal, in order to prevent further deterioration. The Athens-Clarke County Engineering Division of the Transportation and Public Works Department may be able to provide assistance procuring suitable contractors.	$15,000/every 5 years
	2.6 All of the road edges should be trimmed or edged on a yearly basis.	
	2.7 All existing handrails should be immediately evaluated for ADA compliance. Those not meeting ADAAG requirements should be removed and re-engineered. As soon as practical handles should be added to both sides of all steps. Those steps with no handrails should have handrails installed or the stairs closed to the public. While ADA compliant handrails can be engineered, Oconee Hill may find it more convenient to use pre-engineered component handrail systems.	$650/stair
	2.8 The raised planting bed should be amended and planted for integration in horticultural workshops. An initial planting may focus on traditional cemetery plants, although heirloom herbs may also be appropriate.	Volunteers + $800 in supplies

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
2nd Priority, continued	2.9 The holding vault should receive a more detailed conservation assessment.	$3,000
	2.10 There remain a variety of critical bridge repair needs and these should receive immediate attention.	TBD
	2.11 All of the mausoleums require cleaning. Given the liability large structures pose, we also recommend yearly inspections.	Volunteers + $2,000 for D/2
	2.12 There are benches in the Cemetery that are unsafe. The owners of these amenities should be notified by registered letter to make the benches safe. If they are not, the Cemetery should remove the benches.	
	2.13 At least one Cemetery employee must receive Level 1a training under Georgia's Erosion and Sedimentation Control certification program.	$500
	2.14 We recommend that all staff be provided uniforms through a rental program that will clean and repair uniforms on a weekly basis.	$8,000/year
	2.15 Soil tests reveal that many plant nutrients are being affected by the low soil pH and we recommend that the Cemetery grounds be limed with dolomitic lime, broadcast prior to a rainfall.	$6,700
	2.16 Older, mature trees in the Cemetery should have turf removed from under their drip lines and 3-inches of mulch installed.	$150/tree
	2.17 All ivy growing on trees in the Cemetery must be removed.	
	2.18 Mowing must be conducted with sufficient frequency to maintain turf at a height of 1½-inches. This typically requires mowing at two-week intervals during the growing season.	
	2.19 Sunken graves must be infilled on an annual basis.	$50/grave
	2.20 All mowers should have mulching blades installed. All blades must be sharpened weekly.	
	2.21 The Cemetery operates a dump area that is poorly maintained. Immediate steps must be taken to improve its condition. Granite stone and brick should be neatly stacked in individual piles. Broken or discarded stones should be collected in one area. Soil piles should be combined. The large quantities of vegetative debris should be shredded or mulched into a large pile that can be used to mulch under trees in the Cemetery.	
	2.22 The zinc monument should receive conservation treatment.	$8,000

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
2nd Priority, continued	2.23 Leaf management in the Cemetery must be improved. The Cemetery should explore whether the Atomic Replacement Blade can be used on the current mower models. This is an especially sharp blade designed to work with the Toro Recycler Cutting System, chopping clippings into find mulch and returning them to the ground.	
	2.24 Additional small trees (under 4-inch caliper) in the Colored and Pauper Sections should be removed and shredded on-site to provide mulch to those areas.	$3,500
	2.25 The current entrance sign should be replaced with a new sign located outside the gates, allowing visitors to more easily identify the cemetery.	$2,000
	2.26 The current roadside historical marker for the cemetery should be removed to East Campus Road, allowing it to be accessed by more individuals.	$300
	2.27 "Orphan" stones should be documented using a form and collected for short-term safe keeping until their appropriate location is identified through research. In so far as possible, stones should not be allowed to become disassociated with their graves as this effectively loses the grave location.	Volunteers
	2.28 Drainage sumps or collection basins should be cleaned of trash, leaves, and silt yearly. Above grade ditches should be carefully mowed on a regular basis. Stone-line ditches should be periodically repaired to ensure that they function properly and maintain their historic integrity.	
	2.29 In several areas wood curbs are badly deteriorated and should be removed by the Cemetery staff.	
	2.30 In other areas unattractive and potentially hazardous wood and metal walls have been added to control very minimal sheet erosion. These plots should have these features removed, be contoured, and new sod installed to rectify the problems.	$450/plot
	2.31 The Oconee Hill Cemetery records not yet photocopied and scanned should be as soon as practical.	Volunteers + $600 rental and supplies
	2.32 Records held by the Trustees should be evaluated for archival significance and, if preservation is warranted, we recommend donation to the University of Georgia Hargrett Rare Book and Manuscript Library.	
	2.33 While a stone-by-stone assessment might further refine stone treatment priorities, high priority treatments include the nearly 650 stones at Oconee Hill Cemetery that require resetting for the safety of the stone and the public.	$260,000

