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Town of Carrboro

Westwood Cemetery Design Services

Prepared for the Town Council
Town of Carrboro, North Carolina



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Town of Carrboro

Westwood Cemetery Design Services

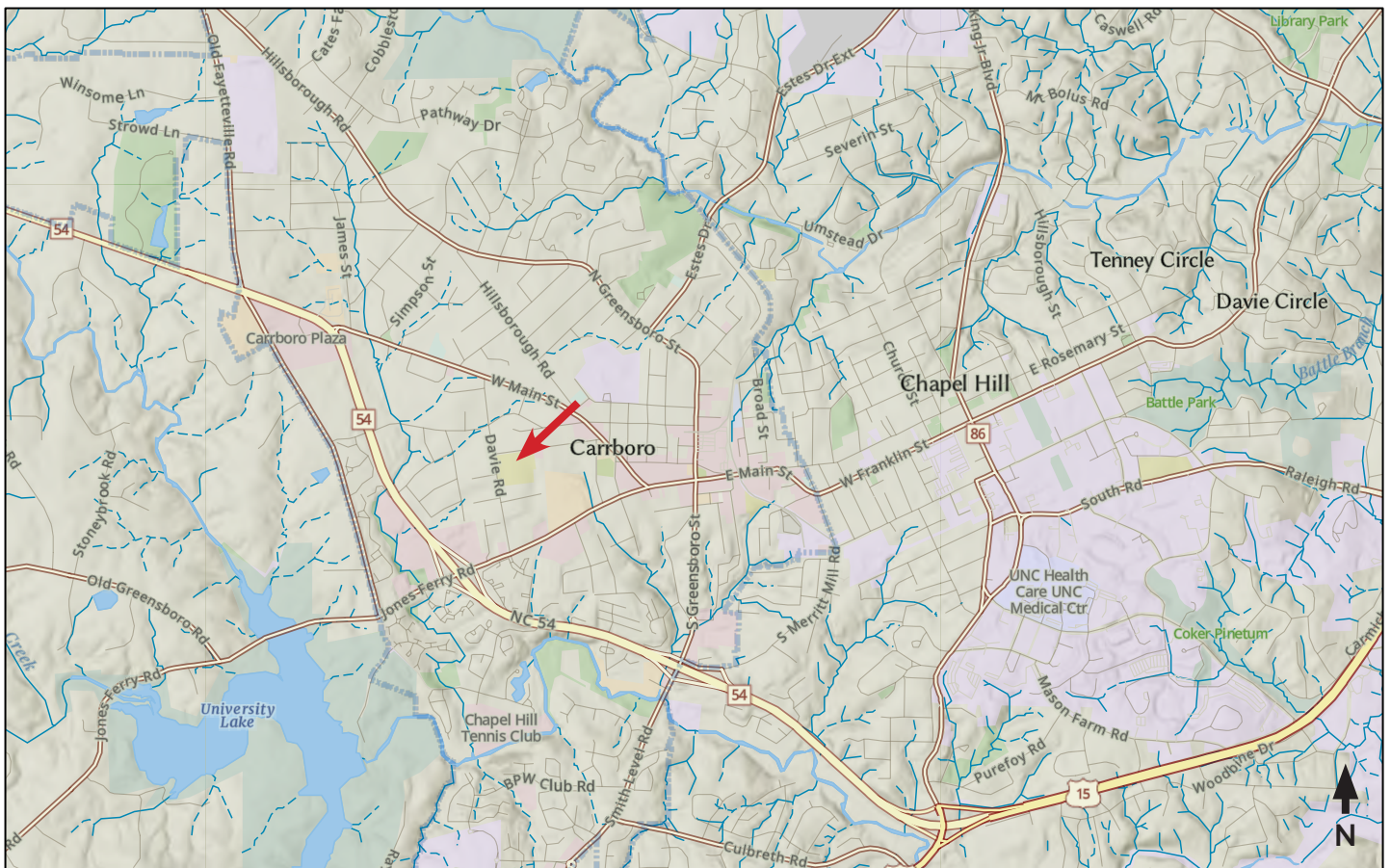


Figure 1 Regional context map. Red arrow indicates location of Westwood Cemetery. Not to scale. (<https://tocgis.ci.carrboro.nc.us/>)

Introduction and Background

a. Town of Carrboro

Carrboro, North Carolina, was first settled in 1882, and was originally known as West End, due to its relationship to the neighboring town of Chapel Hill. The Town was incorporated in 1911. It is named for Julian Shakespeare Carr, the owner of the textile mill that was the Town's dominant industry for its first fifty years. Carrboro is now a diverse municipality of over 20,000 residents, which supports a vibrant arts and cultural community and economy.

The Town's outdoor recreation facilities, parks, and greenways cover 110 acres. In addition, the Town owns two public cemeteries, maintained by the Public Works Department: Old Carrboro Cemetery, established around 1860, and Westwood Cemetery, established around 1933.

b. Westwood Cemetery

Westwood Cemetery is an active burial cemetery, owned and managed by the Town of Carrboro. The cemetery is located at 401 Davie Road, Carrboro, NC 27510, at the corner of Fidelity Street, in an R10 zoning district. The surrounding land use is primarily residential, though at the opposite end of the block Fidelity Street meets Main Street in the main business district. Currently only conventional casketed and cremains in a 4' by 12' plot are permitted.

The total land area is 8.73 acres. The cemetery is divided into four sections:

Zone 1: 1.18 acres and contains 860 plots, of which 10 plots are available

Zone 2: 1.05 acres and contains 608 plots, of which 16 are available

Zone 3: 0.5 acres and contains 763 plots, of which 302 are available (Note: Zone 3 is larger, however part of the section is within the tree line and the cul-de-sac.)

Zone 4: 2.4 acres of undeveloped land

The remaining 2.4 acres of the site is wooded.



Figure 2 Westwood Cemetery zones map. (Carrboro RFP)

c. Current Project

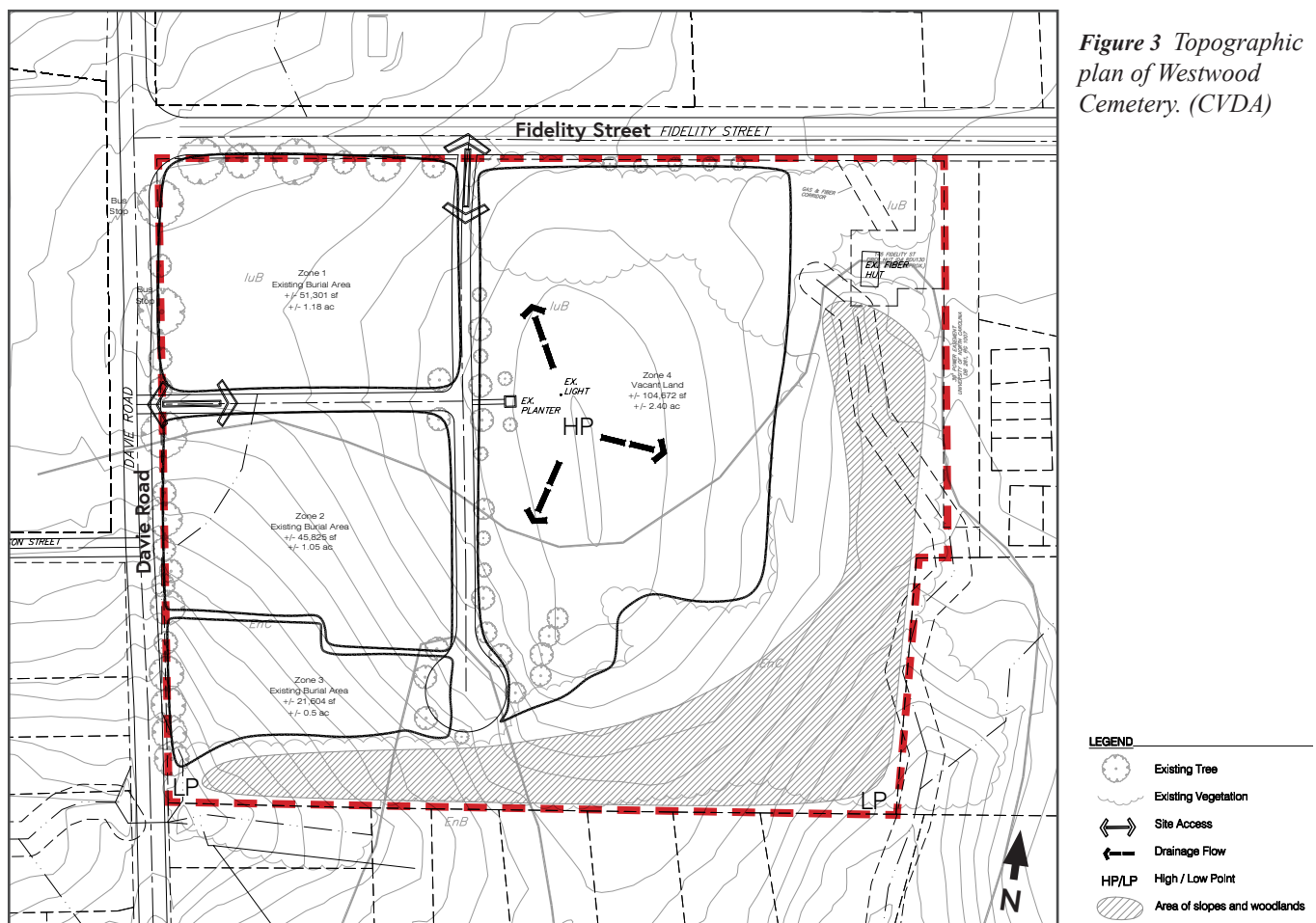
In July of 2020, the Town of Carrboro engaged a team led by Carter van Dyke Associates (CVDA) to develop a plan to guide future development and expansion of Westwood Cemetery.

CVDA is a landscape architecture and planning firm and has been providing cemetery planning and design for the past 27 years. CVDA is the prime consultant and has worked closely with locally based subconsultants to develop this report.

Taylor Wiseman & Taylor (TWT) is a civil engineering and survey firm, with offices in North Carolina, and has provided site analysis, focusing on site circulation, development costs, irrigation and site drainage. TWT assisted CVDA in the review of laws and codes.

Terracon, also with an office in North Carolina, provided geotechnical analysis, developing the geotechnical subsurface investigation for the site. Test borings assisted in determining the suitability of areas of the site for interments, and are used to determine the design of walls, walks and roads.

With the support of the subconsultants, CVDA has completed a statutory review, analyzed the existing site conditions, and provided a master plan for land use and landscaping, including expanded opportunities for burial options.



Statutory Review and Compliance

The Carrboro Town Code, Chapter 13 Cemeteries, addresses the general regulations, the designation and sale of lots and spaces, the installation and design of structures and memorial markers, and the nature of burials allowed within the two Town-owned and operated cemeteries, Westwood Cemetery and Old Carrboro Cemetery. Certain regulations (Sections 13-3, 13-4, 13-5 and 13-6) apply to all cemeteries within the Town borders. (See Appendix 1 on page 31 for Carrboro Town Code Chapter 13 Cemeteries.)

This plan for future development complies with existing code requirements or recommends revisions to accommodate proposed changes. For example, the code currently limits interments to conventional burials or burials of cremated ashes within a 4' by 12' burial space. This plan proposes creating additional burial options that will need to be addressed by revising language in the code. The Consultant Team suggests the following revisions to the Town Code be considered by Council.

a. Legal Compliance and Recommendations

Article I Definitions; Application

Section 13-1 (Definitions) should be expanded to include terms to describe new burial options, such as columbarium, niche, ossuary, and scattering garden, as well as the associated markers or memorial plaques. The definition of “Burial Space” may need to be revised to address dimensions and use.

Article III Designation of Sale of Cemetery Lots and Spaces

Section 13-11 (Cemetery Map Required) describes the requirement for an official map maintained by the clerk depicting the location and dimensions of all lots and spaces within a Town-owned cemetery.

The proposed addition of new burial options would require a revised map indicating additional conventional burial spaces, natural burial spaces, columbarium niches, an ossuary, and a scattering garden.

Subsection (a) refers to maintaining “adequate spacing” between natural burial lots or spaces. This spacing should be defined in the code.

Section 13-12 (Purchase of Burial Rights), subsection (d), limits the use of each burial space. A burial space is defined as “A parcel of ground within a cemetery lot having the dimensions of 4 feet by 12 feet, and the usage of each burial space shall be limited to one of the following: (1) the interment of one human body; (2) the interment of one human body and one cremation urn; or (3) the interment of no more than

four cremation urns.”

With the proposed addition of new burial options, such as a columbarium, and ossuary, and a scattering garden, the definition of “burial space” should be revised. Double depth burial vaults had previously been discussed as an option, but due to the shallow depth to bedrock within the cemetery, this type of burial is not being proposed in the plan.

Article IV Mausoleums, Monuments, Markers, and Coping/Curbs or Fencing

Section 13-17 (Mausoleums) limits the erection of mausoleums, tombs, buildings, or other structures of any kind to lots designated on the plat and plan of the Town’s cemeteries to be used exclusively for that purpose.

The proposed construction of a columbarium and ossuary structure should be incorporated into the Town’s approved plan for the cemetery.



Figure 4 A typical grave site in Zone 2, with headstone monument and footstone markers. (CVDA)

Section 13-18 (Monuments) and **Section 13-19 (Markers)** define the type of memorial stones and plaques that can be installed in the ground to mark a conventional or natural burial.

Memorial markers for the new burial options should be considered. Columbaria often have uniform designs and a granite or bronze plaque on each of the niches. If scattering gardens and an ossuary are constructed, then a memorial wall would be included in the plan to allow memorial plaques to be attached.

Note: Coping/curbs and Fencing is not currently addressed in this Article.

Article V Burials

This Article only addresses conventional and natural burials. With the proposed addition of new burial options, details of columbarium and ossuary interments and scattering gardens should be included.

Section 13-21 (Interment or Disinterment), subsection (e), requires excess dirt that remains following an interment to be hauled away. Currently, a “spoils” pile exists to the east of the cul-de-sac in Zone 4, where excess soil from dug graves is piled. The spoils pile is unsightly and causes erosion and muddy runoff across the drive, as well as damage to turf areas. The code requirement for removal should be enforced.

In a natural burial, the entire volume of soil is returned to the grave, creating a slight mound, which naturally subsides with time and natural decomposition of the body. The soil is not necessarily hidden from sight, as

is required by current code.

Section 13-23 (Minimum Depth of Graves), subsection (a), requires graves be dug to a minimum depth of 5 feet for conventional burials and 3.5 feet for natural burials. The proposed master plan would conform to these requirements.

Subsection (b) allows for soil mounding in natural burials, but requires conventional graves to be filled and leveled with the surrounding area.

Section 13-24 (Grave Liner or Vault Required) requires a grave liner or vault to hold a casket for all graves, excluding natural burials. This section could be redefined to apply only to “conventional in-ground burials” to allow for natural burials, in-ground interment of a cremation urn or box, and above-ground structures.

Under this section, natural burials are only allowed in Old Carrboro Cemetery. This section should be revised to allow natural burials in Westwood Cemetery as well.

b. Review of Existing Cemetery Rules and Procedures

The Consultant Team recommends that the cemetery regulations be reviewed. Cemeteries were historically the first landscaped open spaces, and people would visit cemeteries for family outings and even picnics. While loitering may be prohibited, the Town may want to invite visitors in to enjoy the new site amenities, such as trails and benches. Regulations can be written to enforce a respectful atmosphere while also allowing some recreational use of the space.

Article II General Regulations

Section 13-4 (Disruptive Activity Prohibited) limits the use of any cemetery within the Town to activities consistent “with the use of a cemetery as a cemetery.” Subsections (b), (c), and (f) prohibit recreational access to or use of cemeteries, including driving or parking in a cemetery other than when attending a burial or visiting a grave, dog-walking, and picnicking, jogging, playing games, or other active and passive recreational activities.

With the proposed introduction of walking paths and benches into the cemetery, the Town can choose to invite people into the cemetery to enjoy the landscape and natural area, to pause to rest or contemplate, and to make use of an public green space within the town core. The Town could consider revising this section to allow some recreational access and activities within cemeteries, and to allow private cemeteries to impose more restrictive rules if desired.



Figure 5 Sign posted in Westwood Cemetery, displaying the current rules against recreational activities. (CVDA)

Section 13-5 (Desecration of Public and Private Cemeteries) protects any cemetery within the Town from desecration from trash or litter and from damage to plants, landscaping, and ornaments.

Only one trash receptacle currently exists on the Westwood Cemetery grounds. Subsection (1) is unclear in its phrasing regarding the use of trash or recycling receptacles and could be revised to encourage their use and to discourage illegal littering and dumping. If more visitors are encouraged to use the cemetery, trash receptacles should be available to them. (Note: the subsections are numbered rather than lettered.)

Dumping is currently a problem along the southern property edge and should be addressed.

Section 13-8 (Trees, Plantings, Landscaping), subsection (a), limits planting, pruning, and removal of any plants in the Town-owned cemeteries to the administrator. The proposed introduction of natural burial sites and a scattering garden increases the complexity of landscaping in grave areas. Families of the deceased who are buried or whose ashes are scattered there may wish to have more direct influence in that landscaping by planting and tending to flowers or shrubs, for example. Subsection (a) could be revised to encourage or allow for more public interaction with plantings.

Site Analysis

a. Introduction

CVDA and subconsultants Terracon Consultants and TWT have completed a site analysis of Westwood Cemetery, reviewing geologic and hydrologic conditions, existing land use, vehicle and pedestrian circulation through the site, site amenities, drainage systems, and landscaping. Terracon's subsurface exploration and geotechnical engineering recommendations will guide future land use, earthwork, and the design and construction of foundations for structures.



Figure 6 Neighborhood context of Westwood Cemetery. (Google Earth)

b. Geotechnical Engineering Services

See Appendix 2 on page 43 for the complete Geotechnical Engineering Report by Terracon Consultants, Inc.

