2013

Terrestrial Laser Scanning Documentation Survey and Modeling of the Addison Block House (8Vo193) and MacRae Sugar Works Ruins (8Vo7496)

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Terrestrial Laser Scanning Documentation Survey and Modeling of the Addison Block House (8Vo193) and MacRae Sugar Works Ruins (8Vo7496)

Prepared for: The Florida Park Service

By: Lori D. Collins, Ph.D, Travis F. Doering, Ph.D., Alliance for Integrated Spatial Technologies, University of South Florida

Project Contributors:

James “Bart” McLeod – GPS and TLS Survey Assistant

Steven Fernandez, MA, CCM, GIS Manager

Kelly Driscol, MA, RPA, project research

Joseph Evans, USF Ph.D Anthropology student, web services and field assistance

Joseph Conrad, USF MA History student, Geomagic modeling

Jorge Gonzalez, 3D animation and modeling
Acknowledgements

This project was greatly assisted through the help and cooperation of the Friends Support group who assisted in clearing vegetation around the structural ruins to support our survey. Park Manager Phillip Rand and his staff were a big help for us both logistically and through their enthusiasm and interest. Historic Resources Administrator for the Florida Park Service, Phillip Werndli and Archaeologist Triel Lindstrom assisted with logistics and project planning discussions and are always eager to use best technologies and implement ways to provide resource protection with efficiency. We would also like to thank AIST researchers and field participants including Bart McLeod, Steven Fernandez, Joseph Conrad, and Joseph Evans were integral to this work. Jorge Gonzalez provided animations and 3D models for the Addison Blockhouse and is an important new addition to the AIST team.
Introduction

The Addison Block House (8VO193) and Addison-MacRae Sugar Works (8VO7496) are today part of the Florida Park System in Volusia County, and these early agro-industrial sites are an important part of Florida's heritage. The Addison Blockhouse Historic State Park is managed as part of the Tomoka Basin Geopark. The geopark has previously-recorded archaeological features relating to the Addison and Macrae plantation era occupations and land use. Within the boundary of the park, extant ruins including the Addison-Macrae sugar works (8VO7496), the Addison Blockhouse (8VO193) and a prehistoric mound known as Addison’s Mound (8VO243), are recorded in the Florida Master Site File records. The blockhouse and sugar works have temporal affiliations that span Florida’s British Period (1763-1784), Second Spanish Period (1784-1821), and the American Period (1821 to the Present). Of primary concern to this project is the plantation-era sugar works built by Duncan and Kenneth MacRae in 1832, and a blockhouse that was built around the ruins of the house/kitchen in 1836, as part of General Winfield Scott’s campaign against the Seminoles. These features continue to suffer substantial damage from natural and human factors, with degradation of structural integrity noted. This survey provides as-built documentation and structural assessment data, and allows for consideration and greater understanding of these features for long-term management and monitoring.

Previous archaeological and architectural documentation work in the Addison Blockhouse Historic State Park includes projects by John W. Griffin, who worked at the Addison Blockhouse site in 1950 (Griffin 1952), and produced drawings of the feature. Herschel Shepard’s (2000) architectural class at the University of Florida produced architectural CAD models for the MacRae sugar works and published the 1952 schematic sketches that Griffin had made that were based as well on a 1939 survey reconnaissance by D.D. Moody. Important work to follow was conducted by Ted Payne and included the finding of slave settlement areas in the vicinity (Payne 2001) of the sugar works. A comprehensive overview of these sites was conducted, including their structural integrity noted at the time and historic significance, by SouthArc and Lucy Wayne (Wayne 2001). Additionally, a more recent archaeological investigative report was conducted by Bland and Associates (Bland 2004), who examined subsurface moat and wall features at the Addison Blockhouse. Lucy Wayne included a thorough historic study of both the Addison Blockhouse (8VO193) and the Addison-MacRae Sugar Mill (8VO7496) in her 2010 book about the architecture of sugar plantations on the east coast of Florida (Wayne 2010).

The Addison Blockhouse (8VO193) consists of the coquina remains of a kitchen originally associated with the frame vernacular house built by John Addison around 1816. The blockhouse measures approximately 11.5-x-15 feet in size, and has been extensively modified since its original construction, including a twentieth century restoration that may have involved
features not associated with the original structure. The Addison-MacRae sugar works (8VO7496) measures approximately 135-feet in length, and is constructed out of coquina, with a brick and coquina foundation. It contains a 12-x-15-foot settling vat, and was the one of the largest sugar mills in Florida (Shepard et al. 2000; Wayne 2010).