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
2nd Priority, continued	2.34 The roughly 32 walls in failure should receive a high priority for rebuilding and it may be most cost-effective to let contracts for multiple walls at one time, with oversight by a conservator.	$384,000
	2.35 Eleven plot fences in the Cemetery are unstable and require extensive rehabilitation prior to painting. Each of these fences should receive detailed conservation assessments to determine appropriate treatments.	$5,000
3rd Priority (2017-2018)	3.1 Historic research should focus on the corporate and legal history of the Trustees in order to better explore the relationship between the City and the Board.	
	3.2 The cemetery should prepare a disaster plan to cover events such as flooding, tornadoes, loss of the bridge, and other events.	
	3.3 The Trustees should obtain a legal opinion regarding the applicability of municipal laws such as trespass, open containers, and intoxication to the Oconee Hill Cemetery grounds. If it is found that any provisions do not apply, the Council should be petitioned to amend the laws to ensure they can enforced on the cemetery property.	
	3.4 The concrete entrance curbs should be repaired prior to additional deterioration.	$10,000
	3.5 A few of the roads have deteriorated to the point that they require the use of an overlay or possibly a mill and overlay treatment. The Athens-Clarke County Engineering Division of the Transportation and Public Works Department may be able to provide assistance procuring suitable contractors.	$60,000
	3.6 The asphalt pathways in East Hill should be removed and replaced with grass.	$900
	3.7 Future consideration should be given to establishing grass tracks underlain by a reinforcing system to achieve ADA compliance on selected pathways of appropriate widths and low slopes with road access.	
	3.8 The exterior of the Sexton's Office will require maintenance, such as new flashing and a roof, within the near future.	$800
	3.9 An effort should be made to identify a useful function for the well house. One suggestion is an open air kiosk containing a map of the cemetery and literature for the public.	
	3.10 The maintenance building in the new section of the cemetery should be evaluated for maintenance needs, with special attention to the flat roof system.	

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
3rd Priority, continued	3.11 The boundary fence should be extended along the front railroad tracks for an additional 50 to 100 feet.	$2,000
	3.12 Additional soil tests should be conducted in 2017, after liming, to determine if additional treatments or fertilization are needed.	$75
	3.13 At least 47 stumps are present in the cemetery. These require cutting to ground level.	$550
	3.14 Both the centipede and Bermuda turfs exhibit extensive weed invasion. The Cemetery should institute a weed control program, using pre- and post-emergent herbicides.	$7,000 per application
	3.15 The Cemetery requires the installation of hose bibs with sufficient frequency that no more than 200 feet of hose would be required for spot watering. This will allow resodding of graves and seeding of bare spots.	$45,000
	3.16 Lawn renovation should be undertaken in areas of bare soil, moss, and compacted soil.	$8,000
	3.17 Core aeration should be conducted in selected areas of the Cemetery, focusing on compacted areas, bare soil areas, and moss covered areas. This should be following by reseeding.	$3,000
	3.18 Where mowing to mulch leaves is not an option, a walk behind blower will more quickly and efficiently move leaves than the current use of mowers and backpack blowers.	
	3.19 A map of the cemetery should be installed either in the vicinity of the Well House or at the toe of the slope of East Hill. It should be mounted to be viewable from an automobile. Eventually a second map should be located in the new section of the Cemetery.	$5,000/map
	3.20 Themed directional signage should be installed, as well as themed Section signage. The old (and historic) Section signage should remain.	$10,000
	3.21 The Cemetery would benefit from two or three vandal resistant trash receptacles.	$1,500
	3.22 Below grade drains have never been cleaned and many are badly clogged with sediment. These require cleaning using a snake or a high pressure water jetting device. During this operation the drain line locations should be documented using a metal detector so the lines can be added to a GIS-based Cemetery map.	$21,000

Table 17.
Prioritization of Recommendations, continued

Priority	Action	Cost Estimate/ Notes
3rd Priority, continued	3.23 Plot curbs or coping throughout the cemetery is in deteriorating condition, posing a hazard to the public and detracting from the beauty of the Cemetery. The repair of these curbs (11 concrete block, 50 stone, and 31 brick) must be viewed as routine maintenance and must be integrated into the maintenance plan.	$25,000
	3.24 Monuments evidencing iron jacking require conservation treatments.	$40,000
	3.25 Broken monuments require repair.	$73,500
	3.26 Walls in poor condition should receive repairs. Walls currently in satisfactory condition should be placed on a maintenance program with 10 evaluated and repaired as needed every year.	$372,000

Sources Cited

Abbott, Judson S.
2012 *Oconee Hill Cemetery: Envisioning A Living Landscape.* Unpublished M.A. Thesis, University of Georgia, College of Environment and Design, Athens.