Terracon's geotechnical engineering report presents the results of our subsurface exploration and geotechnical engineering services performed for future site improvements of Westwood Cemetery located at 401 Davie Road in Carrboro, Orange County, North Carolina. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

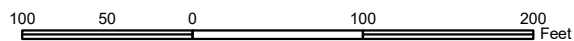
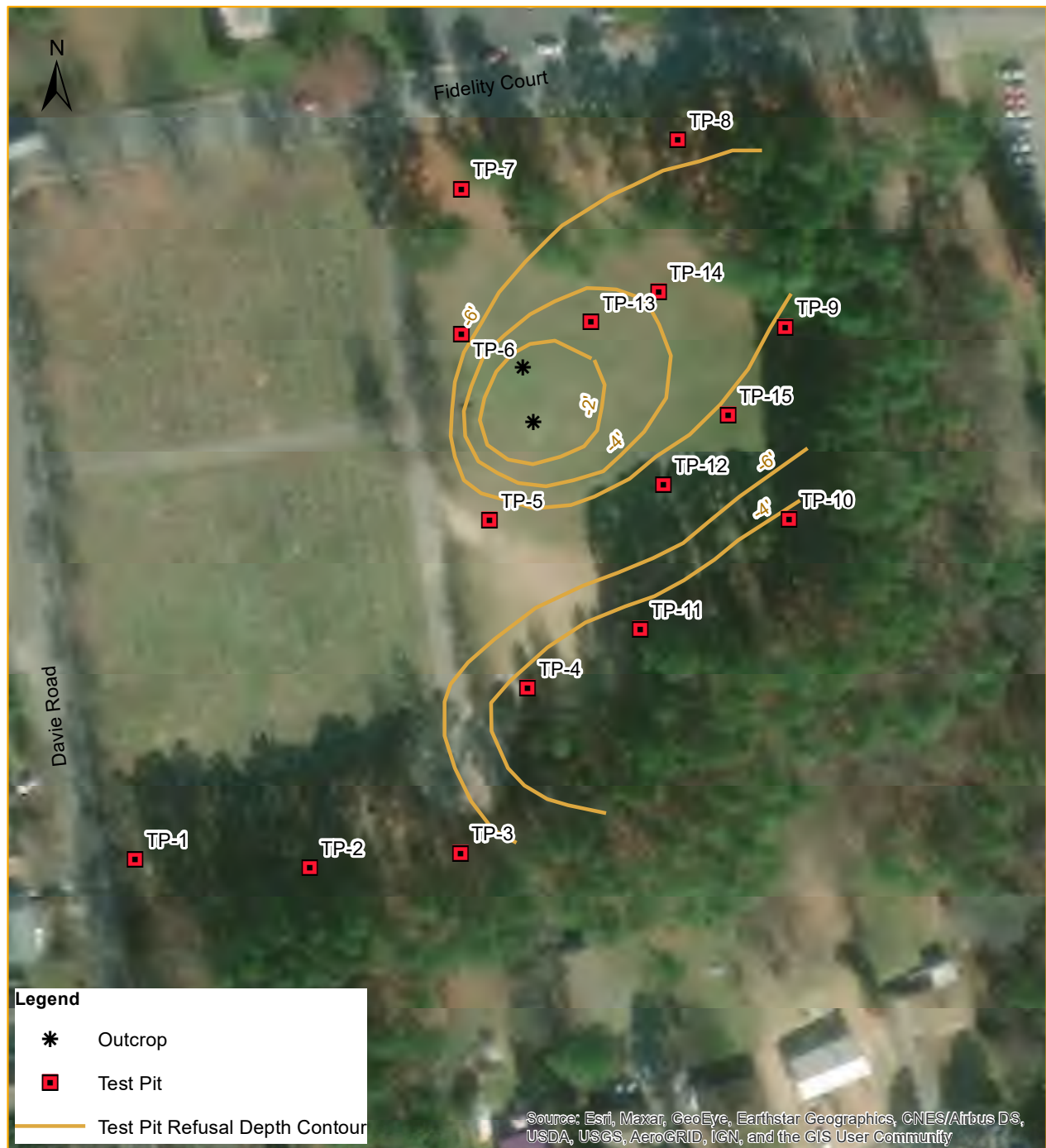
- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Foundation design and construction

Fifteen test pits were excavated. (See Figure 7 on page 9, Exploration Plan.) Test pits TP-4, TP-10, TP-11, TP-13, and TP-14 encountered bedrock refusal at depths less than six feet. Shallow bedrock may limit available usable space for new interment sites. Two locations with granite outcrops were found in the central portion of the site. The majority of the ground surface is relatively flat; however perimeter areas slope moderately downward to the south and east.

EXECUTIVE SUMMARY

The following geotechnical considerations were identified:

- As observed at test pits TP-1, TP-3, and TP-11, a thin, discontinuous layer of existing silty/clayey sand fill is present at scattered locations across the site. Below existing fill (if present), native residual soils were found to consist of silty/clayey sand, which were observed to extend to depths of 3 feet to at least 8 feet below the existing ground surface.
- Test pit excavations encountered backhoe refusal, due to the presence of partially weathered rock (PWR) or intact bedrock, at eight of fifteen test pit locations. Surface contours indicating depth to backhoe refusal is shown on the Exploration Plan. Groundwater was not observed in test pit excavations. Further details regarding subsurface conditions are summarized in Geotechnical Characterization.
- Foundation support of possible small grade level structures, such as columbaria, or other small memorial structures, can be founded upon properly prepared subgrade consisting of soil (residual soils or structural fill), or properly prepared subgrade consisting of PWR/bedrock. The Shallow Foundations section addresses support of the small grade level structures on approved subgrade. Foundation subgrade for any structure should consist entirely of either type of subgrade, and not partially on soil subgrade and partially on PWR/bedrock subgrade. We recommend footing excavations to be inspected by Terracon for suitable preparation of bearing conditions.
- Support of foundations or new earthfill on or above existing fill materials is discussed in this report. However, even with the recommended construction procedures, there is an inherent risk to the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by following the recommendations contained in this report.



PM: MW	Project No. 70205044		Exploration Plan - Aerial	EXHIBIT NO.
Drawn By: MW	Scale: 1 in = 100 ft		Westwood Cemetery	
Checked By: AAN	File Path:		401 Davie Road	
Approved By:	Date: 9/14/2020		Carrboro, North Carolina	
		<small>2401 Brentwood Drive, Suite 107 Raleigh, NC 27604 Phone: (919) 873-2211 Fax: (919) 873-9555</small>		

Figure 7 Terracon Test Pit Exploration Plan

To take advantage of the cost benefit of not removing the entire amount of undocumented fill, the owner must be willing to accept the risk associated with building over the undocumented fills following the recommended reworking of the material.

- Terracon should be retained during site earthwork to perform the necessary testing and observations during cut excavation, subgrade preparation, proof-rolling, placement and compaction of controlled fills, and backfilling of excavations to the planned subgrades.

c. Circulation and Access

The cemetery sits at the intersection of two local streets: Fidelity Street runs along the northern border of the cemetery, and Davie Road is the western border. To the south, the cemetery property borders residential backyards. To the east, the property borders a medical office and more residential properties. In the northeast corner of the property is a telecommunications structure and access easement.

Two internal cemetery drives south off of Fidelity Street and east off of Davie Road provide vehicle access. The two drives intersect, and the drive coming south from Fidelity Street extends almost to the property



Figure 8 Aerial view of Westwood Cemetery and existing features. (Google Earth)

line and ends in a cul-de-sac or turnaround that extends into Section 3 of the burial grids. The cemetery drives are paved with asphalt, with no curbs, and appear to be recently paved. The driveway entrances are paved differently, and should be consistent. Vehicle parking is available along the drives. The cemetery is bordered by sidewalks along Fidelity Street and Davie Road, but there are no sidewalks or walkways within the cemetery. A bus stop is located on the property across from the apartment complex at 400 Davie Road.



Figure 9 The main entrance to the cemetery, from Fidelity Street, looking south. The spoils pile is visible in the background. (Google)



Figure 10 The entrance to the cemetery from Davie Road, between Sections 1 and 2, showing recent asphalt patching, and the sidewalk and driveway apron. The driveway apron is not separated from the adjacent sidewalk and does not have curbing. The sidewalks do not continue into the cemetery. (CVDA)



Figure 11 Erosion and root damage are visible along the south side of the driveway apron at Davie Road, in Section 2, looking east. (CVDA)

The cemetery is not fenced. It is open to the adjacent streets, and existing trees are planted quite close to the property line. In some places, the tree roots have caused upheaval damage to the adjacent sidewalks. Town code allows graves to be dug as close as twelve inches to a property line.



Figure 12 Mature trees growing close to the road along the property line have damaged the sidewalk. (CVDA)

d. Spatial Organization, Site Furnishings, and Signage

CVDA visited the site and reviewed the existing amenities and furnishings. There is one monumental sign located on the east side of the Fidelity Street entrance. The sign is constructed with brick and has a granite inset, and there is some cracking in the mortar of the brick joints on top. The base of the sign is surrounded by a timber-edged planter, planted with annual flowers, and a small wooden retaining wall runs along the township sidewalk.



Figure 13 Sign and planter at Fidelity Street entrance, edged with timbers and planted with seasonal flowers. (CVDA)



Figure 14 Timber retaining wall along sidewalk. (CVDA)

The cemetery offers few amenities for visitors. There are no benches or informational signage. In the center of the site, there is a cluster of site furnishings: there is one trash receptacle, which is the Town of Carrboro standard metal drum with a dome top on a swivel. There is one “rules” sign posting the section of the Town of Carrboro code Section 13-4f. Adjacent to the rules sign is a light pole and a small raised brick planter with a water spigot.



Figure 15 (Top left) The only existing trash receptacle is a standard drum with dome lid. (CVDA)

Figure 16 (Top right) The sign posting cemetery regulations. (CVDA)

Figure 17 (Bottom left) The raised brick planter, with yard hydrant. (CVDA)

Figure 18 (Bottom right) The light pole, with planter and sign visible. (CVDA)

e. Wayfinding and Information, Directional Signage, and Interpretation

Other than the entrance sign and the sign stating the cemetery regulations, there is no existing wayfinding or informative signage. As development of the cemetery proceeds additional wayfinding and signage will be required. A mobile application could be used to facilitate grave location. The inventory of burial sites should be continually updated in the Township’s GIS mapping.

f. Drainage Systems

Currently there are two 12"x12" drain inlets along the internal drive that are connected and drain to the west to the underground stormwater system at Davie Road.

A drainage issue exists along Fidelity Street where street tree roots have pushed up the grade near the trees and have caused an area of ponding. There is a drain through the curb near this area, and a small inlet could be installed to connect to that pipe to drain the area.

Soil erosion occurs on-site due to the activities of funeral homes. The unpaved access path to the spoils disposal area has eroded and muddy run-off drains across the internal cul-de-sac drive and into the adjacent burial area.

One other item to note is the four observation wells found on site. The purpose and history of these wells isn't fully determined, but it is believed that the wells were installed to monitor for possible chemical leachate from a former dry cleaning business at 127 Fidelity Street, and that the wells were decommissioned in the late 1990s. The Township Planning or Public Works divisions may have permitting paperwork relating to these wells.

As part of the master planning for the cemetery, the Town should assess the need for professional engineering services to address drainage issues.



Figure 19 Interconnected drain inlets leading to the stormwater system at Davie Road. (CVDA)



Figure 20 On Fidelity Street, tree roots create a ponding issue that could be resolved by connecting an inlet to the existing drain pipe. (CVDA)



Figure 21 Loose soil in the spoils pile erodes in rain storms. This area was graded and cleaned up in November 2020. (CVDA)

g. Landscape

Vegetation

The existing landscaping is composed of Callery pear trees, red maples, crape myrtles and a few oak trees. Mature street trees line Fidelity Street and Davie Road and the north-south internal drive. The condition of many of the trees is poor, and they should be evaluated by an arborist to protect the safety of the public.

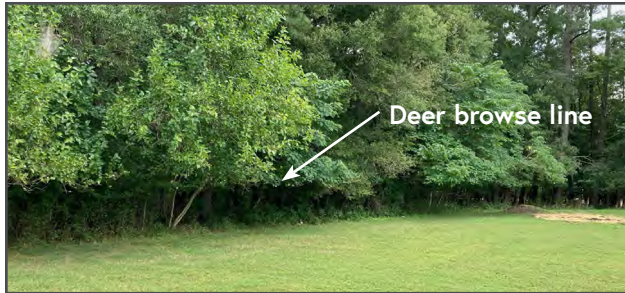


Figure 22 Heavy deer browse is evident in the woodland to the east in Zone 4. (CVDA)

The woodland areas to the east and south are composed of oak trees, southern yellow pine, a few hollies, and Callery pears that have seeded from existing on-site trees. Callery pears are a short-lived species and are considered invasive.

CVDA observes that the overall condition of the turf is marginal. The site is not currently irrigated.



Figure 23 Woodland is mostly open with no understory plants; excavated boulders from graves. (CVDA)



Figure 24 Existing mature pine trees near Fidelity Street in Zone 4. (CVDA)



Figure 25 Mature pear trees along interior drive along edge of Zone 4. (CVDA)



Figure 26 Contractor damage to the turf in Zone 4 and resulting erosion. (CVDA)



Figure 27 Bedrock is visible through the soil at the high point of the site. (TWT)



Figure 28 Tires and household trash in the woodlands in the south of the site. (CVDA)

Soils and Landforms

The site is located on a gentle hill, with the high point near the current location of the light post in the center of the site, in Zone 4. The land slopes downward moderately to the south, with low points in the southeast and southwest corners.

There are granite outcrops visible in the lawn in Zone 4, where the depth to bedrock is very shallow. Test pits excavated by Terracon encountered bedrock refusal at depths less than 6 feet in five locations. Excavated boulders have also been moved into the wooded areas around the edge of the property.

See Appendix 2: Geotechnical Engineering Report by Terracon Consultants, Inc., on page 43 for a detailed investigation of the physical properties of the site.

Burial Spoils Area

The funeral homes that dig the graves have been driving across the turf and piling spoils on site for years. The turf and cemetery sections have been damaged by this activity. Town Code Article V Section 13-21(e) states all excess dirt is to be hauled away and the turf leveled, other than in natural burial areas. The Department of Public Works is working to address this issue.

Dumping

Along the southern property line, there is evidence of dumping, which is prohibited according to Town Code Article II Section 13-5(1). Brush cuttings, lawn waste, and trash cover the ground in the woodland behind the residential properties.

Utilities

The Cemetery is serviced by an overhead electric line for the light pole in Section 4. There are no additional lights.

Currently there is one yard hydrant providing water in the cemetery, at the brick planter in the center of the site. This spigot will need to be relocated and upgraded when the cemetery is expanded.

Plan Options and Opportunities

a. Introduction

Through this process, the Township would like to explore the phased expansion and improvement of the Westwood Cemetery. Currently the burial options at the Cemetery are limited. It is the intent of the master plan to provide a range of burial options. Options would include: in-ground cremains, columbaria, an ossuary with memorial wall, a scattering garden, natural burial plots, and expansion of conventional burial plots. The proposed master plan would also expand public engagement and respectful recreation at the cemetery.

b. Land Use and Master Plan

The existing cemetery is under-utilized. To expand access and utility, it is recommended that a new loop roadway be installed. The new road would form a large “P” loop and eliminate the existing cul-de-sac. The center of the loop road would become a multi-functional area that could include columbaria, memorial

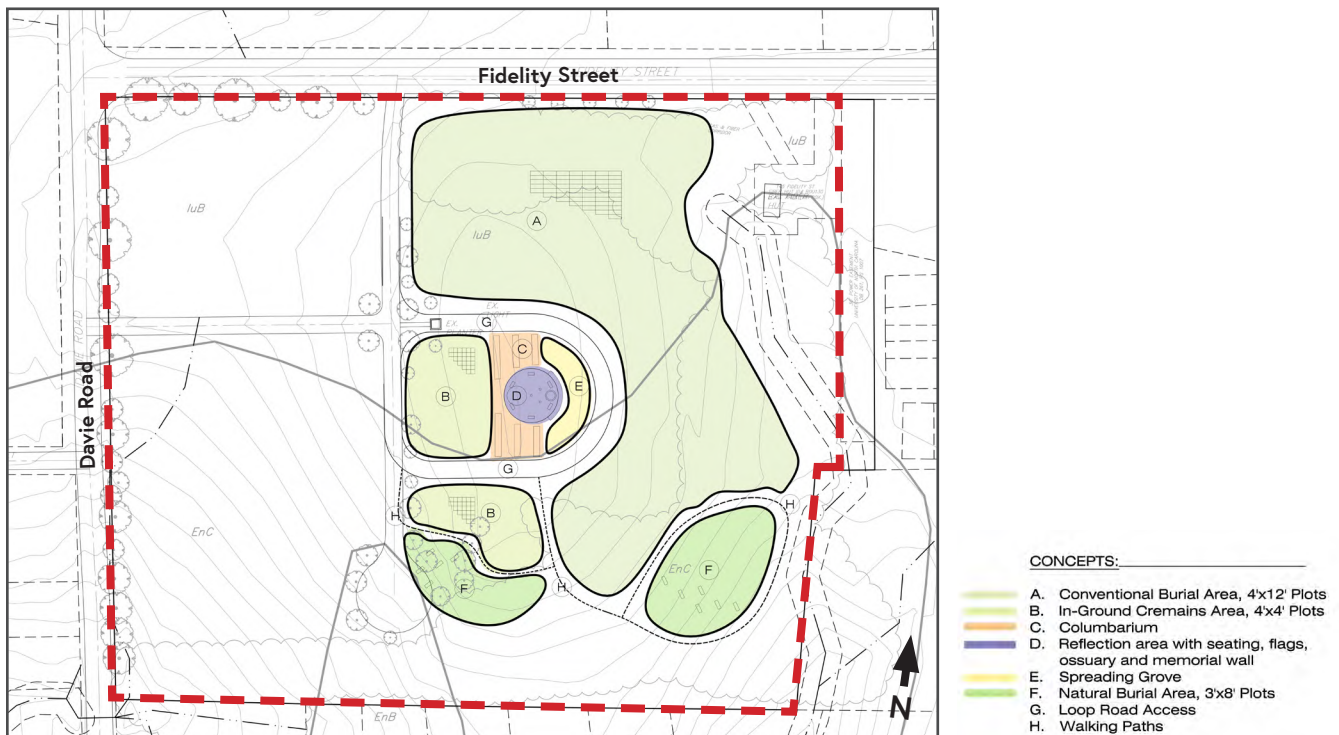


Figure 29 Concept Plan showing proposed land uses and site layout. (CVDA)

wall, in-ground cremains plots, scattering garden, and a ceremony space with benches and flagpoles. The space would be serviced with a yard hydrant and electrical. The ceremony space would be ADA-accessible and provide for cortege parking and wayfinding signage. This new space could also become the site for memorial services and functions on national holidays. A new sign system should be designed to identify the site as well as the burial sections.

c. New Facilities and Features

BURIAL OPTIONS

The space for conventional burial plots is diminishing and existing site features impact the number of available and potential plots. Issues such as depth to bedrock, site layout, and existing site conditions all impact the total number of potential plots. Therefore it is recommended that the Cemetery expand the types of burials permitted to include in-ground cremains, columbaria, a scattering garden with memorial wall, an ossuary, and natural burials in the undisturbed forested portions of the site.



Figure 30 An example of 4' by 4' burial plots for cremated remains. (CVDA)

In-Ground Cremains

Cremation urns are currently allowed to be interred in Westwood Cemetery under Town code, with four cremation urns allowed in one 4' by 12' burial space, with one monument per burial space. Individual in-ground cremation burial spaces require a small plot size (4' by 4') and the depth of the grave is much shallower, at 24 inches. The Town could choose to dedicate an area of shallow depth to bedrock to this type of burial. In Figure 29: Concept Plan on page 17, the areas labeled 'B' near the center of the site are proposed for 1,038 in-ground cremation burial spaces.

Natural Burial

Natural or "green" burial is a method of interment which allows for the natural decomposition of bodies. It does not include embalming bodies, does not require grave liners or vaults, and encourages the use of biodegradable burial containers or wrappings. Conservation of natural resources and habitats, reduction of carbon emissions, lower cost, and protection of worker health are often factors in choosing natural burial. According to the National Funeral Directors Association, nearly 54 percent of Americans are considering a green burial, and 72 percent of cemeteries are reporting increased demand. In October 2018, the Town Council approved natural burials in the Old Carrboro Cemetery and directed staff to prepare a plan to convert some of the un-plotted land in Westwood Cemetery to natural burials.