Both 8VO193 and 8VO7496 lie on property that was once owned by John Addison, who was granted over 1,400 acres of land on the Tomoka River in 1825, but who lived on the property as early as 1816. Carrickfergus was the name he gave to the plantation. This name is a reference to Addison’s Irish birthplace. Addison built a number of buildings to support his family, his thriving cotton crop, and the 67 slaves who worked the property, including a large frame vernacular main house (Shepard et al. 2000; Wayne 2010).

Addison died in 1825, soon after his land grant was approved, and the property changed hands a few times before it was eventually purchased by two brothers, Kenneth and Duncan MacRae, in 1828. It is presumed that the MacRae’s occupied the former Addison main house while they ran their plantation. Any immediate changes they made to the property were apparently not documented. They soon turned the holdings into a large sugar plantation, with Duncan doubling the number of slaves working on the plantation after Kenneth’s death in 1830 (Wayne 2010).

The 135-foot long sugar works (8VO7496) was constructed by Duncan MacRae in 1832 and operated until 1836, when the devastating results to the sugar cane industry from the freeze of 1835 sugar were felt. The MacRae plantation was pushed further into complete disrepair when it was burned along with a number of other east coast Florida plantations by Seminole Indians. This fire damaged both 8VO193 and 8VO7496 (Shepard et al. 2000).

Troops from the Carolina Regiment of Volunteers moved onto the Addison-MacRae property in 1836 to help in the fight against the Seminoles. They rebuilt the Addison Blockhouse, giving it a watchtower, and surrounded it with deep trenches and a breastwork, thereby making the Addison/Macrae plantation the only sugar mill to ever have a fort established on its grounds (Figure 1). This camp was attacked in early March 1836 by the Seminoles, who withdrew when they saw that the garrison was prepared. The men left the camp in late March 1836, and the plantation was never returned to after the end of the Second Seminole War (Shepard 2000; Wayne 2010).

Preservation and stabilization as well as interpretive projects are urgently needed at these important sites that are central in Florida’s historic sugar mill industry and plantation heritage, and in their connection to the Second Seminole War. Due to the deteriorating conditions, this project assisted the Florida Park Service (FPS) in the documentation, assessment, monitoring,
Figure 1. Photograph (above) of 8VO193 from approximately 1945-1950. Photo is courtesy of the State Archives of Florida, Florida Memory, http://floridamemory.com/items/show/116978. Addison blockhouse sketch from Shepard et al. (2000) showing the location of the fort/camp.
modeling, and conservation planning for these sites in an effort to better plan for targeted future restoration and present-day management. We used three-dimensional terrestrial laser scanning (TLS) and other advanced spatial technologies and imaging to comprehensively record the MacRae Sugar Works and Addison Blockhouse. Three dimensional models and computer-aided design (CAD) architectural drawings were derived from these data and will assist in the structures’ long-term preservation and stabilization. The project recorded the entirety of the extant structures along with the viewable terrain surrounding the structures. The FPS has identified a series of exterior wall fractures; sections of eroded coquina stone, tabby, and masonry; and portions previously repaired with Portland cement as areas of critical concern, and using the data captured, these areas can be assessed for deterioration monitoring and examined in terms of preservation and conservation strategies.

TLS is a revolutionary technology for the documentation, preservation, and restoration of archaeological and historic sites. The non-contact, non-destructive TLS has proven particularly effective in the production of CAD as-built drawings and 3D models that are used by conservators, engineers, and architects to preserve and stabilize threatened historic structures. The capture of terrain features and landscape elements at these resolutions may result in the identification of unrecorded aspects of the MacRae Plantation, as it has in other sugar mill work by the authors. Combined with aerial LiDAR of larger terrain areas and GPS for control and ground verification, this provides a holistic understanding of the site area and feature relationships.

Recent assessments of the structural elements of the sugar works and blockhouse indicate significant deterioration of the structural materials (coquina, limestone, and brick) contributing to areas of collapse (Figure 2). Also, the mortars used in the constructions have concerns with deterioration from weathering and moisture intrusion. Previous restoration efforts have in instances used materials like Portland cement to repair these structures, methods now known to cause additional cracking and fissuring. Additionally, bracing has been done in an attempt to stabilize portions of walls, and the assessment of these techniques needs to be examined and monitoring points for deterioration should be established.
Figure 2. The tower portion (above) of the Addison blockhouse has experienced stone and mortar loss and where it attaches to the main body of the structure there is noted integrity issues and deformation in the wall of the fireplace feature. Wooden bracing (below) has been used to maintain the entry way wall integrity, but cracking and spalling especially in the corner of this wall are significant (see blow-up of figure bottom right). A tarp system is being utilized to prevent moisture intrusion (note pipe structure in bottom photo with tarp removed for survey).
Data from previous documentation and restoration efforts was incorporated into present modeling efforts to examine conditional aspects, rates of structural deterioration, and previously noted locations of associated plantation features. Positions for long-term monitoring were established for accurate assessments of deformation and integrity issues for future management of these assets. The FPS will receive data and deliverable products that directly address the research priorities for the analysis, maintenance, and management of these sites.