Andrews, K., H. Dejong, A. Guzman, M. Ingram, S. Lewis, K. Lyons, A. Wilson, and E. Yona
2010 Friends of Oconee Hill Cemetery: Final Project. Ms. on file, Grady College of Journalism and Mass Communication, University of Georgia, Athens.

Anonymous
1946 *Historical Sketch of Oconee Hill Cemetery With Supplementary Information Relating to Its Operation*. n.p., Athens.

1963 *To Bury the Dead*. Brothers of St. Joseph, Oklahoma City, Oklahoma.

Atwood, Rosanne, Jeffrey Kelly, and Ellen Lipsey
1989 *The Boston Experience: A Manual for Historic Burying Grounds Preservation*. Second Edition. City of Boston, Boston Parks & Recreation Department, Boston.

Duncan, Janine L.
2013 *Oconee Hill Cemetery*. Ms. on file, Board of Trustee for Oconee Hill Cemetery, Athens.

Edwards, Garrick
2009 *Bridge Repair and Rating Report. Carrs Hill Road over Yellow River* [sic], *Oconee Hill Cemetery, Athens, Georgia*. HMM# 268689. Ms. on file, Friends of Oconee Hill Cemetery, Athens, GA.

E.G.A. Certified Memorials Program
n.d. *Techniques for Erecting Granite Monuments*. Elberton Granite Association, Elberton, Georgia.

Firth, Ian, K. Chastine, R. Hart, R. Hildebrandt, J. Holder, J. Sager, P. Stallings, and M. Temples
2001 Oconee Hill Cemetery: Analysis and Treatment. Ms. on file, EDES 7350, Landscape Management, University of Georgia, School of Environmental Design, Athens.

Klupar, G.J.
1962 *Modern Cemetery Management.* Catholic Cemeteries of the Archdiocese of Chicago, Chicago.

Lilly, Sharon J.
2001 *Arborists' Certification Study Guide*. International Society of Arboriculture, Champaign, Illinois.

Llewellyn, John F.
1998 *A Cemetery Should Be Forever: The Challenge to Managers and Directors*. Tropico Press, Glendale, California.

Marshall, Charlotte Thomas
2009 *Oconee Hill Cemetery of Athens, Georgia*. Vol. 1. Athens Historical Society, Athens.

Merkle, John and Sons
1917 Sizes of Foundations. In *The Cemetery Hand Book: A Manual of Useful Information on Cemetery*

Development and Management, pp. 473. Park and Cemetery Publishing, Madison, Wisconsin.

Moffson, Steven
2013 Oconee Hill Cemetery National Register of Historic Places Registration Form. Ms. on file, Georgia Department of Natural Resources, Historic Preservation Division, Atlanta.

Reap, James
2011 Oconee Hill Cemetery - Athens, GA: A Report on Advocacy Strategies for the Cemetery. Ms. on file, HIPR 6720, Preservation Advocacy, University of Georgia, College of Environment and Design, Athens.

Robertson, Stanley M.
1968 *Soil Survey of Clarke and Oconee Counties, Georgia*. U.S.D.A., Soil Conservation Service, Washington, D.C.

Ruskin, John
1989 *The Seven Lamps of Architecture*. Dover Publications, New York.

Sloane, David C.
1991 *The Last Great Necessity: Cemeteries in American History.* John Hopkins University Press, Baltimore.

Trinkley, Michael and Debi Hacker
2006 *Preservation Assessment and Plan for the Old Athens Cemetery, Athens, Georgia*. Research Contribution 459. Chicora Foundation, Inc., Columbia.

Walker, Clifford
1917 *Report and Opinions of the Attorney-General of Georgia from June 15, 1915 to December 31, 1916*. Index Printing Company, Atlanta.

West, Myron H.
1917 Establishing a Successful Cemetery Business. In *The Cemetery Hand Book: A Manual of Useful Information on Cemetery Development and Management*, Second Edition, pp. 21-26. Park and Cemetery Publishing Co., Madison, Wisconsin.

Cemetery Preservation Plans

Historical Research

Identification of Grave Locations and Mapping

Condition Assessments

Treatment of Stone and Ironwork

Chicora Foundation, Inc.
PO Box 8664 ▪ 861 Arbutus Drive
Columbia, SC 29202-8664
Tel: 803-787-6910
Fax: 803-787-6910
www.chicora.org