The carbon footprint of conventional burial is heaviest in the production and materials of the coffin, the concrete vault, and the transportation of materials and people to the cemetery. Natural burials avoid coffins and vaults, and the grave itself is smaller and shallower to dig.

By code, all burial spaces are currently required to be 4' by 12' but nationally green burial spaces can be as small as 3' by 8'. While conventional burial graves must be opened to a minimum depth of 5 feet under Town code, the required depth of the grave in a natural burial is 3.5 feet. Soil may be mounded on a natural grave, with the expectation that it will settle as natural decomposition occurs. Natural burials can be performed in wooded settings, as there is less disturbance of soil than in a conventional burial. The required grave

marker must be of stone and/or bronze and set on a footing of concrete.

In Figure 29: Concept Plan on page 17, the woodland areas labeled 'F' to the south of the site are proposed for 306 natural burial spaces, with asphalt and mulch paths to provide access. The Concept Plan allows for 4' by 12' burial spaces.



Figure 31 A natural burial site in the woods, accessed by a mulch path. (CVDA)



Figure 32 An example of a natural burial, with no casket or vault, and with the soil left visible during the funeral. (Green Burial Council)



Figure 33 The natural burial area in Old Carrboro Cemetery, with mounds of soil visible over newer graves. Burial spaces are 4' x 12' but can be 3' x 8'. (CVDA)

Scattering Garden

Cremated ashes may be scattered over a landscaped areas with perennial ground cover and lightly raked in. A plaque on a memorial wall or another type of marker displays the names of the deceased. Benches are often provided, and landscaping is well maintained. In Figure 29: Concept Plan on page 17, the landscaped area labeled ‘E’ in the center of the site is proposed for a scattering garden.



Figure 34 An example of a memorial marker in a cremation or scattering garden. (Dignity Memorial)

Ossuary and Memorial Wall

An ossuary is an underground chamber or vault for holding the cremated ashes of the deceased. A raised top with a removable section allows the ashes to be poured into the structure. The names of the deceased are memorialized on a plaque on a memorial wall. Benches are included in the design of the ossuary space. In Figure 29: Concept Plan on page 17, the central area labeled ‘D’ is proposed for a memorial wall and an ossuary. A flag pole and benches could be installed in this area to create a central gathering space for civic events, such as Veterans Day or Memorial Day.



Figure 35 A stone wall provides a backdrop for the ossuary. An open gathering place with flags and memorials is created. (CVDA)

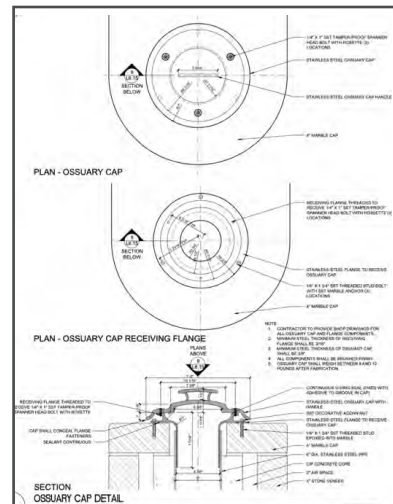


Figure 36 Construction details for an ossuary. (CVDA)

Columbaria

A columbarium is an above-ground vault that holds cremation urns. Usually formed of pre-cast concrete, the structure contains individual niches that can hold up to two or three urns. On the face of the structure, granite covers with plaques label each niche. The top, sides and back can be covered in granite. The structure can be single- or double-sided. In Figure 29: Concept Plan on page 17, the area labeled 'C' in the center of the site is proposed for six columbaria structures, accommodating 300 burial niches in Phase One, and 2400 niches at full build-out.



Figure 37 *Columbaria under construction, with pre-cast concrete niches visible. (CVDA)*



Figure 38 *An 80-niche columbarium, faced in granite, with bronze markers on niches. The granite niche covers are pre-drilled to accept bronze plaques. (CVDA)*



Figure 39 *Another style of columbarium. (CVDA)*

SITE FURNITURE

Additional monuments and commemorative features can be included to memorialize the dead and to allow contemplative space for visitors. Benches allow mourners to linger and create a welcoming environment.



Figure 40 Brick paving on a pedestrian path and a landscaped seating area. (CVDA)



Figure 41 Teak benches, with post lights and wall-mounted path lights. (CVDA)



Figure 42 Granite section marker. (CVDA)



Figure 43 Wayfinding signage. (CVDA)

New signage identifying sections of the cemetery assists visitors in finding graves. Interpretive or informational signage can provide the history of the site.

In the central area of the concept site plan, a gathering area with a flag pole, benches, and paving are proposed.

d. Planting Plan

CVDA suggests hiring a certified arborist to evaluate the health of the existing mature trees, and pruning or removing trees for public safety. Native tree species and crape myrtles to blend with existing trees will be chosen to replace removed or missing trees along the street and internal drives. Evergreens such as American Holly will create screening and year-round interest. A selection of flowering trees, including magnolias and crape myrtles, provide successive seasons of color. A detailed planting plan will be developed as part of the site planning process.

e. Irrigation Plan

Currently the Cemetery is not irrigated. It is questionable whether money is well spent to completely renovate the turf area and then install an irrigation system. The existing lawn hydrant should be relocated and upgraded as part of the site design, to provide a source of water for landscaped areas.

f. Financial Analysis

Westwood Cemetery is currently plotted to accommodate a total of 2,231 burial spaces, of which 328 are still available. Expanding the cemetery with new burial options in addition to new conventional burial plots will increase the capacity of the cemetery to serve the community into the future, as well as improve revenues for the cemetery. Based on geotechnical analysis of the site and an inventory of its existing features, CVDA has proposed a grid plan that provides for an additional 5,200 burials.

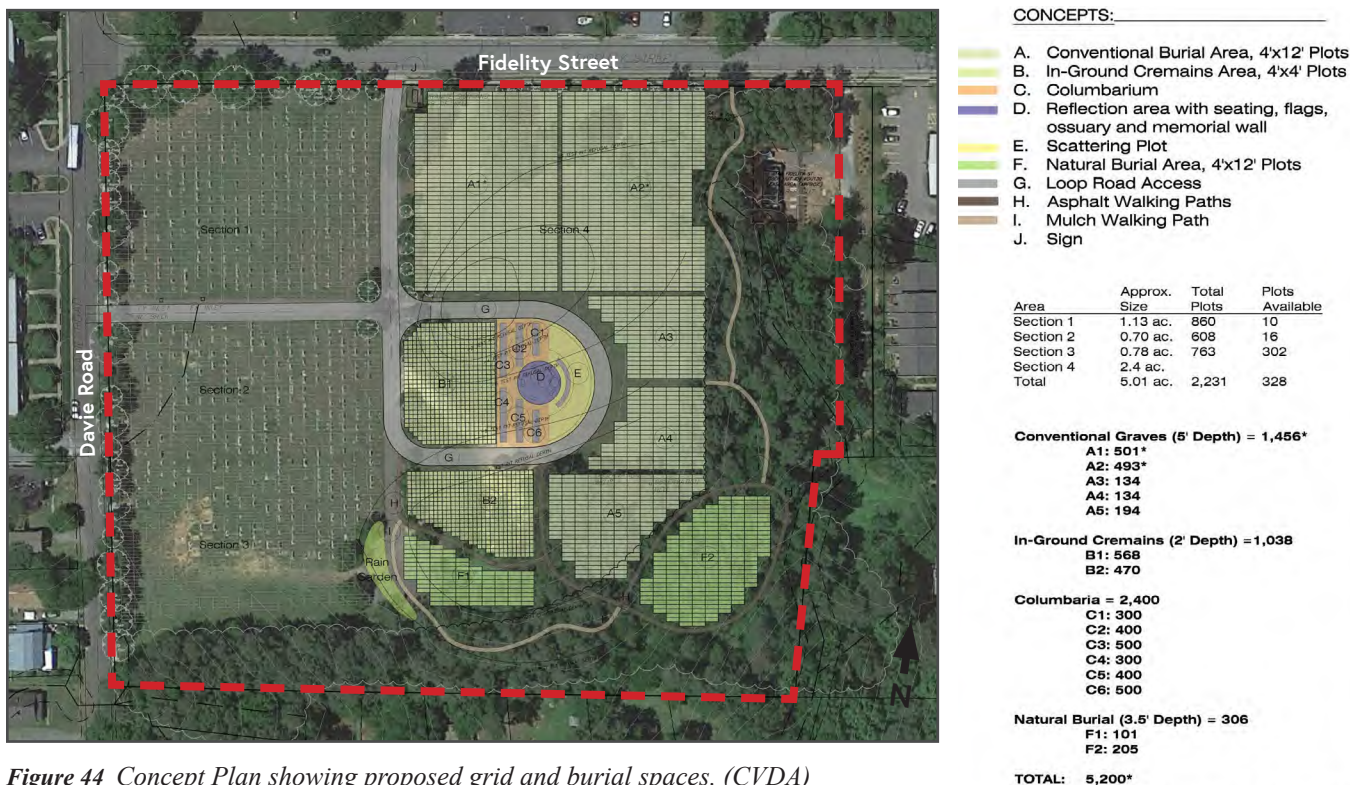


Figure 44 Concept Plan showing proposed grid and burial spaces. (CVDA)

The Consultant Team proposes to divide the project into two phases: Phase One and a complete build-out of the Master Plan. Phase One would include site work, including grading and earthwork, installation of the asphalt drive, a 5'-wide concrete sidewalk, asphalt path, and masonry memorial wall. (See Figure 46: Preliminary Partial Estimate of Probable Cost for TWT's estimate.) Phase One would also include construction of two double-sided columbaria structures, site furnishings, and a new entrance sign at Fidelity Street. The complete build-out of the Master Plan would follow, with more extensive site development and landscaping, as well as the construction of the remainder of the columbaria structures. (See Figure 45: Phased Cost Estimate for the total construction cost estimate.)

The Master Plan proposes areas for conventional burials and new burial options, with the yield of burial spaces for each type of burial option and the associated proposed sales price is outlined in Figure 47: Estimated Revenue Generation. Phase One as proposed could generate revenues of \$3,548,400, while construction costs are estimated at \$375,193. At full build-out of the Master Plan, revenue would be \$7,738,400, with total construction costs of \$1,696,991.

Revenue from plot sales from the previous fiscal years (July to June) are as follows:

FY 2021 - YTD [9/28/2020] - \$15,000

FY 2020 - \$85,500

FY 2019 - \$34,750

FY 2018 - \$49,600

This estimate does not include ongoing maintenance of the site. Currently the Town spends \$800 every two weeks on lawn mowing and trimming. Additional costs for landscape maintenance and lighting may be expected.

Westwood Cemetery Expansion - Phased Cost Estimate

CVDA / TWT

December 2020

	Master Plan				Phase One			
	qty	unit	unit price	total	qty	unit	unit price	total
Columbarium niches	2400	each	\$ 425.00	\$ 1,020,000.00	300	each	\$ 425.00	\$ 127,500.00
Benches	8	each	\$ 1,400.00	\$ 11,200.00	2	each	\$ 1,400.00	\$ 2,800.00
Signs	5	each	\$ 300.00	\$ 1,500.00	3	each	\$ 300.00	\$ 900.00
Ossuary	1	lump sum	\$ 12,000.00	\$ 12,000.00				
Flagpoles	3	lump sum	\$ 23,000.00	\$ 69,000.00				
Landscaping	1	lump sum	\$ 25,000.00	\$ 25,000.00				
Scatter garden curbing	280	linear feet	\$ 80.00	\$ 22,400.00				
Utility work - Water	1	lump sum	\$ 3,000.00	\$ 3,000.00				
Utility work - Electrical	1	lump sum	\$ 12,000.00	\$ 12,000.00				
Entrance sign - Fidelity St.	1	lump sum	\$ 5,000.00	\$ 5,000.00	1	lump sum	\$ 5,000.00	\$ 5,000.00
Subtotal				\$ 1,181,100.00				\$ 136,200.00
Contingency @ 15%			15%	\$ 177,165.00			15%	\$ 20,430.00
Construction Subtotal				\$ 1,358,265.00				\$ 156,630.00
Design fees @ 10%			10%	\$ 135,826.50			10%	\$ 15,663.00
Total				\$ 1,494,091.50				\$ 172,293.00
* Projected Costs - TWT				\$ 202,900.00				\$ 202,900.00
Total Costs - Phase One								\$ 375,193.00
Total Costs - Build-out				\$ 1,696,991.50				

* See TWT Preliminary Partial Estimate of Probable Cost

Figure 45 Estimated costs to expand Westwood Cemetery, with Phase One broken out, including TWT's initial site work construction estimate. (CVDA/TWT)

PRELIMINARY PARTIAL ESTIMATE OF PROBABLE COST¹

Westwood Cemetery - Cemetery Expansion

Town of Carrboro
Orange County, NC

Taylor Wiseman & Taylor

11/4/2020

	DESCRIPTION	UNITS	TOTAL QUANTITY	UNIT COST	EXTENDED COST
1	Demolition ²	LS	1	by Owner	-
2	Memorial Wall (Masonry w/ Brick Face)	SF	280	\$ 32.00	\$ 8,960.00
3	5' Concrete Sidewalk	SF	8,250	\$ 6.75	\$ 55,687.50
4	Asphalt Drive, 20-ft wide, ditch & shoulder Section ³	SY	1,222	\$ 28.00	\$ 34,222.22
5	Asphalt Path, 8-ft wide ⁴	SY	178	\$ 13.50	\$ 2,400.00
6	Earthwork Rough Grading ⁵	CY	5,556	\$ 1.85	\$ 10,277.78
7	Earthwork Fine Grading	CY	2,222	\$ 2.80	\$ 6,222.22
8	Undercut Unstable Soil	CY	75	\$ 50.00	\$ 3,750.00
9	Rock Excavation - Removal by Mechanical Means	CY	100	\$ 175.00	\$ 17,500.00
10	Sedimentation & Erosion Control	LS	1	\$ 7,500.00	\$ 7,500.00
11	Seeding & Mulching	AC	1.38	\$ 2,000.00	\$ 2,754.82
Estimated Construction Cost					\$ 149,300.00
Contingency @ 15%					\$ 22,400.00
Engineering Design Fees					\$ 18,700.00
Utility Relocation Allowance ²					-
Permitting Fees					\$ 1,500.00
Geotechnical Soils Eval. & CMT					\$ 11,000.00
ESTIMATED TOTAL PROJECT COST¹					\$ 202,900.00

NOTES:

¹ PRELIMINARY PARTIAL COST ESTIMATE. Costs are estimated for project bid in 2021, no adjustment for escalation between Fiscal Years is included. Additional Line items and Unit Prices to be provided by Landscape Architect.

² Demolition will be performed by the Town. No Allowance included for utility relocation; some electrical work may be needed for lighting circuit continuity with removed light pole.

³ Asphalt Roadway Section includes compacted subgrade, Compacted 8" Base, 3" Binder Course, and 2" Overlay with ditch and shoulder section.

⁴ Asphalt Path Section includes compacted subgrade, 2" Binder Course, 1" Overlay.

⁵ Assumes 2.5-ft average depth of earthwork across 60,000 SF for volume estimate.

Figure 46 Estimated initial construction costs for Phase One site work. (TWT)

Westwood Cemetery Expansion - Estimated Revenue Generation

CVDA

December 2020

	Master Plan			Phase One		
	Est. Sale Cost	Total Yield	Revenue / Build-out	Est. Sale Cost	Phase 1 Yield	Revenue / Phase 1
In-Ground Grave	\$ 1,200.00	1,456	\$ 1,747,200.00	\$ 1,200.00	1,456	\$ 1,747,200.00
In-Ground Cremain	\$ 800.00	1,038	\$ 830,400.00	\$ 800.00	1,038	\$ 830,400.00
Columbarium Niche	\$ 1,400.00	2,400	\$ 3,360,000.00	\$ 1,400.00	300	\$ 420,000.00
Natural Burial	\$ 1,800.00	306	\$ 550,800.00	\$ 1,800.00	306	\$ 550,800.00
Ossuary	\$ 500.00	2,000	\$ 1,000,000.00			
Scattering Garden	\$ 500.00	500	\$ 250,000.00			
Total			\$ 7,738,400.00			\$ 3,548,400.00
<i>Estimated Construction Cost Phase One</i>						<i>\$ 375,193.00</i>

Figure 47 Estimated revenue generation from expansion of Westwood Cemetery, including estimates of burial site numbers and sales costs.(CVDA)

Definition of Terms

Burial Space A parcel of ground within a cemetery, which can be allocated for the interment of one or more human bodies or cremation urns. Carrboro Code currently defines a space as “having the dimensions of 4 feet by 12 feet, and the usage of each burial space shall be limited to one of the following: (1) the interment of one human body; (2) the interment of one human body and one cremation urn; or (3) the interment of no more than four cremation urns.”

Columbarium An above-ground structure or vault with niches that hold cremation urns.

Conventional Burial A method of interment in which an embalmed body is placed in a casket, and the casketed body is buried in a grave into which a burial vault has previously been placed, or entombed in an above-ground mausoleum.

Cremains The ashes that remain after the cremation of a body.

Marker An identifying plaque installed at ground level at a grave site, or installed on a memorial wall or stone at an columbarium, ossuary, or scattering garden.

Mausoleum A structure substantially exposed above ground used for the entombment of human bodies.

Monument A memorial stone or other structure installed at a grave site.

Natural Burial Also known as “Green burial.” A method of interment which allows for the natural decomposition of bodies. It does not include embalming bodies, does not require grave liners or vaults, and encourages the use of biodegradable burial containers or wrappings. Conservation of natural resources and habitats, reduction of carbon emissions, lower cost, and protection of worker health are often factors in choosing natural burial.

Ossuary A receptacle or vault for holding the ashes or bones of the dead, often of more than one person.

Scattering Garden A landscaped space where cremated ashes may be scattered.

Appendices

Appendix 1. Carrboro Town Code Chapter 13 Cemeteries

Appendix 2. Geotechnical Engineering Report by Terracon Consultants, Inc.

Appendix 3. Site Analysis Plans and Concept Master Plans

Appendix 1. Carrboro Town Code Chapter 13 Cemeteries

CHAPTER 13

CEMETERIES

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Section 13-2 Application of Provisions

Article II - General Regulations

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Article IV - Mausoleums, Monuments, Markers and Coping/Curbs or Fencing

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Section 13-19 Markers

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Section 13-22 Records of Persons Buried Required

Section 13-23 Minimum Depth of Graves

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Article VI - Penalties and Remedies

Section 13-26 Penalties and Remedies

Article I

DEFINITIONS; APPLICATION

Section 13-1 Definitions

Unless the context otherwise indicates, the following words shall have the meaning indicated when used in this chapter.

(1) Administrator: The person designated by the manager to perform the functions and exercise the responsibilities assigned by this chapter to the administrator.