The project planning, data mining (aerial LiDAR and GIS geodatabase layer collection for these survey areas), and review of these data was conducted prior to the fieldwork, establishing targets for survey. These data were largely available from our 2010 GIS Archaeological Sensitivity Model of District 3 conducted for the FPS. This project included sub-meter GPS work performed in April 2010 at both target locations (Collins, et al. 2010) (Figure 3). During the D3 survey, we found errors in previous spatial plot locations of these sites, and our GPS data was used to accurately locate these resources and provide updated references to the Florida Master Site File. An assessment was made during this initial work of the existing conditions at both locales, and photographs and other documentation were taken in support of any future work planned.

As part of this survey, conducted in 2012, AIST performed field visitation to the sites, made conditional assessments, observations, and did standard field documentation, as well as performed the TLS and further GPS survey work. Both locales were visited in June and again in July 2012. From this survey work, 3D modeling and review of data was related to the terrain information derived from aerial LiDAR (Figure 4). High resolution LiDAR data that is now available for this area is revealing of the Addison site configuration and extents, and we have georeferenced the John Griffin (1952) historic archaeological sketch map so that coordinates and a ‘real-world’ understanding of the location and extent can be considered (Figure 5). A historical background review and report of our survey results, as well as the completed model development and geodatabase (GIS) construction is provided as part of this project. These final products and FMSF updates are provided to the FPS and to the FDHR (FMSF and BAR)(Appendix A). Modeling includes pre and post visitation GIS maps and database including DEMs interpolated from aerial LiDAR. Our GPS data was used to accurately map site extents for VO193 and VO7496, and to examine known cultural resource locations, and provide special feature digitization (such as from georeferencing of historic maps and other source information).
Figure 3. GPS data was used to accurately map site extents for VO193 and VO7496, and these data were provided to the FMSF for updating their records in 2010, and are now reflected in current State GIS data.
Figure 4. Aerial LiDAR was used to generate a DEM for the park area, including the MacRae and Addison site locations within the Addison Blockhouse Historic State Park area.
Figure 5. Georeferenced historic basemap drawing of the blockhouse (Griffin, 1952:277), shown with the processed aerial LiDAR data to reveal site features and extents to modern landscape.
Addison Blockhouse Documentation

The TLS survey consisted of GPS control work and 11 scan positions at variable heights and location to capture the entirety of the structural remains (Figure 6). These laser scan (TLS) survey included color image spherical photos and standard photography (Figure 7). Data was pre-processed and registered in 3D software, with meshed surface models produced from the scan point cloud data (Figures 8-9). Data was exported for modeling work in third party software, and GPS data is used to georeference historic drawings and maps. Preliminary 3D modeling including photogrammetric data (Figures 10-11) has been conducted, with true color 3D models useful for visualization.

Figure 6. TLS survey work at the Addison Blockhouse feature.
Figure 7. Standard photographs of all elevations and site area were acquired as part of the survey work.

Figure 8. TLS of the site for development of 3D models
Figure 9. Terrestrial laser scanning (TLS) of the site allowed for development of 3D models.
Figure 10. Photogrammetry with 3D models and surface texture models are continuing to be developed
Figure 11. Photogrammetry of site with 3D models and surface texture models produced.
The AIST 3D modeling of Addison blockhouse with TLS included using the information to produce digital elevation contour models for each wall surface in an effort to examine integrity in a non-subjective way. These models are not drawn from the data collected (as architectural renderings are made), but rather are derived directly from an assessment of the data in 3D software, with geometry and curvature of the wall faces preserved and able to be accurately considered. These detailed contour elevation models were made for each wall section elevation and for the fireplace feature on the interior of the structure and for the plan view, with noted structural integrity problems now able to be accurately assessed (Figures 12-17).