(2) Burial Space: A parcel of ground within a cemetery lot having the dimensions of 4 feet by 12 feet, and the usage of each burial space shall be limited to one of the following: (1) the interment of one human body; (2) the interment of one human body and one cremation urn; or (3) the interment of no more than four cremation urns. (Amend. 5/9/89, 1/21/92)

(3) Lot: A plot of ground within the town cemeteries consisting of not more than three (3) burial spaces, as shown on the official cemetery map. (Amend. 5/9/89)

(4) Marker: A plaque installed at ground level at the site of a grave to indicate the name, date of birth, and date of death of the person buried there.

(5) Mausoleum: A structure or building substantially exposed above ground intended to be used for the entombment of remains of a deceased person.

(6) Monument: A memorial stone or other structure erected at a gravesite in remembrance of the dead.

(7) Natural Burial: A method of internment with minimal environmental impact and which aids in the conservation of natural resources, reduction of carbon emissions, protection of worker health, and the restoration and preservation of natural habitats. This method of internment does not include embalming of bodies, does not require grave liners or vaults, encourages the use of biodegradable burial containers, and is intended to the natural decomposition of bodies. Graves used for Natural Burials shall be maintained such that the grave's appearance shall be kept as consistent as practical with the surrounding graves. This burial method may also be referred to as "Green Burial" (Created 10/16/18)

Section 13-2. Application of Provisions

The following sections apply to all cemeteries within the town: Sections 13-3, 13-4, 13-5 and 13-6. The remaining sections of this chapter apply only to cemeteries owned or operated by the town.

Article II

GENERAL REGULATIONS

Section 13-3 Burial Only in Cemeteries

No person may bury or cause to be buried the body of any deceased person within the town limits in any place other than a church cemetery or a cemetery operated by a governmental entity or a private cemetery licensed or specifically exempted from licensing according to the North Carolina Cemetery Act (Article 9 of G.S. Chapter 65).

Section 13-4 Disruptive Activity Prohibited

(a) No person may drive any motor vehicle of any kind in any cemetery except upon the main roads and avenues provided therein for vehicular traffic.

(b) No person may drive any motor vehicle or park any motor vehicle in any cemetery unless in attendance at burial services or otherwise engaged in activities consistent with the use of a cemetery as a cemetery.

(c) No person may take any dog, horse, or other animal into any cemetery or allow any animal to run at large therein. This provision shall not apply to seeing eye dogs when accompanied by a blind person. (Amend. 5/9/89)

(d) No person may intentionally disrupt any funeral service or disturb the quiet and good order of any cemetery by extremely loud or boisterous conduct. Except in the case of military funerals and veterans or military commemorative exercises, no person may carry or discharge firearms in any cemetery.

(e) No person may post or attach any bills, posters, placards, pictures or other form of political or commercial advertising within any cemetery or on the inside or outside of any wall or fence enclosing any cemetery.

(f) No person may engage in recreational activities in any cemetery. For purposes of this subsection, recreational activities shall include, but not be limited to the throwing of balls or frisbees, playing games or engaging in sports activities, running or jogging, picnicking, walking dogs, cats or other animals, allowing dogs, cats, or other animals to run at large, and other similar activities inconsistent with the use of a cemetery as a cemetery. (Amend. 8/11/92)

Section 13-5 Desecration of Public and Private Cemeteries

As provided in G.S. 14-150.1, if any person shall willfully commit any of the acts set forth in the following subdivisions, he shall be guilty of a misdemeanor and shall be fined not more than one-hundred dollars (\$100.00) or imprisoned for not more than thirty days, or both, in the discretion of the court.

(1) Throwing, placing, or putting any refuse, garbage, trash, or articles of similar nature in or on a public or private cemetery where human bodies are interred.

(2) Destroying, removing, breaking, damaging, overturning, or polluting any flower, plant, shrub, or ornament located in any public or private cemetery where human bodies are interred without the express consent of the person in charge of said cemetery.

Provided nothing contained in this section shall preclude operators of such cemeteries from exercising all the powers reserved to them in their respective rules and regulations relating to the care of such cemeteries.

Section 13-6 Removing or Defacing Monuments and Tombstones

As provided in G.S. 14-140, if any person shall, unlawfully and on purpose, remove from its place any monument of marble, stone, brass, wood, or other material, erected for the purpose of designating the spot where any dead body is interred, or for the purpose of preserving and perpetuating the memory, name, fame, birth, age or death of any person, whether situated in or out of the common burying ground, or shall unlawfully and on purpose break or deface such monument, or alter the letters, marks or inscription thereof, he shall be guilty of a misdemeanor. Provided that nothing contained in this section shall preclude operators of public or private cemeteries from exercising all the powers reserved to them in their respective rules and regulations relating to the use and care of such cemeteries.

Section 13-7 Hours of Operation

(a) The town cemetery shall remain open to the public throughout the year from sunrise until sunset.

(b) No person may enter the town cemetery at any time other than the hours of operation established by subsection (a).

Section 13-8 Trees, Plantings, Landscaping

(a) No person may plant, prune, or remove any tree, shrub, flower, grass or other plant of any kind except with the consent of and in accordance with the directions of the cemetery administrator.

(b) The cemetery administrator may enter any lot and remove or trim any tree, shrub, or other plant that encroaches upon any other lot or any walkway, or driveway, or other part of the cemetery.

(c) The cemetery administrator may remove from the cemetery all floral designs, flowers, weeds, or plants of any kind from the cemetery as soon as they deteriorate or otherwise become unsightly.

(d) Artificial flowers used in floral decorations may be used in the cemetery but a limit of two months is established as a reasonable period for use of such decorations. After two months such arrangements will be removed and disposed of by the cemetery administrator.

Sections 13-9 through 13-10 Reserved

Article III

DESIGNATION AND SALE OF CEMETERY LOTS AND SPACES

Section 13-11 Cemetery Map Required

(a) There shall be maintained in the town clerk's office an official cemetery map which shall depict, as accurately as possible, the boundaries of the town cemetery and the location and dimension of all lots and spaces within the cemetery. Natural Burial spaces shall be clearly marked on the cemetery map and the cemetery map shall be amended from time to time in order to ensure that adequate spacing is maintained between Natural Burial lots or spaces. (Amended 10/16/18)

(b) Burial rights in all lots and spaces shall be sold in reference to the official cemetery map.

(c) There shall be maintained by the cemetery administrator an alphabetical list of purchasers of Certificates of Burial Rights and a numerical list of lots sold. (Amend. 5/9/89)

Section 13-12 Purchase of Burial Rights

(a) The town shall sell burial rights in cemetery lots and spaces in accordance with the provisions of this chapter and the schedule of fees set forth in the Miscellaneous Fees and Charges Schedule maintained in the office of the town clerk.

(b) Differential fees shall be charged according to whether the person intended to be buried in the space with respect to which a burial right is purchased is a bona fide resident of or owner of real property within the Town of Carrboro at the time such right is purchased. (Amend. 5/22/84, effective 6/1/84)

(c) (c) A Certificate of Burial Right shall be issued to the person who purchases a burial right. The certificate shall identify the purchaser, the specific lots or spaces to which the certificate applies, the names of the individuals intended to be buried in the spaces purchased, and whether the lots or spaces shall be used for traditional or natural burials. If spaces are intended to be reserved for unborn children or grandchildren of the purchaser, that fact shall be noted on the certificate and such offspring shall be deemed to have the same residency as their parents. If the cremated remains of more than one person are to be located on a single space, the names of all persons whose remains are intended to be located on the space shall be indicated on the certificate. (Amend. 12/11/84, 10/16/18)

(d) The usage of each burial space shall be limited to one of the following: (1) the interment of one human body; (2) the interment of one human body and one cremation urn; or (3) the interment of no more than four cremation urns. (Amend. 5/9/89, 1/21/92)

Section 13-13 Rights of Owner of Certificate of Burial Right

(a) The Certificate of Burial Right transfers no property right to the certificate owner. The Certificate of Burial Right entitles the owner thereof (i.e., the purchaser) to use the designated spaces as a place of burial for the persons named on the certificate, subject to the terms and conditions of this ordinance and subject to the town's authority to operate, regulate, control, and abandon cemeteries. (Amend. 5/9/89)

(b) If the owner of a Certificate of Burial Right desires to change the designation of persons entitled to be buried in the spaces covered by the certificate, he or she may do so by surrendering the old certificate and obtaining a new certificate. Fees will be charged at the then current rate for the spaces being changed, but credit will be given for previous payments with respect to those spaces. In addition, the town will refund, without interest, any sums paid for spaces that the owner of a Certificate of Burial Right no longer wishes to reserve, upon surrender of the Certificate of Burial Right covering those spaces.

(c) Upon the death of the owner of a Certificate of Burial Right, all rights evidenced by such certificate shall pass to the owner's heirs, legatees, or devisees in the same manner as other interests in personal property.

Section 13-14 Speculation in Burial Rights Prohibited

(a) No person may purchase or otherwise acquire any burial right for the purpose of sale or exchange.

(b) No person may sell or exchange any burial right for a profit or gain.

Sections 13-15 through 13-16 Reserved

Article IV

MAUSOLEUMS, MONUMENTS, MARKERS, AND COPING/CURBS OR FENCING

Section 13-17 Mausoleums

No mausoleum, tomb, building, or other structure of any kind shall be erected on any lot within the town's cemeteries, except on lots which may be designated on the plat and plan of the town's cemeteries by the Board of Aldermen as lots to be used exclusively for mausoleums and tombs. (Amend. 5/9/89)

Section 13-18 Monuments (Amend. 5/9/89)

- (a) All monuments shall be bronze and/or stone.
- (b) All monuments shall be placed on a concrete apron which shall extend four (4) inches from each side of the base of the monument and which shall be flush with the ground in order to facilitate monument protection, stability and maintenance.
- (c) No monument may exceed four (4) feet in height.
- (d) The length for single burial space monuments shall not exceed twenty-eight (28) inches.
- (e) A double space monument shall be permitted on two (2) adjacent burial spaces, located side by side. The length for double space monuments shall not exceed seventy-six (76) inches. A double space monument shall be centered on the line between two (2) burial spaces.
- (f) A triple space monument shall be permitted on three (3) adjacent burial spaces, located side by side. The length for the triple space monument shall not exceed one hundred-twenty (120) inches. A triple space monument shall be centered on the second (middle) burial space.
- (g) The width of monuments shall not exceed sixteen (16) inches.
- (h) All monuments shall be placed at the head of the burial space(s) and positioned perpendicular to the burial space(s).
- (i) The foregoing provisions of this section shall not apply to monuments placed prior to the effective date of this section.

Section 13-19 Markers

- (a) All markers shall be of bronze and/or stone. (Amend. 5/9/89)
- (b) A head marker used in place of a monument shall be placed on a concrete apron which shall extend four (4) inches from each side of the base of the head marker and which shall be laid flush with the ground in order to facilitate head marker protection, stability, and maintenance. (Amend. 5/9/89)
- (c) A head marker used in place of a monument shall be laid flush with the ground, shall not exceed two (2) feet in length and one foot in width and shall be placed at the head of the grave, perpendicular to the burial space(s). Only one head marker shall be permitted on each burial space. (Amend. 5/9/89, 1/21/92)
- (d) A foot marker shall be laid flush with the ground, shall not exceed two (2) feet in length and one (1) foot in width and shall be placed at the foot of the grave, perpendicular to the burial space. Only one foot marker shall be permitted on each burial space. (Amend. 5/9/89, 1/21/92)

(e) The foregoing provisions of this section shall not apply to markers placed prior to the effective date of this section. (Amend. 5/9/89)

Section 13-20 Reserved

Section 13-20.1 Installation, Repair or Removal of Monuments (Amend. 5/9/89)

- (a) A monument or marker shall be placed at the burial site within one (1) year of the funeral.
- (b) Should any monument or marker in the town's cemeteries at any time become unsafe, unsightly, or in need of repair or resetting, the cemetery administrator shall notify the owner of the relevant Certificate of Burial Rights of such condition and shall request such person to make any needed repairs under the administrator's supervision.
- (c) Nothing in this section shall obligate the town to place, replace, or repair any monument or marker in the town's cemeteries.

Section 13-20.2 Monuments and Markers on Natural Burial Sites (Created 10/16/18)

Notwithstanding the foregoing provisions of Article IV, Monuments and Markers installed at graves used as Natural Burial sites shall be placed such that they will not be affected by natural sinking of topsoil resulting from the decomposition of the bodies.

Article V

BURIALS

Section 13-21 Interment or Disinterment (Amend. 5/9/89)

- (a) No person shall be interred or disinterred in the town's cemeteries without lawful authority and a written permit issued by the cemetery administrator.
- (b) Application for the permit authorized by this section shall be made at least ten (10) hours prior to the opening of the grave. This application shall be submitted in writing and shall designate the person to be buried.
- (c) No permit shall be issued when the person to be buried is not designated as the person to be buried in the relevant burial space on the current Certificate of Burial Rights maintained by the cemetery administrator. The permit required by this section shall be issued if the application contains the information specified in this section and if all fees and charges authorized by this chapter have been paid.
- (d) No person shall open any grave in a town cemetery other than a licensed funeral director or those employed by such funeral director under the supervision of the cemetery administrator.

(e) Following the digging of a grave, the dirt shall be hidden from public view until after the funeral. Following the funeral, the dirt is to be replaced and sufficiently packed. All excess dirt is to be hauled away and the turf leveled.

Section 13-22 Records of Persons Buried Required

(a) The cemetery administrator shall keep complete and accurate records of the name, age, sex, date of death, and date of burial of every person buried in the town cemetery, as well as the particular space where such person is buried.

(b) The funeral director shall provide the cemetery administrator with a Death Information Certificate within ten (10) days of any burial. (Amend. 5/9/89)

Section 13-23 Minimum Depth of Graves

(a) All graves must be opened to a depth of at least five (5) feet to the bottom thereof. Notwithstanding the foregoing, graves intended for use for a Natural Burial shall be opened to a depth of three and a half (3.5) feet to the bottom thereof.
(Amend. 5/9/89, 10/16/18)

(b) All graves shall be level with the surrounding areas and no mounds shall be allowed. Notwithstanding the foregoing, graves intended for use for a Natural Burial may be covered with a mound and are not subject to the requirement that all graves shall be level with the surrounding areas, except to the extent that the grave's appearance shall be kept as consistent as practical with the surrounding graves. (Amend. 10/16/18)

(c) No grave in town cemeteries shall be dug nearer than twelve (12) inches to any property line. (Amend. 5/9/89)

Section 13-24 Grave Liner or Vault Required

Grave liners or vaults, composed of concrete or a substance of equivalent strength and durability, shall be required for all graves within the town cemetery. No person may bury or cause to be buried the body of any deceased person unless the casket is properly placed within a grave liner or vault. Notwithstanding the foregoing, the Natural Burials shall be permitted in the Old Carrboro Cemetery in conformance with this Chapter. (Amend. 12/11/84, 10/16/18)

Section 13-25 Reserved

Article VI

PENALTIES AND REMEDIES

Section 13-26 Penalties and Remedies

(a) A violation of any of the following provisions shall constitute a misdemeanor, punishable as provided in G.S. 14-4:

Sections 13-3, 13-4, 13-7, 13-8, 13-14, 13-17, 13-18, 12-19, 13- 20, 13-21, 13-23, 13-24 (Amend, 12/11/84, 5/9/89)

(b) Violations of any of the sections listed in subsection (a) shall also subject the offender to a civil penalty of twenty- five dollars (\$25.00). If a person fails to pay this penalty within ten (10) days after being cited for a violation, the town may seek to recover the penalty by filing a civil action in the nature of debt.

(c) The town may seek to enforce this chapter through any appropriate equitable action.

(d) Each day that a violation continues after the offender has been notified of the violation shall constitute a separate offense.

(e) The town may seek to enforce this chapter by using any one or any combination of the foregoing remedies.

Appendix 2. Geotechnical Engineering Report by Terracon Consultants, Inc.



Geotechnical Engineering Report

**Proposed Westwood Cemetery Improvements
Carrboro, Orange County, North Carolina**

September 30, 2020

Terracon Project No. 70205044

Prepared for:

Carter Van Dyke Associates, Inc.
Doylestown, Pennsylvania

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina



September 30, 2020

Carter Van Dyke Associates, Inc.
40 Garden Alley
Doylestown, Pennsylvania 18901



Attn: Mr. Peter R. Fernandez, President
P: (215) 345-5053 x129
E: peter@cvda.com

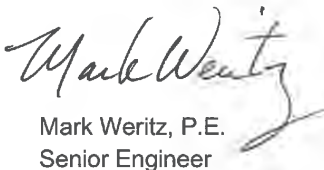
Re: Geotechnical Engineering Report
Proposed Westwood Cemetery Improvements
401 Davie Road
Carrboro, Orange County, North Carolina
Terracon Project No. 70205044

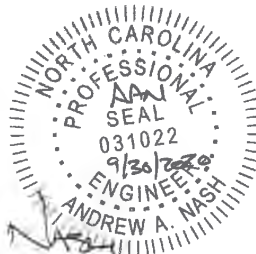
Dear Mr. Fernandez:

We have completed Geotechnical Engineering services for the above referenced project. This study was conducted in general accordance with Terracon Proposal No. P70205044 dated July 14, 2020. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning site improvements for the cemetery.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.


Mark Weritz, P.E.
Senior Engineer


Andrew A. Nash, P.E.
Geotechnical Manager
Registered, NC 031022

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Environmental

Facilities

Geotechnical

Materials



REPORT TOPICS

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Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the  logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

- EXPLORATION AND TESTING PROCEDURES
- SITE MAP AND EXPLORATION PLANS
- EXPLORATION RESULTS (Test Boring Logs, Laboratory Data, and GPR Results)
- SUPPORTING INFORMATION (General Notes and Unified Soil Classification System)

Responsive ■ Resourceful ■ Reliable

Geotechnical Engineering Report

Proposed Westwood Cemetery Improvements ■ Carrboro, Orange County, North Carolina
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EXECUTIVE SUMMARY

The following geotechnical considerations were identified:

- As observed at test pits TP-1, TP-3, and TP-11, a thin, discontinuous layer of existing silty/clayey sand fill is present at scattered locations across the site. Below existing fill (if present), native residual soils were found to consist of silty/clayey sand, which were observed to extend to depths of 3 feet to at least 8 feet below the existing ground surface.
- Test pit excavations encountered backhoe refusal, due to the presence of partially weathered rock (PWR) or intact bedrock, at eight of fifteen test pit locations. Surface contours indicating depth to backhoe refusal is shown on the Exploration Plan. Groundwater was not observed in test pit excavations. Further details regarding subsurface conditions are summarized in **Geotechnical Characterization**.
- Foundation support of possible small grade level structures, such as columbariums, or other small memorial structures, can be founded upon properly prepared subgrade consisting of soil (residual soils or structural fill), or properly prepared subgrade consisting of PWR/bedrock. The **Shallow Foundations** section addresses support of the small grade level structures on approved subgrade. Foundation subgrade for any structure should consist entirely of either type of subgrade, and not partially on soil subgrade and partially on PWR/bedrock subgrade. We recommend footing excavations to be inspected by Terracon for suitable preparation of bearing conditions.
- Support of foundations or new earthfill on or above existing fill materials is discussed in this report. However, even with the recommended construction procedures, there is an inherent risk to the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by following the recommendations contained in this report. To take advantage of the cost benefit of not removing the entire amount of undocumented fill, the owner must be willing to accept the risk associated with building over the undocumented fills following the recommended reworking of the material.
- Terracon should be retained during site earthwork to perform the necessary testing and observations during cut excavation, subgrade preparation, proof-rolling, placement and compaction of controlled fills, and backfilling of excavations to the planned subgrades.
- The **General Comments** section provides a description of report limitations.

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Geotechnical Engineering Report
Proposed Westwood Cemetery Improvements
401 Davie Road
Carrboro, Orange County, North Carolina
Terracon Project No. 70205044
September 30, 2020

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for future site improvements of Westwood Cemetery located at 401 Davie Road in Carrboro, Orange County, North Carolina. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Foundation design and construction

The geotechnical engineering scope of services for this project included the excavation of fifteen test pits and geophysical exploration by ground penetrating radar (GPR).

Maps showing the site and exploration locations are shown in the **Site Map** and **Exploration Plan** sections, respectively. Results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring and test pit logs in the **Exploration Results** section of this report.



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**SITE CONDITIONS**

The following description of site conditions is derived from our site visits in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Location	401 Davie Road, Carrboro, North Carolina. The cemetery is an 8.7-acre parcel located at the southeast corner of the intersection of Davie Road and Fidelity Street. 35.911° latitude, -79.083° longitude
Existing Improvements	The northwestern and west-central portions of the cemetery are actively used and are occupied with grave sites. The Zone 3 area (0.5 acre-southwestern portion) and the Zone 4 area (2.4 acre-eastern portion) are currently inactive.
Current Ground Cover	Most of the ground surface is covered with grass turf. Some scattered mature trees are located around the cemetery perimeter. Granite outcrops are located within the central portion of the site.
Existing Topography	The majority of the ground surface is relatively flat; however, perimeter areas slope moderately downward to the south and east.

PROJECT DESCRIPTION**Project Information**

Our current understanding of the project conditions is as follows:

Item	Description
Project Description	Within Zones 3 and 4, we understand that the Town is considering layout of new interment sites, and possible construction of other memorial features. Shallow bedrock, however, may limit available usable space for new interment sites.
Proposed Structures or Improvements	New structures may include columbariums (small precast concrete memorial structures with urn niches) or other similar, but small memorial structures. New site features may include green burial areas (burial areas in ungraded wooded areas) or small cremains grave areas. New paths or walkways may also be included in new site features.
Finished Floor Elevation	Unknown
Maximum loads	Unknown, but wall loads are assumed to be less than 2 klf.
Maximum allowable movement	Total: 1-inch Differential: ½ inch over 50 feet

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Item	Description
Grading	Proposed grading has not been provided but is expected to be minimal. Site grading is assumed to include cut and fill depths of less than 2 feet. Grave excavations are anticipated to be 6 feet.

GEOTECHNICAL CHARACTERIZATION**Site Geology**

The project site is located in the Piedmont Physiographic Province, an area underlain by igneous and metamorphic bedrock. Residual soils in this area are the product of in-place physical and chemical weathering of native bedrock. The typical residual soil profile consists of clayey soils near the surface where soil weathering is more advanced, underlain by clayey/silty sands that generally become denser with depth to the top of parent bedrock. According to the *1985 Geologic Map of North Carolina*, bedrock at the site is described as foliated to massive granite. Granite outcrops are present in the central portion of project site.

Residual soils derived from in-place weathering of parental bedrock generally transition from soil to rock gradually over a vertical distance of a few feet to tens of feet. This transitional zone is termed “partially weathered rock (PWR),” which is defined for engineering purposes as residual bedrock material that can be drilled with soil drilling methods and exhibits standard penetration test values in excess of 100 blows per foot.

Subsurface Profile

We developed a general characterization of the subsurface soil and groundwater conditions based upon our review of the data and our understanding of the geologic setting and planned construction. The geotechnical characterization forms the basis of our geotechnical calculations and evaluation of site preparation, foundation options and pavement options. As noted in **General Comments**, the characterization is based upon widely spaced exploration points across the site, and variations are likely. The following table provides our geotechnical characterization.

Stratum	Approximate Depth to Bottom of Stratum	Material Description	Estimated Density
1	1.5 to 3.5 (Test Pits TP-1, TP-3, & TP-11)	Existing Fill: Silty Sand (SM) to Clayey Sand (SC)	loose to medium dense
2	3.0 to greater than 8.0	Silty Sand (SM) to Clayey Sand (SC)	medium dense to very dense (contains zones of PWR, cobbles & boulders)
3	Top of Unweathered Bedrock	Granite Bedrock	very hard

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Conditions encountered at each test pit location are indicated on individual logs in the attached **Exploration Results**. Stratification boundaries on logs represent the approximate location of changes in native soil types; in situ, the transition between materials may be gradual.

Groundwater Conditions

Test pit excavations were observed during excavation for the presence and level of groundwater. Groundwater was not observed in test pits during the time interval that excavations were open.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the test pits were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GEOTECHNICAL OVERVIEW

As observed at test pits TP-1, TP-3, and TP-11, a thin, discontinuous layer of existing silty/clayey sand fill is present at scattered locations across the site. Below existing fill (if present), native residual soils were found to consist of silty/clayey sand. Native residual soils were observed to extend to depths of 3 feet to at least 8 feet below the existing ground surface.

Test pit excavations encountered backhoe refusal at eight of fifteen test pit locations. Backhoe refusal (test pit refusal) was likely encountered at or near the interface between very dense soil and least dense PWR. Contours indicating depth to backhoe refusal is shown on the Exploration Plan. Groundwater was not observed in test pit excavations. Further details regarding subsurface conditions are summarized in **Geotechnical Characterization**.

The site was also explored by Ground Penetrating Radar (GPR), which is an exploration method that provides a continuous, high resolution graphical cross-section depicting variations in the electrical properties of the shallow subsurface. GPR results appeared to be affected by the presence of cobbles and boulders within the upper portion of the soil profile. The interpreted bedrock surface estimated by GPR methods, therefore, tends to be higher than what was observed in test pits. GPR results do confirm the absence of shallow bedrock in the southwest corner of the project site. Results of the GPR exploration, as interpreted by the geophysicist, are presented in the **Exploration Results**. Results of test pit information should be relied to be more accurate, or representative, than GPR results.

Foundation subgrade for possible small grade level structures, such as columbariums, or other small memorial structures, can be founded upon properly prepared subgrade consisting of residual soils, or properly prepared subgrade consisting of PWR/bedrock. The **Shallow Foundations** section addresses support of the small grade level structures on approved subgrade

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consisting of soil, or PWR/bedrock. Foundation subgrade for any structure should consist entirely of either type of subgrade, and not partially on soil subgrade and partially on PWR/bedrock subgrade. We recommend footing excavations to be inspected by Terracon for suitable preparation of bearing conditions.

Excavations for individual graves may encounter zones of PWR, granite boulders, or intact granitic bedrock. Excavation equipment larger than a Case 580N backhoe may be required to extend deeper into most PWR material, or excavate boulders. Rock excavation methods, such as hydraulic hammering, ripping, or drilling and blasting will be required to extend excavations into very dense PWR or intact granitic bedrock.

Placement of new structural fill, or preparation of foundation subgrade, should not be conducted on existing fill without proper exploration or evaluation by the geotechnical engineer. This risk of unforeseen conditions cannot be eliminated without completely removing existing fill, but can be reduced by following the recommendations contained in this report. To take advantage of the cost benefit of not removing the entire amount of undocumented fill, the owner must be willing to accept the risk associated with building over the undocumented fills following the recommended reworking of the material.

EARTHWORK

The following presents recommendations for development of specifications for site preparation, excavation, subgrade preparation and placement of engineered fills for the project. The recommendations presented for design and construction of earth-supported elements including shallow foundations are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon personnel. The evaluation of earthwork should include observation of cut excavations and testing of engineered fill, and subgrade preparation.

Site Preparation

Prior to placing structural fill, existing vegetation, root mat, and other unwanted utilities, structures or materials should be removed. After site stripping, we recommend proof-rolling exposed soil in areas to receive fill or areas of earth cut. Proof-rolling should be performed with a minimum 10-ton truck. Proof-rolling operations should be observed by a representative of Terracon and should be performed after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade and to reduce the amount of remedial work required.

If the exposed soil surface exhibits excessive deflection, pumping, or rutting under the proof-rolling operation, we recommend over-excavation of soft/unstable soil and replacement with suitable compacted structural fill or crushed stone. The extent to which over-excavation and

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replacement will be required will likely be reduced if site preparation and earthwork are performed during warmer and drier periods of the year. Additional recommendations for site stabilization will depend on the location of the instability and should be provided by the Geotechnical Engineer based on observations at the time of construction.

Existing Fill

As noted in **Geotechnical Characterization**, test pits encountered existing fill up to a depth of 3.5 feet below existing grade at three of the fifteen test pit locations. Support of foundations or placement of new earth fill on or above existing fill soils is discussed in this report. However, even with the recommended construction procedures, there is an inherent risk for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by recommendations contained in this report.

Excavation Conditions

We anticipate that most soil material can be excavated with conventional earth moving equipment. Large excavation equipment, or bedrock excavation methods, may be required for excavations to extend into moderately dense PWR, or intact bedrock. All temporary excavations that may be required during construction should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards to provide stability and safe working conditions.

PWR was encountered at this site. Mass excavation of dense PWR may require excavation equipment with ripper teeth or may require blasting. If PWR and/or rock are encountered in open cut areas, the least dense PWR material can typically be excavated from open cuts by ripping with a single-tooth ripper pulled by a Caterpillar D-8 or equivalent bulldozer. Moderately dense to very dense PWR material and rock, if encountered, will likely require blasting or hydraulic hammers to effectively excavate. The PWR excavated at the site can be used as fill in other areas of the site only if the material is thoroughly processed with maximum particle sizes smaller than 3 inches, and thoroughly blended with soil to fill voids

Water was not observed in test pit excavations at times of excavation; however, dewatering of any excavations may be required during prolonged periods of wet weather. Most dewatering can be accomplished with sumps and pumps.

Fill Material Types

Engineered fill should consist of approved materials, free of organic material, debris and particles larger than about 3 inches. The maximum particle size criteria may be relaxed by the geotechnical engineer of record depending on construction techniques, material gradation, allowable lift

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thickness and observations during fill placement. Soil for use as engineered fill material should conform to the following specifications:

Fill Material ¹	USCS Classification	Acceptable Location for Placement
On-Site Soils or Imported Soils (min. 20% fines)	SM, SC, CL, ML	All locations and elevations
Sand / Gravel with less than 10% fines	GW/GP, SW/SP	NCDOT ABC – suitable beneath pavement sections and floor slabs

1. Controlled, compacted fill should consist of approved materials that are free of organic matter and debris. A sample of each material type should be submitted to the geotechnical engineer for evaluation.

Fill Compaction Requirements

Structural and general fill should meet the following compaction requirements.

Item	Description
Fill Lift Thickness	9-inches or less in loose thickness (4-inch to 6-inch lifts when hand-operated equipment is used).
Structural Fill Compaction Requirements¹	Minimum of 95% of the material's standard Proctor maximum dry density (ASTM D698). The top lift of engineered fill should be compacted to a minimum of 98% of the material's standard Proctor maximum dry density (ASTM D698).
General Fill Compaction Requirements¹	Minimum of 92% of the material's standard Proctor maximum dry density (ASTM D698).
Moisture Content	Within the range of -2% to +3% of optimum moisture content as determined by the standard Proctor test at the time of placement and compaction.

1. Engineered fill should be tested for moisture content and compaction during placement. If in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the tests should be reworked and retested as required until the specified moisture and compaction requirements are achieved.

Grading and Drainage

Adequate positive drainage should be provided during construction and maintained throughout the life of site features. Surface water drainage should be controlled to prevent undermining of fill slopes and structures during and after construction. Exposed ground should be sloped and

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maintained at a minimum 5 percent away from site features for at least 10 feet beyond its perimeter.

Gutters and downspouts that drain water a minimum of 10 feet beyond the footprint of the proposed structures are recommended. This can be accomplished through the use of splash-blocks, downspout extensions, and flexible pipes that are designed to attach to the end of the downspout. Flexible pipe should only be used if it is daylighted in such a manner that it gravity-drains collected water. Splash-blocks should also be considered below hose bibs and water spigots.

It is recommended that all exposed earth slopes be seeded to provide protection against erosion as soon as possible after completion. Seeded slopes should be protected until the vegetation is established.

Earthwork Construction Considerations

Residual soils can be moisture sensitive and will lose strength and stability and will become difficult to adequately compact as their moisture content increases. Performing site earthwork between during dryer times of the year (typically between June and October) will likely reduce the potential for earthwork problems associated with wet soil.

Performing site preparation and earthwork at other times of the year increases the potential for having to perform remedial work on the subgrade soil. Construction traffic over wet subgrades should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades. If the subgrade should become, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and re-compacted. The use of lime treatment generally reduces the plasticity of clays and silts, makes them less susceptible to moisture fluctuations, and may make them more workable during wetter periods of the year.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompact prior to floor slab and pavement construction and observed by Terracon.

Surface water should not be allowed to pond and soak into the soil during construction. Construction staging should provide drainage of surface water and precipitation away from the building and pavement areas. Any water that collects over or adjacent to construction areas should be promptly removed, along with any softened or disturbed soils. Surface water control in

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the form of sloping surfaces, drainage ditches and trenches, and sump pits and pumps will be important to avoid ponding and associated delays due to precipitation and seepage.

All excavations should be sloped or braced as required by OSHA regulations to provide stability and safe working conditions. Temporary excavations will probably be required during grading operations. The grading contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current Occupational Health and Safety Administration (OSHA) Excavation and Trench Safety Standards.

Construction site safety is the sole responsibility of the contractor who controls the means, methods and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean that Terracon is assuming any responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied or inferred.

Construction Observation and Testing

Earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, observation of cut excavations, proof-rolling and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency indicated in this section.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. In the event that unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

Small ground level structures, such columbariums or other small memorial structures, with total wall loads less than 2 kips per foot, can be supported on shallow wall or spread footings bearing

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on residual soil, or backhoe refusal grade (PWR or intact granitic bedrock). If foundations are expected to bear on PWR or intact bedrock, some removal of PWR or intact bedrock may be required to prepare a level bearing surface. Removal of PWR or intact bedrock may require bedrock excavation methods as described in this report. Provided that foundation subgrade has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

Foundation Design Recommendations

Description	Value
Net allowable soil bearing capacity, soil ¹	3,000 psf
Net allowable bearing capacity, PWR/bedrock (backhoe refusal grade) ¹	6,000 psf
Minimum embedment below lowest adjacent finished grade for frost protection and protective embedment ²	18 inches
Minimum width for continuous wall footings	16 inches
Minimum width for isolated column footings	24 inches
Approximate total settlement ³	Up to 1 inch
Estimated differential settlement ³	Less than L/500 along walls. Less than ½ inch over 50 feet between interior columns.
Passive Lateral Resistance	300 pcf (unfactored)
Coefficient of Friction	0.35 (unfactored)

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation.
2. The footing embedment depth recommended exceeds the frost depth for the area. Footings should be embedded at least 12 inches to provide protective embedment.
3. The actual magnitude of settlement that will occur beneath the foundations would depend upon the variations within the subsurface soil profile, the structural loading conditions and the quality of the foundation excavation. The estimated total and differential settlements listed assume that the foundation related earthwork and the foundation design are completed in accordance with our recommendations.

The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total factored loads that include wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

Footings, foundations, and masonry walls should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of control joints at openings or other discontinuities in masonry walls is recommended.

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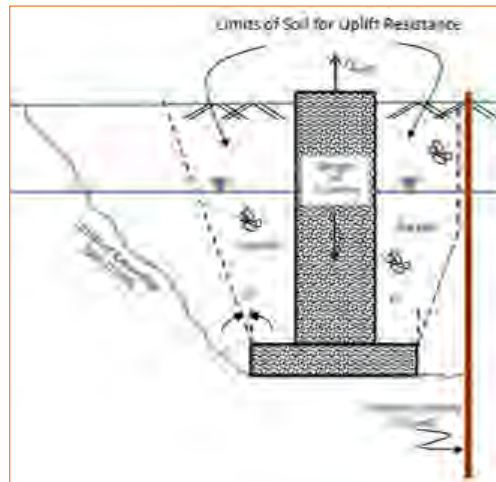


A representative of the geotechnical engineer should be retained at this time to carefully evaluate the foundation excavations through a combination of hand auger borings, dynamic cone penetrometer (DCP) testing, and probing. The materials within a depth of at least 4 feet below foundation bearing elevations should be evaluated. Soft, loose, or otherwise unsuitable materials, if encountered, should be over-excavated and replaced with compacted engineered fill. If the subsurface conditions encountered differ from those presented in this report, supplemental recommendations will be required.

If existing fill is found below the proposed foundation the hand auger and DCP should be extended to residual soils. In areas where existing fill remains under the proposed building the frequency of testing should be increased.

Design Parameters - Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ , of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum total unit weight of 115 pcf should be used for the backfill. This unit weight should be reduced to 53 pcf for portions of the backfill or natural soils below the groundwater elevation.



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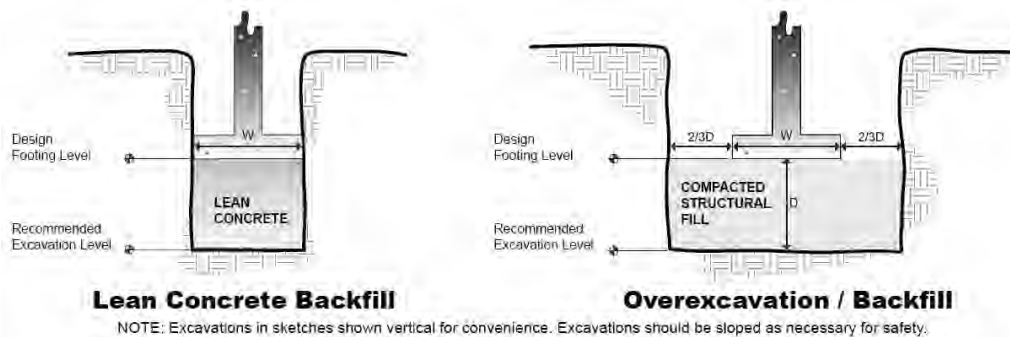
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Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil and rock prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Should the soils at bearing level become excessively dry, disturbed, saturated, or frozen, the affected soil should be removed prior to placing concrete. We recommend placement of a lean concrete mud-mat over bearing soils if excavations must remain open over night, or for an extended period. It is recommended that the geotechnical engineer be retained to observe and test the soil foundation bearing materials.

If unsuitable bearing soils are encountered in footing excavations, excavations should be extended deeper to suitable soils and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations up to design foundation subgrade levels. The footings could also bear on properly compacted backfill extending down to the suitable soils. Overexcavation for compacted backfill placement below footings should extend laterally beyond all edges of the footings a distance equivalent to at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with well-graded granular material placed in lifts of 9 inches or less in loose thickness and compacted to at least 95 percent of the material's maximum standard Proctor dry density (ASTM D-698). Compacted crushed stone or compacted No. 57 stone could also be used. The overexcavation and backfill procedure is illustrated in the figure below.