It was established that there are noted areas of loss and continuing deterioration that have occurred since the last architectural documentation work that was done at the site in 2000 (Shepard et al. 2000). In particular, stone block loss continues to occur along the top course of the walls and tower and in the lintel area on the interior of the structure along the firebox feature wall. These 3D data-derived drawings, simplified into computer assisted drawings (CAD) can be compared to the Shepard reference in 2000 to examine the structural loss (Figure 18-20). Also of comparative note is the difference between the plan view building foot print from the present survey and that of the architectural drawing of the structure. Differences in the shape and complexity of the structure are noted, as is the ability to see the wall deformation in the scan derived drawings. Finally, using the GPS and aerial LiDAR data in conjunction with the historical archaeological survey data from Griffin (1952), we are able to identify the extent and shape of the associated earthen and subsurface ruin features through the elevation model comparison (Figure 21).
South Wall Elevation

Figure 12. TLS 3D models showing elevation of south wall of Addison Blockhouse
Figure 13. TLS 3D models showing elevation of east wall of Addison Blockhouse
Figure 14. TLS 3D models showing elevation of the firebox feature of Addison Blockhouse
Figure 15. The TLS 3D models showing elevation of west wall and tower area of Addison Blockhouse. Of note for stabilization measures is the pulling away and deformation of the firebox wall area (red arrow above).
Figure 16. TLS 3D models showing elevation of north wall of Addison Blockhouse
Plan View of Addison Blockhouse

Figure 17. TLS 3D models showing plan view of Addison Blockhouse
Figure 18. TLS 3D plan view (left) showing differences in shape and structural integrity since the 2000 architectural survey (right) (Shepard et al. 2000).

Figure 19. CAD sketch showing north wall detail (Shepard et al. 2000), with an overlay of the TLS 3D (right) with the previously drawn CAD file that indicates loss and change in the structure over the last 13 years.
Figure 20. CAD sketch showing firebox feature (above left) (Shepard et al. 2000), compared to the TLS 3D and photo of region (above right) indicating loss and change in the structure over the last 13 years. Wall deformation and lintel block loss continue to occur in this region of the structure as noted in the contour line extraction map of the surfaces (below).
Figure 21. Georeferenced historic basemap drawing of the blockhouse (Griffin, 1952:277), shown with the processed aerial LiDAR data to reveal site features and extents to modern landscape, with 3D model plan view of the blockhouse structure.
MacRae Sugar Works Documentation

The MacRae sugar works ruin area is located on lands falling within the Addison Blockhouse Historic State Park and in the Bulow Creek State Park (Figure 22). Previous GPS survey work at this site by the authors (Collins et al. 2010) was utilized to correct the former plot location with the FMSF, and it is now documented that the site boundary does extend onto the Bulow Creek State Park (Figure 23). The site consists of standing and ruinous areas of coquina blocks and rubble associated with the sugar works and possible related structures and plantation era features present (Figure 24) (Shepard et al. 2000; Wayne 2001). Previous work at this location includes a survey condition assessment, CAD architectural drawings made by Herschel Shepard and students in 2000, and a comprehensive overview in the SouthArc report in 2001 (Figure 25-26). A GPS location survey performed by the authors in 2010 was the last survey work conducted at the site, done as part of a GIS modeling project for the District 3 parks (Collins, et al. 2010; Shepard 2000; Wayne 2001).

The present TLS survey at this site included 15 scan positional set ups at variable height and location. Color image spherical photos were taken as part of this survey, as well as standard photographs of elevations and site features. Data was pre-processed and registered, with colorization of scan point cloud data performed to provide realistic photo textured models (Figure 27). Data was exported for further modeling work in third party software, and allowed for solid surface digital constructs and CAD products to be created (Figure 28-29). GPS data are used to georeference structural remains and to consider layout of the site area and as ground truth for use with aerial LiDAR to depict a wider area of consideration. GPS data in relation to interpolated bare earth LiDAR data reveals the site extent and features present, and these features have been correlated to the previous sketch modeling to show these extents (Figures 30-31). GPS photographs of standing extant features were also taken and will be provided with other GPS, LiDAR and other data as part of a GIS geodatabase to be provided with the final report deliverables for this project.

The final deliverables and products from this project provide as-built, existing documentation and historical comparison of these sites, and allow for effective and efficient management and long-term monitoring, stabilization and restoration at these important features. Additionally, these data can prove useful for clearer understanding and relationship consideration studies and can assist in the development of public interpretive efforts in support of the Florida Park Service on-going efforts (Appendix B).
Figure 22. Updated plot location based on sub-meter GPS survey work that shows position of the MacRae Sugar Works.
Figure 23. AIST performing GPS survey near standing remains at the MacRae Sugar Works location
Figure 24. Spanish land grant documents include this 1816 sketch of the Addison application for the Carrick Fergus plantation lands. Named for Addison’s Ireland birthplace, the property would later be purchased by Duncan and Kenneth MacRae, who would build a sugar mill in 1832 (Griffin 1952). This 1816 sketch map shows 17 loosely grouped structures, possibly including slave quarters.
Figure 25. Schematic rendering of the MacRae Sugar Works location (Shepard et al. 2000)