Construction Considerations

On most project sites, site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material with properly compacted fill. Subgrade

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areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to placement of the crushed stone base and concrete, if required for construction.

GENERAL COMMENTS

As the project progresses, we address assumptions by incorporating information provided by the design team, if any. Revised project information that reflects actual conditions important to our services is reflected in the final report. The design team should collaborate with Terracon to confirm these assumptions and to prepare the final design plans and specifications. This facilitates the incorporation of our opinions related to implementation of our geotechnical recommendations. Any information conveyed prior to the final report is for informational purposes only and should not be considered or used for decision-making purposes.

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in the final report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our scope of services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third party beneficiaries intended. Any third party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site

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characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Geotechnical Engineering Report

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EXPLORATION AND TESTING PROCEDURES

Field Exploration

Test Pits: Test pit exploration locations were measured in the field by GPS location. The locations of the test pits should be considered accurate only to the degree implied by the means and methods used to define them.

Test pits were excavated with a Case 510N backhoe, provided by the Town Carrboro. Samples of the soil encountered in test pits were obtained as grab samples. Soil samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the test pit logs attached to this report includes soil descriptions, excavation depths, sampling intervals, and groundwater conditions. Test pits were backfilled with excavated soil material after the test pit was logged.

Initially, test pit logs were prepared in the field by a geotechnical engineer and include visual classification of the materials encountered during excavation. Final test pit logs, included in **Exploration Results**, represent the engineer's interpretation of the field logs and include modifications based on laboratory testing of selected samples.

Geophysics: The site was also explored by Ground Penetrating Radar (GPR). We conducted the GPR survey using a 350 MHz HS digital antenna and SIR-4000 Subsurface Interface Radar System made by Geophysical Survey Systems, Inc. (GSSI) to perform an upper profile geophysical survey. In general, field data collection was accomplished as referenced in ASTM D6432. Data was collected using a free-scan method, allowing for data to be interpreted in the field in real-time.

Ground penetrating radar is a method that provides a continuous, high resolution graphical cross-section depicting variations in the electrical properties of the shallow subsurface. The method involves repeatedly radiating an electromagnetic pulse (radar signal) into the ground from a transducer (antenna) as it moves along a traverse. Radar signals reflected by subsurface objects or horizons are detected by an antenna (typically the same one used to generate the signal) and sent to a control unit for processing. The control unit then converts the varying amplitude of the reflected radar signal as a function of time into a cross-sectional image showing signal amplitude as a function of distance and depth.

GPR responses is governed by two electrical properties; electrical conductivity and dielectric permittivity, also referred to as dielectric constant. Electrical conductivity is the ability of a material to conduct a charge when an electromagnetic field is applied. Electrical conductivity governs how far radar signals can propagate through the subsurface before becoming unstable. The higher the conductivity, the faster the signal attenuates. Consequently, conductivity also affects the strength of radar signals that are reflected from subsurface boundaries representing a change in

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permittivity. The greater the contrast the more energy that is reflected. Most earthen materials (soil and rock) and even artificial materials (e.g. concrete) have relatively low dielectric permittivity and therefore, are relatively transparent to electromagnetic energy. This means that only a portion of the radar signal incident upon a subsurface boundary is reflected back to the surface. On the other hand, when radar encounters an object composed of material that has very high permittivity, such as buried metal, most of the incident energy is reflected. Results of the GPR survey are as shown in **Exploration Results**.

Property Disturbance: We backfilled the test pit after completion. Our services did not include repair of the site beyond backfilling the test pits. Excess soil dispersed in the general vicinity of the test pit. Because backfill material often settles below the surface after a period, we recommend test pits are checked periodically and backfilled, if necessary.

Laboratory Testing

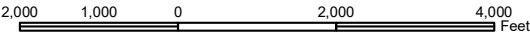
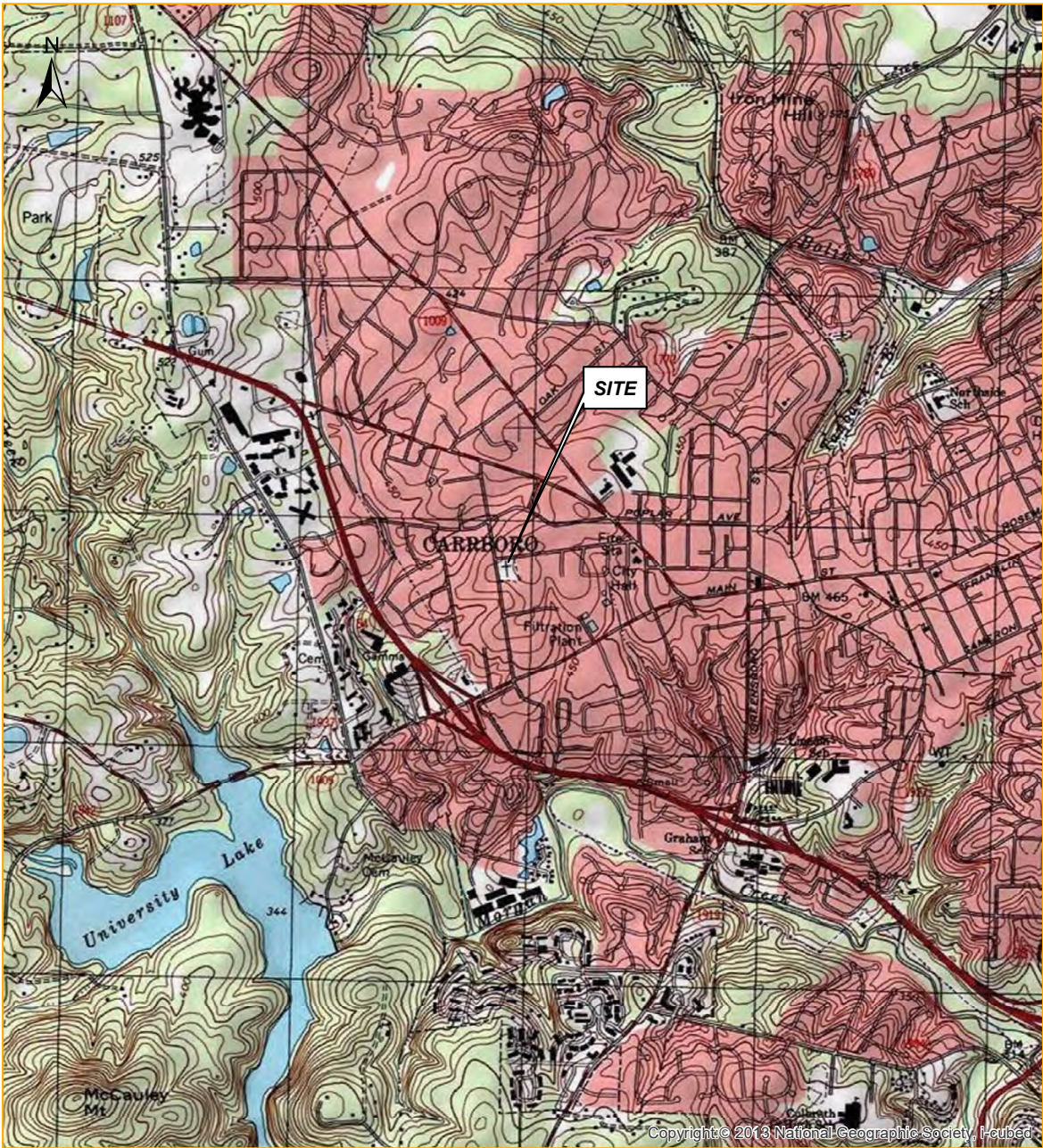
The project engineer reviews field data and assigns various laboratory tests to better understand the engineering properties of various soil strata. Procedural standards noted below are for reference to methodology in general. In some cases, local practices and professional judgement require method variations. Standards noted below include reference to other related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Method of Determination of Water Content of Soil and Rock by Mass
- ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- ASTM D2488 Standard Practice of Description and Identification of Soils (Visual Manual Method)
- ASTM D422 Standard Test Method for Particle Size Analysis of Soils
- ASTM D4318 Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils

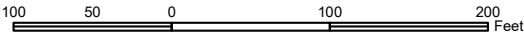
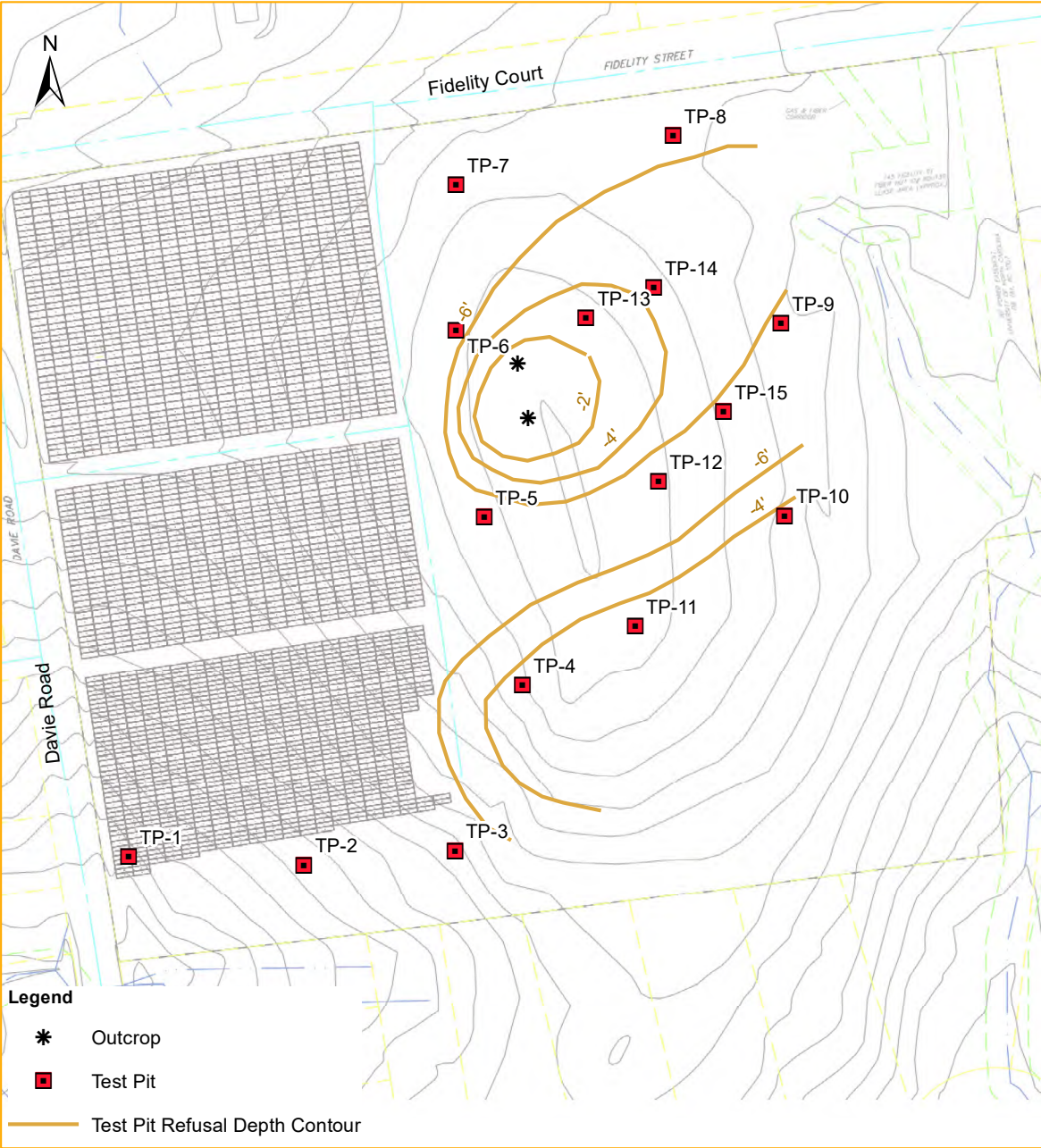
Our laboratory testing program often includes examination of soil samples by an engineer. Based on the material's texture and plasticity, we describe and classify soil samples in accordance with the Unified Soil Classification System (USCS). Laboratory test results are included in **Exploration Results**.

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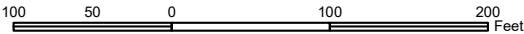
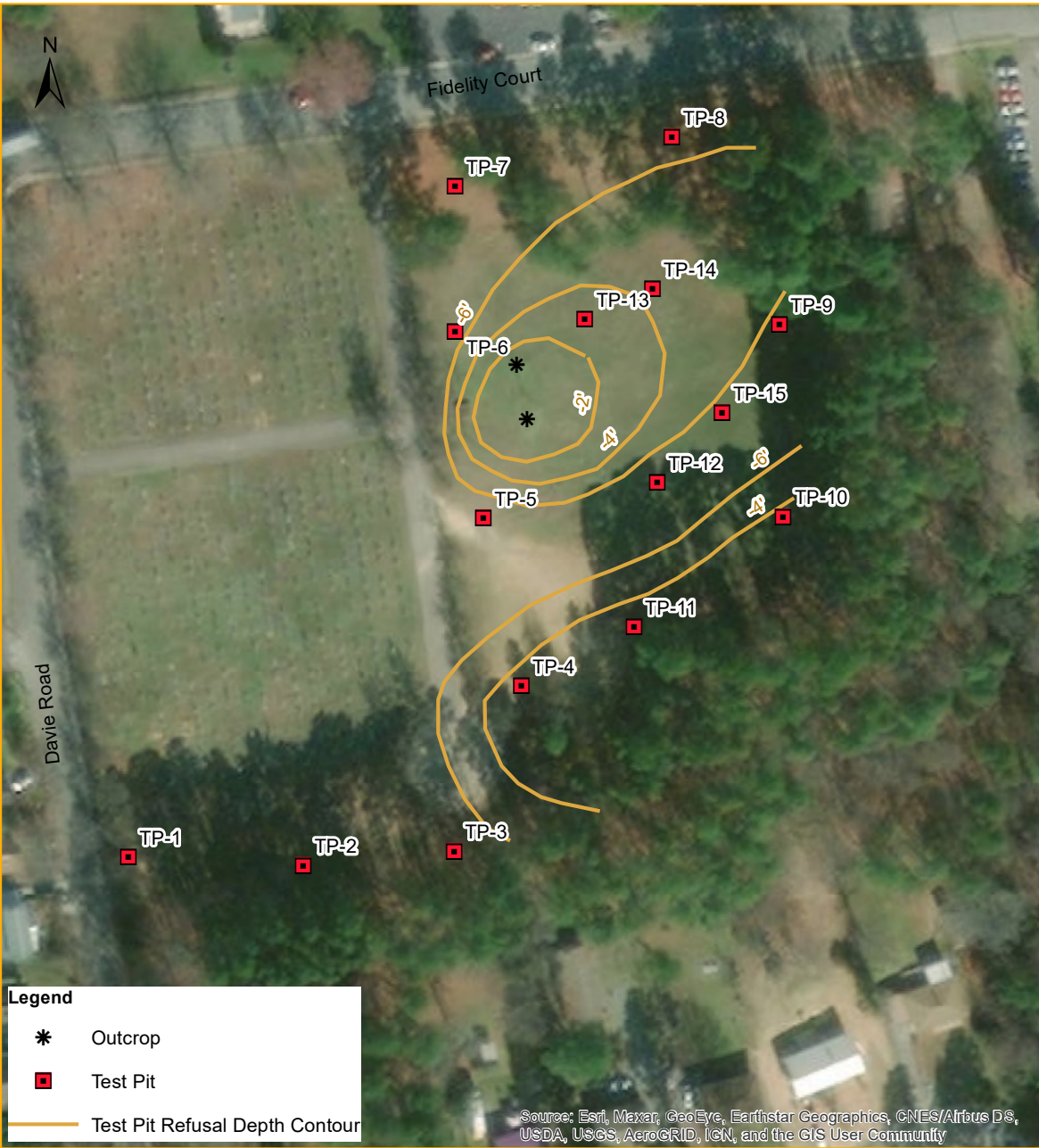
SITE MAP AND EXPLORATION PLANS



PM: MW	Project No. 70205044	<div>Terracon</div> <div>2401 Brentwood Drive, Suite 107 Raleigh, NC 27604 Phone: (919) 873-2211 Fax: (919) 873-9555</div>	Site Map	EXHIBIT NO.
Drawn By: MW	Scale: 1 in = 2,000 ft		Westwood Cemetery 401 Davie Road Carrboro, North Carolina	
Checked By: AAN	File Path:			
Approved By:	Date: 9/28/2020			



PM: MW	Project No. 70205044	 2401 Brentwood Drive, Suite 107 Raleigh, NC 27604 Phone: (919) 873-2211 Fax: (919) 873-9555	Exploration Plan	EXHIBIT NO.
Drawn By: MW	Scale: 1 in = 100 ft		Westwood Cemetery	
Checked By: AAN	File Path:		401 Davie Road	
Approved By:	Date: 9/14/2020		Carrboro, North Carolina	



PM:	MW	Project No.	70205044		Exploration Plan - Aerial		EXHIBIT NO.
Drawn By:	MW	Scale:	1 in = 100 ft		Westwood Cemetery 401 Davie Road Carrboro, North Carolina		
Checked By:	AAN	File Path:					
Approved By:		Date:	9/14/2020				
		<div>2401 Brentwood Drive, Suite 107 Raleigh, NC 27604 Phone: (919) 873-2211 Fax: (919) 873-9555</div>					

EXPLORATION RESULTS

TEST PIT LOG NO. TP-1						Page 1 of 1		
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA					
SITE: 401 Davie Road Carrboro, NC								
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9102° Longitude: -79.0841°			DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS
	DEPTH							LL-PL-PI
	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, yellow 2px, yellow 4px); border: 1px solid black; margin-right: 5px;"></div> <div> FILL - SILTY SAND (SM), orange brown to gray brown, moist, wood debris at 3 feet </div> </div>			5				
	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, yellow 2px, yellow 4px); border: 1px solid black; margin-right: 5px;"></div> <div> SILTY SAND (SM), fine to coarse grained, orange brown to brown, moist, weathered rock fragments at 5 to 6.5 feet </div> </div>							
<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, yellow 2px, yellow 4px); border: 1px solid black; margin-right: 5px;"></div> <div> Terminated at 6.5 Feet </div> </div>								
Stratification lines are approximate. In-situ, the transition may be gradual.								
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).			Notes:		
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.					
WATER LEVEL OBSERVATIONS Groundwater not encountered			<div style="font-size: 8px; margin-top: 5px;">2401 Brentwood Rd, Ste 107 Raleigh, NC</div>			Boring Started: 08-25-2020 Boring Completed: 08-25-2020 Drill Rig: Case 580N Backhoe Driller: Town of Carrboro Project No.: 70205044		

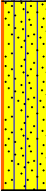

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 70205044 WESTWOOD CEMETERY.GPJ TERRACON.DATATEMPLATE.GDT 9/10/20

TEST PIT LOG NO. TP-2						Page 1 of 1		
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA					
SITE: 401 Davie Road Carrboro, NC								
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9102° Longitude: -79.0836°			DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS
	DEPTH							LL-PL-PI
	0.5 TOPSOIL							
	1.5 SILTY SAND (SM) , fine to coarse grained, orange brown to brown, moist							
	3.5 SILTY SAND (SM) , fine to coarse grained, light gray and rust brown, moist, weathered rock fragments							5
6.5 Terminated at 6.5 Feet								
Stratification lines are approximate. In-situ, the transition may be gradual.								
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).			Notes:		
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.					
WATER LEVEL OBSERVATIONS Groundwater not encountered			 2401 Brentwood Rd, Ste 107 Raleigh, NC			Boring Started: 08-25-2020		
						Boring Completed: 08-25-2020		
			Drill Rig: Case 580N Backhoe			Driller: Town of Carrboro		
			Project No.: 70205044					

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TEST PIT LOG NO. TP-3						Page 1 of 1
PROJECT: Westwood Cemetery				CLIENT: Carter Van Dyke Associates Doylestown, PA		
SITE: 401 Davie Road Carrboro, NC						
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9102° Longitude: -79.0833°				DEPTH (FL)	WATER LEVEL OBSERVATIONS
	DEPTH				SAMPLE TYPE	WATER CONTENT (%)
	0.3 TOPSOIL					
	FILL - CLAYEY SAND (SC), fine to coarse grained, brown and light gray, moist					
	2.2 SILTY SAND (SM) , fine to coarse grained, yellow brown, moist, weathered rock fragments at 5 to 6.5 feet					
7.1 Terminated at 7.1 Feet						
Stratification lines are approximate. In-situ, the transition may be gradual.						
Advancement Method: Backhoe test pit				Notes:		
Abandonment Method: Backfilled with excavated soil.						
WATER LEVEL OBSERVATIONS Groundwater not encountered				 2401 Brentwood Rd, Ste 107 Raleigh, NC		
				Boring Started: 08-25-2020		
				Boring Completed: 08-25-2020		
				Drill Rig: Case 580N Backhoe		
				Driller: Town of Carrboro		
				Project No.: 70205044		


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TEST PIT LOG NO. TP-4						Page 1 of 1	
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA				
SITE: 401 Davie Road Carrboro, NC							
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9105° Longitude: -79.0831°		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS
	DEPTH						LL-PL-PI
	0.1' TOPSOIL SILTY SAND (SM) , fine to coarse grained, light gray and tan, moist, many rock fragments						
	3.0' Test Pit Refusal at 3 Feet						
Stratification lines are approximate. In-situ, the transition may be gradual.							
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:		
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.				
WATER LEVEL OBSERVATIONS Groundwater not encountered			 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020		
					Boring Completed: 08-25-2020		
			Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro		
			Project No.: 70205044				

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TEST PIT LOG NO. TP-5						Page 1 of 1	
PROJECT: Westwood Cemetery				CLIENT: Carter Van Dyke Associates Doylestown, PA			
SITE: 401 Davie Road Carrboro, NC							
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9109° Longitude: -79.0832°			DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)
	DEPTH						
	0.2' TOPSOIL						LL-PL-PI
	CLAYEY SAND (SC), fine to coarse grained, rust tan and light gray, moist, scattered rock fragments, cobbles and boulders						
	6.3' Terminated at 6.3 Feet						
Stratification lines are approximate. In-situ, the transition may be gradual.							
Advancement Method: Backhoe test pit				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:	
Abandonment Method: Backfilled with excavated soil.				See Supporting Information for explanation of symbols and abbreviations.			
WATER LEVEL OBSERVATIONS Groundwater not encountered				Terracon 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020 Boring Completed: 08-25-2020 Drill Rig: Case 580N Backhoe Driller: Town of Carrboro Project No.: 70205044	




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TEST PIT LOG NO. TP-6							Page 1 of 1	
PROJECT: Westwood Cemetery				CLIENT: Carter Van Dyke Associates Doylestown, PA				
SITE: 401 Davie Road Carrboro, NC								
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9112° Longitude: -79.0833°			DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS
	DEPTH							LL-PL-PI
<div style="background-color: yellow; border: 1px solid black; padding: 2px;"> 0.2 TOPSOIL CLAYEY SAND (SC), fine to coarse grained, tan brown and light gray, moist, rock fragments at 2 feet </div>				5				
8.0	Terminated at 8 Feet							
Stratification lines are approximate. In-situ, the transition may be gradual.								
Advancement Method: Backhoe test pit				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:		
Abandonment Method: Backfilled with excavated soil.				See Supporting Information for explanation of symbols and abbreviations.				
WATER LEVEL OBSERVATIONS Groundwater not encountered				 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020		
						Boring Completed: 08-25-2020		
				Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro		
				Project No.: 70205044				

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TEST PIT LOG NO. TP-7						Page 1 of 1	
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA				
SITE: 401 Davie Road Carrboro, NC							
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9115° Longitude: -79.0833°		DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
	DEPTH 0.2' TOPSOIL CLAYEY SAND (SC) , fine to coarse grained, light rust brown and light gray, moist, scattered rock fragments, difficult excavation 4.5 to 6.8 feet		5				
	6.8' Terminated at 6.8 Feet						
Stratification lines are approximate. In-situ, the transition may be gradual.							
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:		
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.				
WATER LEVEL OBSERVATIONS Groundwater not encountered			 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020 Boring Completed: 08-25-2020 Drill Rig: Case 580N Backhoe Driller: Town of Carrboro		
			Project No.: 70205044				


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TEST PIT LOG NO. TP-8						Page 1 of 1	
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA				
SITE: 401 Davie Road Carrboro, NC							
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9116° Longitude: -79.0828°		DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS
	DEPTH						LL-PL-PI
	0.3 TOPSOIL CLAYEY SAND (SC) , fine to coarse grained, light rust brown and light gray, moist, scattered rock fragments, difficult excavation 4.5 to 6.8 feet		5			18	39-20-19
	6.5 Terminated at 6.5 Feet						
Stratification lines are approximate. In-situ, the transition may be gradual.							
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:		
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.				
WATER LEVEL OBSERVATIONS <i>Groundwater not encountered</i>			 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020		
					Boring Completed: 08-25-2020		
			Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro		
			Project No.: 70205044				

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TEST PIT LOG NO. TP-9						Page 1 of 1	
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA				
SITE: 401 Davie Road Carrboro, NC							
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9113° Longitude: -79.0825°		DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
	DEPTH						
	0.4 TOPSOIL						
	CLAYEY SAND (SC) , fine to coarse grained, light rust brown and light gray, moist						
	3.0 CLAYEY SAND (SC) , fine to coarse grained, rust tan and light gray, moist to very moist, difficult excavation						
	6.0 Test Pit Refusal at 6 Feet						
Stratification lines are approximate. In-situ, the transition may be gradual.							
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:		
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.				
WATER LEVEL OBSERVATIONS Groundwater not encountered			 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020 Boring Completed: 08-25-2020 Drill Rig: Case 580N Backhoe Driller: Town of Carrboro Project No.: 70205044		

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 70205044 WESTWOOD CEMETERY.GPJ TERRACON DATATEMPLATE.GDT 9/10/20

TEST PIT LOG NO. TP-10						Page 1 of 1		
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA					
SITE: 401 Davie Road Carrboro, NC								
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9108° Longitude: -79.0825°		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS	
	LL-PL-PI							
DEPTH								
0.3 TOPSOIL								
SILTY SAND (SM) , fine to coarse grained, brown								
1.5 CLAYEY SAND (SC) , fine to coarse grained, rust tan and light gray, moist								
4.8 Test Pit Refusal at 3.8 to 4.8 Feet								
Stratification lines are approximate. In-situ, the transition may be gradual.								
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:			
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.					
WATER LEVEL OBSERVATIONS			 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020		Boring Completed: 08-25-2020	
Groundwater not encountered					Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro	
					Project No.: 70205044			



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TEST PIT LOG NO. TP-11							Page 1 of 1	
PROJECT: Westwood Cemetery				CLIENT: Carter Van Dyke Associates Doylestown, PA				
SITE: 401 Davie Road Carrboro, NC								
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9107° Longitude: -79.0828°			DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS
	DEPTH							LL-PL-PI
	0.1' TOPSOIL							
	1.5' FILL - SILTY SAND (SM) , fine to coarse grained, brown, scattered metal and concrete debris							
	3.3' CLAYEY SAND (SC) , fine to coarse grained, rust brown and tan gray, moist							
Test Pit Refusal at 3.3 Feet								
Stratification lines are approximate. In-situ, the transition may be gradual.								
Advancement Method: Backhoe test pit				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:		
Abandonment Method: Backfilled with excavated soil.				See Supporting Information for explanation of symbols and abbreviations.				
WATER LEVEL OBSERVATIONS Groundwater not encountered						Boring Started: 08-25-2020 Boring Completed: 08-25-2020 Drill Rig: Case 580N Backhoe Driller: Town of Carrboro Project No.: 70205044		



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TEST PIT LOG NO. TP-12						Page 1 of 1	
PROJECT: Westwood Cemetery				CLIENT: Carter Van Dyke Associates Doylestown, PA			
SITE: 401 Davie Road Carrboro, NC							
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9109° Longitude: -79.0828°				DEPTH (FL)	WATER LEVEL OBSERVATIONS	
	DEPTH				SAMPLE TYPE	WATER CONTENT (%)	
0.2 TOPSOIL CLAYEY SAND (SC) , fine to coarse grained, tan brown and light gray, moist				5		LL-PL-PI	
8.0 Test Pit Refusal at 8 Feet							
Stratification lines are approximate. In-situ, the transition may be gradual.							
Advancement Method: Backhoe test pit		See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes:			
Abandonment Method: Backfilled with excavated soil.		See Supporting Information for explanation of symbols and abbreviations.					
WATER LEVEL OBSERVATIONS <i>Groundwater not encountered</i>		 2401 Brentwood Rd, Ste 107 Raleigh, NC		Boring Started: 08-25-2020		Boring Completed: 08-25-2020	
				Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro	
				Project No.: 70205044			

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 70205044 WESTWOOD CEMETERY.GPJ TERRACON.DATATEMPLATE.GDT 9/10/20

TEST PIT LOG NO. TP-13						Page 1 of 1			
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA						
SITE: 401 Davie Road Carrboro, NC									
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9113° Longitude: -79.083°			DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS	
	DEPTH							LL-PL-PI	
	0.4 TOPSOIL								
	CLAYEY SAND (SC), fine to coarse grained, red brown to tan, moist								
	3.5 Test Pit Refusal at 3.5 Feet								
Stratification lines are approximate. In-situ, the transition may be gradual.									
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).			Notes:			
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.						
WATER LEVEL OBSERVATIONS			 2401 Brentwood Rd, Ste 107 Raleigh, NC			Boring Started: 08-25-2020		Boring Completed: 08-25-2020	
Groundwater not encountered						Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro	
						Project No.: 70205044			

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT GEO SMART LOG-NO WELL 70205044 WESTWOOD CEMETERY.GPJ TERRACON_DATATEMPLATE.GDT 9/10/20

TEST PIT LOG NO. TP-14						Page 1 of 1		
PROJECT: Westwood Cemetery			CLIENT: Carter Van Dyke Associates Doylestown, PA					
SITE: 401 Davie Road Carrboro, NC								
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9113° Longitude: -78.0828°			DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS
	DEPTH							LL-PL-PI
	0.4	TOPSOIL						
		CLAYEY SAND (SC), fine to coarse grained, tan brown, moist, scattered cobbles and boulders						
	4.2	Test Pit Refusal at 4.2 Feet						
Stratification lines are approximate. In-situ, the transition may be gradual.								
Advancement Method: Backhoe test pit			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).			Notes:		
Abandonment Method: Backfilled with excavated soil.			See Supporting Information for explanation of symbols and abbreviations.					
WATER LEVEL OBSERVATIONS Groundwater not encountered			 2401 Brentwood Rd, Ste 107 Raleigh, NC			Boring Started: 08-25-2020		Boring Completed: 08-25-2020
						Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro
			Project No.: 70205044					

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 70205044 WESTWOOD CEMETERY.GPJ TERRACON.DATATEMPLATE.GDT 9/10/20

TEST PIT LOG NO. TP-15										Page 1 of 1	
PROJECT: Westwood Cemetery					CLIENT: Carter Van Dyke Associates Doylestown, PA						
SITE: 401 Davie Road Carrboro, NC											
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 35.9111° Longitude: -79.0826°				DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS		
	DEPTH								LL-PL-PI		
	0.4 <u>TOPSOIL</u>				5			14	30-19-11		
	<u>CLAYEY SAND (SC)</u> , fine to coarse grained, rust tan and light gray, moist, scattered cobbles and boulders										
6.0 <i>Test Pit Refusal at 6 Feet</i>											
Stratification lines are approximate. In-situ, the transition may be gradual.											
Advancement Method: Backhoe test pit					See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).					Notes:	
Abandonment Method: Backfilled with excavated soil.					See Supporting Information for explanation of symbols and abbreviations.						
WATER LEVEL OBSERVATIONS <i>Groundwater not encountered</i>							Boring Started: 08-25-2020		Boring Completed: 08-25-2020		
							Drill Rig: Case 580N Backhoe		Driller: Town of Carrboro		
							Project No.: 70205044				

ASTM D4318



Exploration Location Diagram

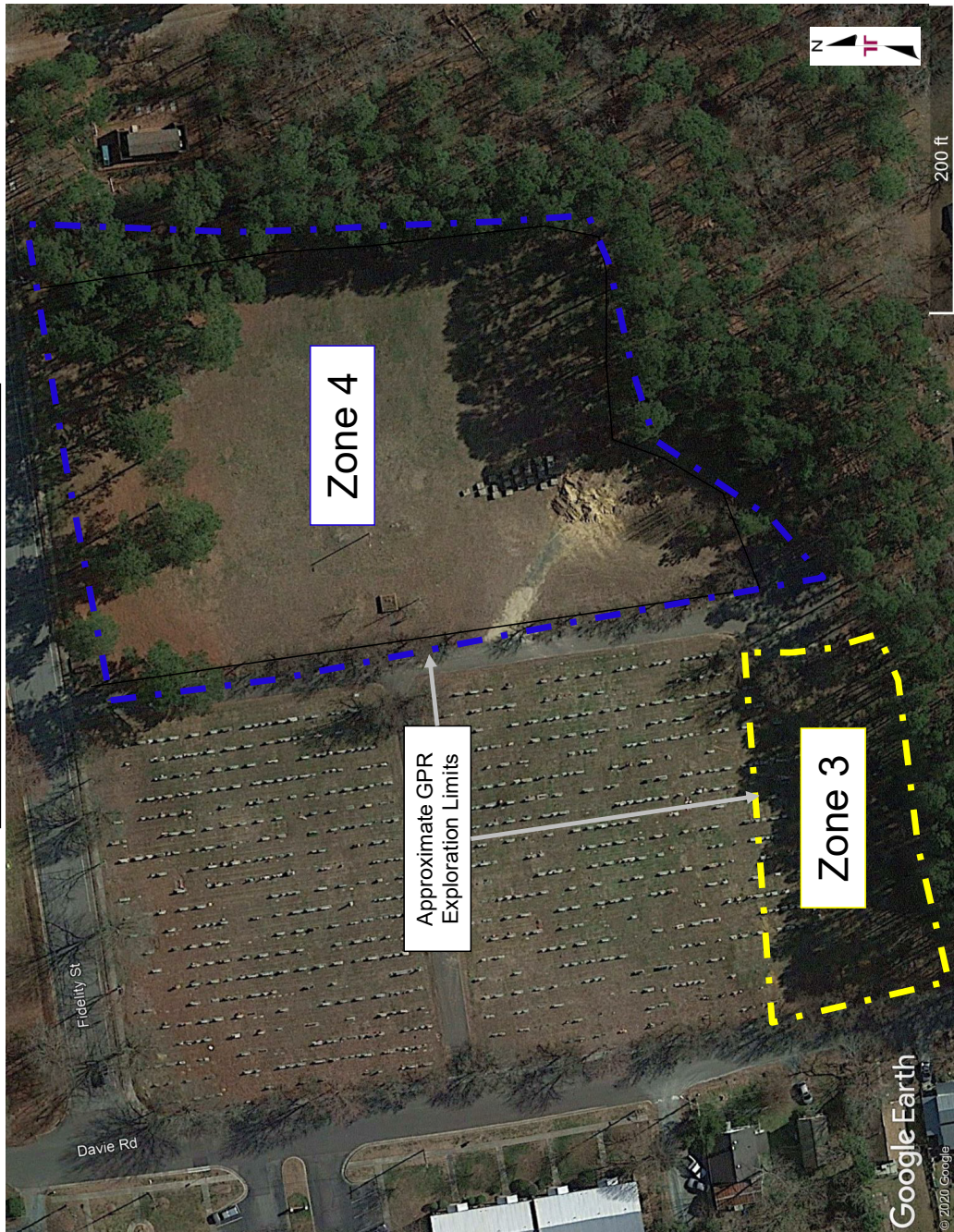
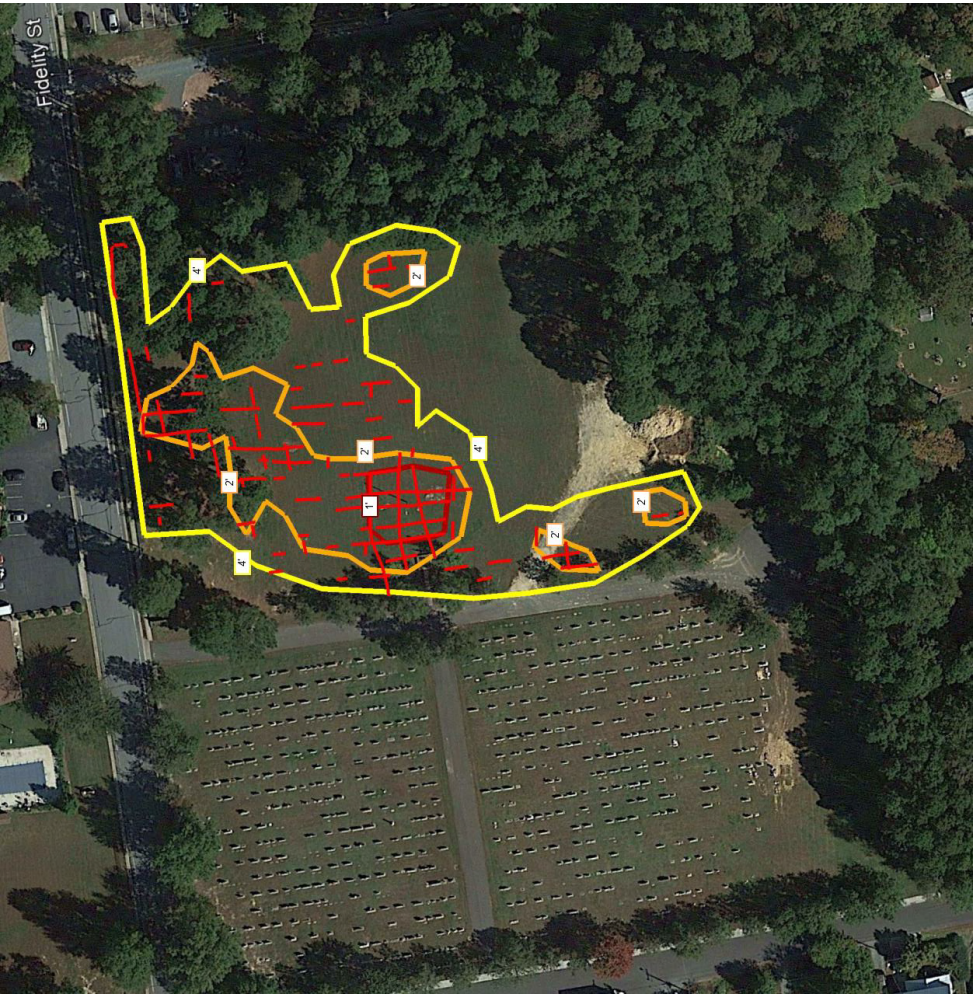
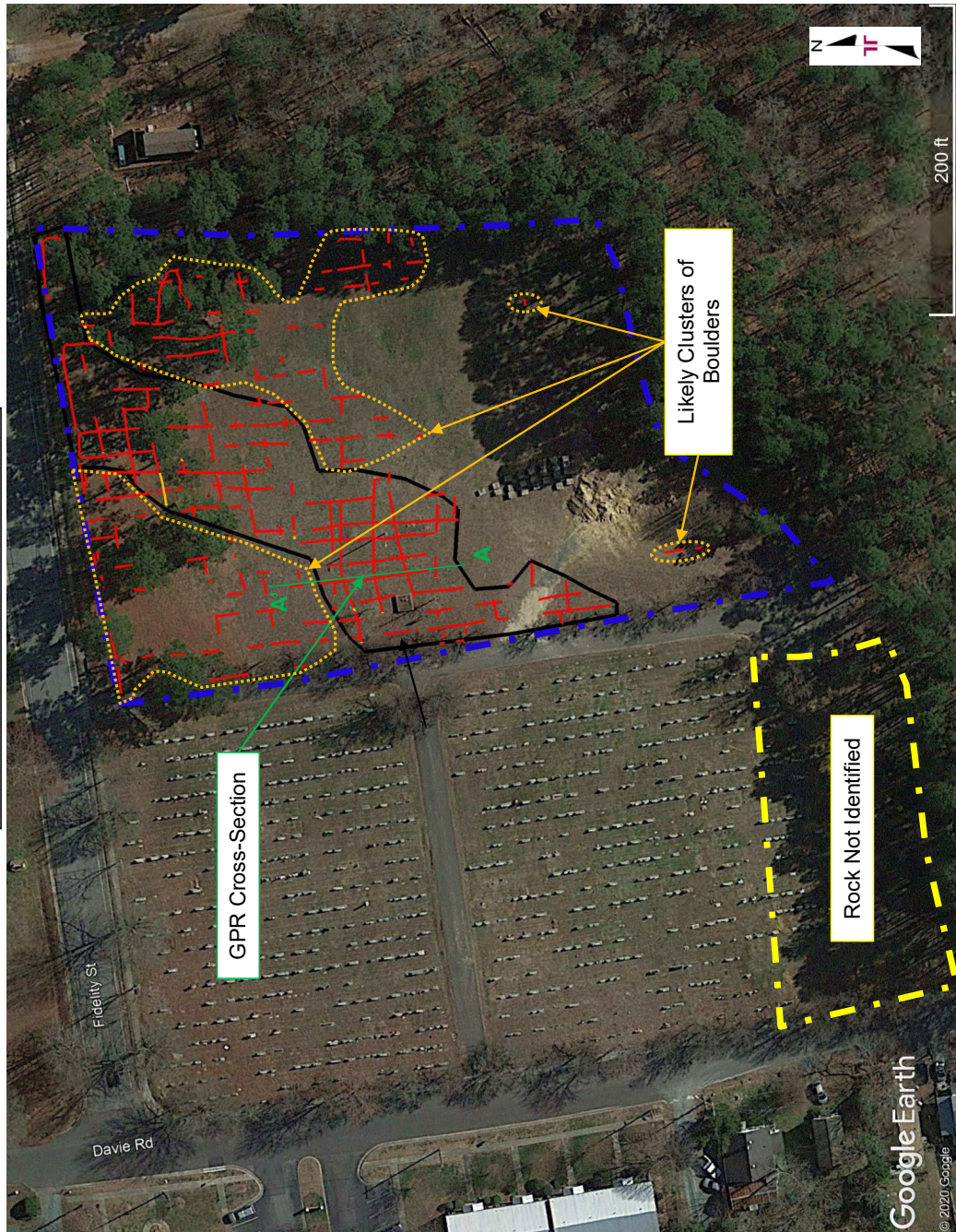


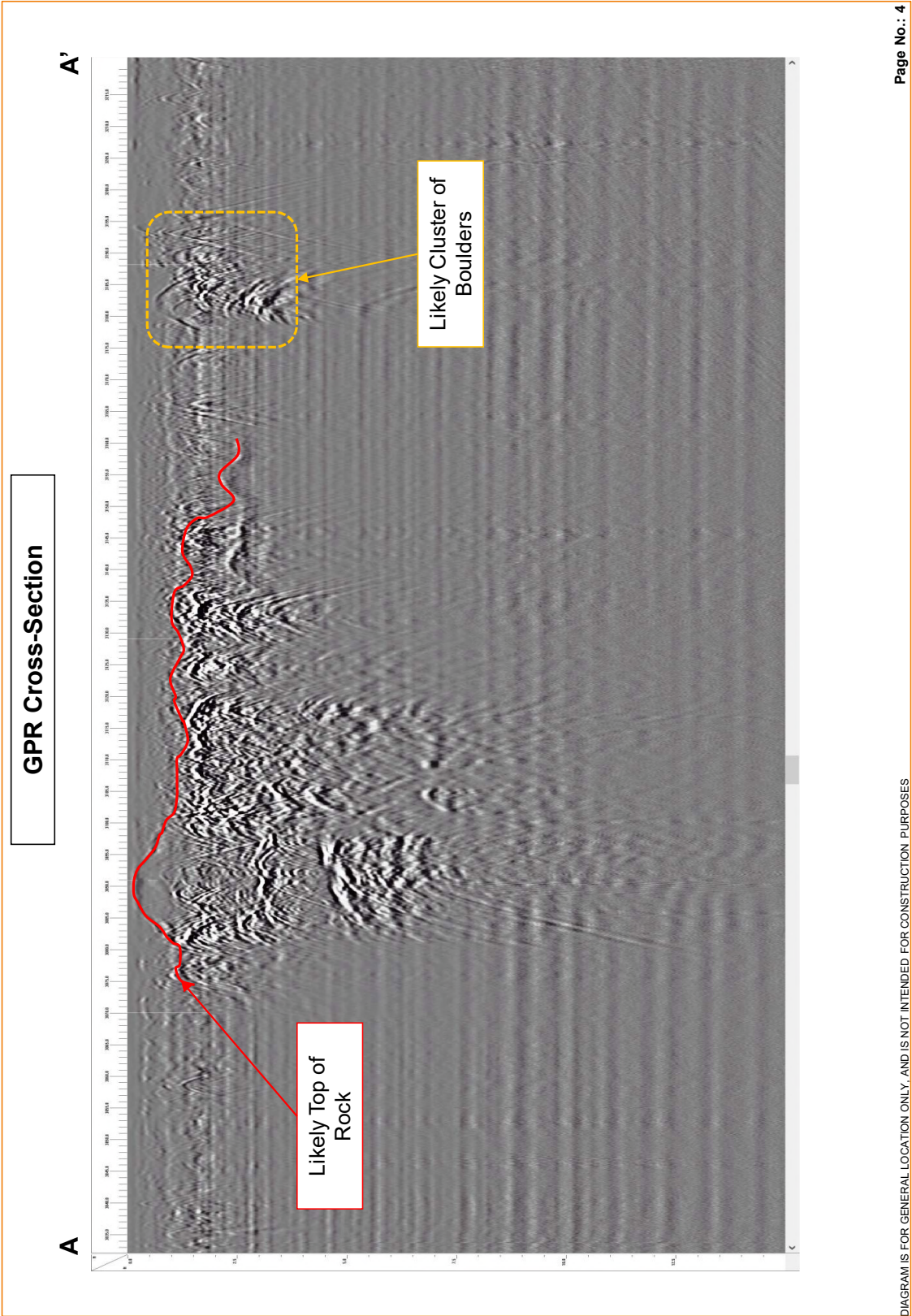
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Depth to Rock Contour Diagram
(Geophysicist Interpretation)



GPR Data Diagram









SUPPORTING INFORMATION

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			Water Initially Encountered	FIELD TESTS	N	Standard Penetration Test Resistance (Blows/Ft.)
			Water Level After a Specified Period of Time		(HP)	Hand Penetrometer
			Water Level After a Specified Period of Time		(T)	Torvane
					(DCP)	Dynamic Cone Penetrometer
					(PID)	Photo-Ionization Detector
					(OVA)	Organic Vapor Analyzer

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength Qu, (psf)	Standard Penetration or N-Value Blows/Ft.
	Very Loose	0 - 3	Very Soft	less than 500	0 - 1
	Loose	4 - 9	Soft	500 to 1,000	2 - 4
	Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	4 - 8
	Dense	30 - 50	Stiff	2,000 to 4,000	8 - 15
	Very Dense	> 50	Very Stiff	4,000 to 8,000	15 - 30
			Hard	> 8,000	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

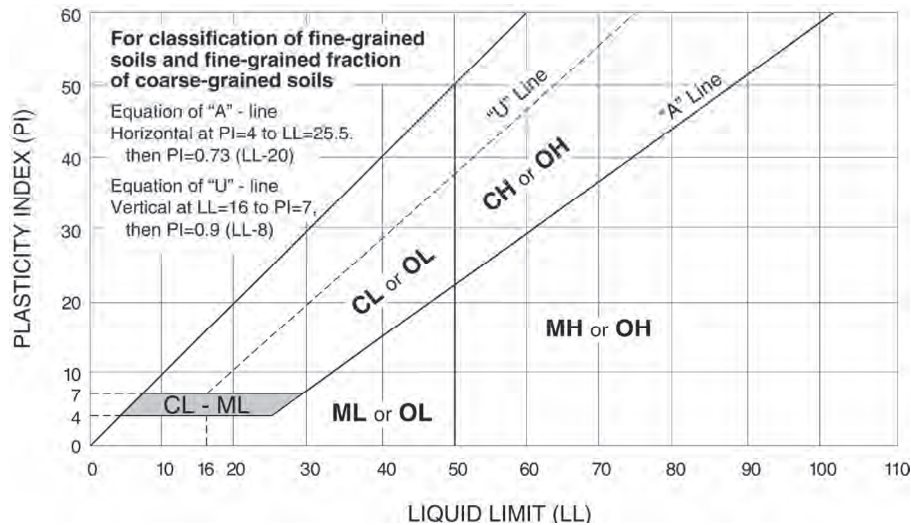
Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification	
					Group Symbol	Group Name ^B
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^E	GW	Well-graded gravel ^F	
			Cu < 4 and/or 1 > Cc > 3 ^E	GP	Poorly graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F,G, H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F,G,H}	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E	SW	Well-graded sand ^I	
			Cu < 6 and/or 1 > Cc > 3 ^E	SP	Poorly graded sand ^I	
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G,H,I}	
			Fines Classify as CL or CH	SC	Clayey sand ^{G,H,I}	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots on or above "A" line ^J	CL	Lean clay ^{K,L,M}	
			PI < 4 or plots below "A" line ^J	ML	Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid limit - not dried		Organic silt ^{K,L,M,O}	
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}	
			PI plots below "A" line	MH	Elastic Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried		Organic silt ^{K,L,M,Q}	
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

^A Based on the material passing the 3-in. (75-mm) sieve^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^E \quad Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.^H If fines are organic, add "with organic fines" to group name.^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.^N $PI \geq 4$ and plots on or above "A" line.^O $PI < 4$ or plots below "A" line.^P PI plots on or above "A" line.^Q PI plots below "A" line.

Appendix 3. Site Analysis Plans and Concept Master Plans



or depth to bedrock, To be field determined.

GRAPHIC SCALE

 $1 \text{ mol} = 40 \text{ g}$

Know what's below?
Call before you dig.



Parcel Identification Number: 9778563356

Landowner: The Town of Carboro
301 West Main Street
Carboro, NC 27510

Site Address: 145 Fidelity Street / 401 Davie Road
Carrboro, NC 27510
Orange County

CONCEPTS:

CONCEPTS:

- | | |
|----|--|
| A. | Conventional Burial Area, 4x12' Plots |
| B. | In-Ground Remains Area, 4x4' Plots |
| C. | Columbarium |
| D. | Reflection area with seating, flags, ossuary and memorial wall |
| E. | Scattering Plot |
| F. | Natural Burial Area, 4x12' Plots |
| G. | Loop Road Access |
| H. | Asphalt Walking Paths |
| I. | Mulch Walking Path |
| J. | Sign |

Area	Approx. Size	Total Plots	Plots Available
Section 1	1.13 ac.	860	10
Section 2	0.70 ac.	608	16
Section 3	0.78 ac.	763	302
Section 4	2.4 ac.		
Total	5.01 ac.	2,231	328

Phase 1

In-Ground Remains (2' Depth) = 1,038
Phase 1 **B1: 568**
B2: 470

Phase 1

C1: 300
C2: 400
C3: 500
C4: 300
C5: 400
C6: 500

Phase 1

Natural Burial (3.5' Depth) = 306
Phase 1 F1: 101

* Note: Some graves obstructed by existing trees or depth to bedrock. To be field determined.

1. Base information provided by Taylor Wiseman Taylor.

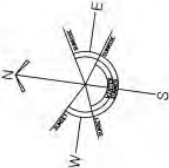
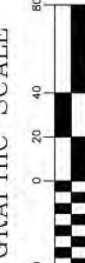
2. a. supplemental information gathered from: Google Earth, (n.d.), Westwood Cemetery, Carboro, NC], 25 Aug. 2020. www.maps.google.com
2. b. Orange County GIS, 25 Aug. 2020. www.ocgis.com/ocgis/default.htm
2. c. Orange County Aries, 25 Aug. 2020. aries.oc.orange.nc.us/Aries/
2. d. Nrcs. Web Soil Survey, 25 Aug. 2020. websoilsurvey.sc.egov.usda.gov/App/HomePage.html
2. e. "FEMA Flood Map Service Center." FEMA Flood Map Service Center, 25 Aug. 2020. msc.fema.gov/

Enb: Enon loam, 2-6% slopes

sub. Irredell-Orban) and complex, 1-6% slopes

Site is located in ZONE X, Area of Minimal Flood Hazard

GRAPHIC SCALE



Know what's below.
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PROGRESS PRINT
FOR DISCUSSION
PURPOSES ONLY

Scale:
1" = 40' - 0"

Sheet No. 1 of 1

G-1.1

Westwood Cemetery
Cemetery Expansion Concept
Phase 1 Layout

Prepared for the Town of Carboro
145 Fidelity Street / 401 Davie Road
Carboro, NC 27510; Orange County



Issue Date: 08/27/2020
Revisions: 10/16/2020
03/29/2021
Drawn/checked by: jar/lmb/prt

Taylor Wiseman & Taylor
LEAD SOURCE: (212) 526-9200/9201
2341 BROADWAY, 10TH FLOOR, NEW YORK, NY 10024
OFFICE: (212) 277-0025 FAX: (212) 277-0026

Terracon
TERRACON, INC. 200 WEST 42ND STREET, 10TH FLOOR, NEW YORK, NY 10018-3601

TMT

Carter van Dyke Associates
CVDA
Landscape Architects / Planners

40 Garden Alley
Doylestown, Pennsylvania
18901-4325
Voice: 215 345 5053
Fax: 215 345 4324
Web: www.CYDA.com



SITE DATA:
Parcel Identification Number: 9778563356
Landowner: The Town of Carboro
301 West Main Street
Carboro, NC 27510
Site Address: 145 Fidelity Street / 401 Davie Road
Carboro, NC 27510
Orange County
Site Area: 8.73 Total Acres

CONCEPTS:

- A. Conventional Burial Area, 4'x12' Plots
- B. In-Ground Cremains Area, 4'x4' Plots
- C. Columbarium
- D. Reflection area with seating, flags, ossuary and memorial wall
- E. Scattering Plot - Phase 2
- F. Natural Burial Area, 4'x12' Plots
- G. Loop Road Access
- H. Asphalt Walking Paths
- I. Mulch Walking Path
- J. Sign

Area	Approx. Size	Total Plots	Plots Available
Section 1	1.13 ac.	860	10
Section 2	0.70 ac.	608	16
Section 3	0.78 ac.	763	302
Section 4	2.4 ac.	2,231	328
Total	5.01 ac.	2,231	328

Conventional Graves (5' Depth) = 1,456*
A1: 501*
A2: 493*
A3: 134
Phase 2 A4: 134
Phase 1 A5: 194

In-Ground Cremains (2' Depth) = 1,038
Phase 1 B1: 568
B2: 470

Columbaria = 2,400
Phase 1 C1: 300
Phase 2 C2: 400
C3: 500
C4: 300
Phase 2 C5: 400
Phase 1 C6: 500

Natural Burial (3.5' Depth) = 306
Phase 1 F1: 101
F2: 205

TOTAL: 5,200*

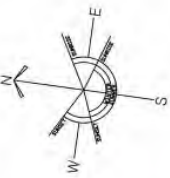
* Note: Some graves obstructed by existing trees or depth to bedrock. To be field determined.

NOTES:

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- Supplemental information gathered from:
 - Google Earth, (n.d.). [Westwood Cemetery, Carboro, NC], 25 Aug. 2020. www.mapsgoogle.com.
 - Orange County GIS, 25 Aug. 2020. gis.orangecountync.gov/orangecountygis/default.htm.
 - Orange County Aries, 25 Aug. 2020. aries.co.orange.nc.us/Aries/.
 - Nrcs. Web Soil Survey, 25 Aug. 2020. websoilsurvey.sc.egov.usda.gov/App/HorizonIndex.nrcs.
 - "FEMA Flood Map Service Center." FEMA Flood Map Service Center, 25 Aug. 2020. msc.fema.gov.

Soil Information:
Erb: Eron loam, 2-6% slopes
EnC: Eron loam, 6-12% slopes
IuB: Iredell-Urban land complex, 1-8% slopes

Flood Information:
Site is located in ZONE X, Area of Minimal Flood Hazard
FEMA Map 3710977800K, eff. 11/17/2017



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



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Westwood Cemetery
Cemetery Expansion Concept
Phase 2 Layout
Prepared for the Town of Carboro
145 Fidelity Street / 401 Davie Road
Carboro, NC 27510; Orange County

Scale:
1" = 40' - 0"
Sheet No. 1 of 1
G-1.2

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Issue Date: 08/27/2020
Revision: 11/09/2020
03/29/2021
Drawn/checked by: lar/mb / prt



CVDA
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Landscape Architects / Planners

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