Figure 26. The MacRae sugar works (8VO193) as documented by Shepard et al. (2000) and adapted from (Wayne 2001)
Figure 27. TLS of the MacRae sugar works site location in 2012

Figure 28. TLS data allowed for precise modeling of the site extant features at MacRae
Figure 29. CAD modeling process derived from the TLS survey is demonstrated for the east wall elevation (above and center) with standard architectural rendering shown below for comparison (Shepard et al. 2000).
Figure 30. Aerial LiDAR data that has been interpolated into a DEM and ground truthed using sub-meter GPS showing the extant features at MacRae sugar works
Figure 31. Aerial LiDAR data that has been interpolated into a DEM and shown in relation to the 2000 architectural survey (Shepard et al. 2000) which has now been georeferenced as part of this project.
Conclusions
Remote sensing techniques, such as aerial LiDAR and imagery analysis using Geographic Information Systems processing is a powerful tool for site location and assessment when combined with field truthing measures such as sub-meter GPS. These new techniques seen applied here allow for a clearer presentation and understanding of fine scale surface elevation differences of note and allow for the georeferencing and comparison of previously collected data and sketch maps. In this project, Cad drawings of these sites made by subsequent surveyors were brought together with aerial LiDAR and GPS data to provide an understanding of actual site extents and boundaries, and allowed for an understanding of the accuracy and subjective nature of the historic depictions of these ruins. Additionally, documentation strategies using best available technologies has allowed for the digital and accurate capturing of the as-is condition of these structures. Using terrestrial LiDAR in the form of 3D laser scanning (TLS), complete X,Y, Z and RGB data was captured with accuracy rates of +/- 2mm. Photogrammetric and standard imaging as well as GPS images allow for photo realistic texture modeling of these data and presentation of the sites for interpretive development and management.

In addition to this report, deliverables as part of this project entail a GIS geodatabase for these locations, visualization models using the 3D data, and a hosted demonstration website developed as a prototype to show usefulness for the 3D data capture for on-going management and preservation projects. The web server allows for the 3D data to be shared and viewed without the need for specialized software, and provides capabilities such as document linkages with spatial locations, and on-the-fly measurement and dimensional understanding. The GIS and visualization data for this project is supplied on CD, and the web service for the Addison Blockhouse portion of the project is supplied as a demonstration and can be found at: http://aistweb.forest.usf.edu.


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Wayne, L.B.

Wayne, L. B., Dickinson, Martin F, Hall, Gregory A
Appendix A

*Florida Master Site File forms for this project*
Survey Log Sheet
Florida Master Site File
Version 4.1 1/07

Consult Guide to the Survey Log Sheet for detailed instructions.

Identification and Bibliographic Information

Survey Project (name and project phase)  Terrestrial Laser Scanning Documentation Survey and Modeling of the Addison Block House (8V0193) and MacRae Sugar Works Ruins (8V00496)
Report Title (exactly as on title page)  Terrestrial Laser Scanning Documentation Survey and Modeling of the Addison Block House (8V0193) and MacRae Sugar Works Ruins (8V00496)
Report Authors (as on title page, last names first)  1. Collina, Lori D.  3. Fernandes, Steven
  2. Dunning, Travis  4. Driscoll, Kelly A.
Publication Date (year)  2013  Total Number of Pages in Report (count text, figures, tables, not site forms)
Publication Information (Give series, number in series, publisher and city. For article or chapter, cite page numbers. Use the style of American Antiquity.)
Supervisors of Fieldwork (even if same as author)  Names  Lori D. Collina
Affiliation of Fieldworkers:  Organization  University of South Florida
City  Tampa
Key Words/Phrases (Don't use county name, or common words like archaeology, structure, survey, architecture, etc.)
2. modeling  4. Laser Scanning
Survey Sponsors (corporation, government unit, organization or person directly funding fieldwork)
Name  Florida Park Service  Organization  Florida Park Service
Address/Phone/E-mail
Recorder of Log Sheet  Kelly A. Driscoll  Date Log Sheet Completed  2-7-2013
Is this survey or project a continuation of a previous project?  No  Previous survey #s (FMSF only)

Mapping
Clear Mapping Value

Counties (List each one in which field survey was done; attach additional sheet if necessary)
1. Volusia
2.
3.
4.
5.
6.

USGS 1:24,000 Map Names/Year of Latest Revision (attach additional sheet if necessary)
1. Name  NEWPORT BEACH  Year  1993
2. Name
3. Name

Description of Survey Area

Dates for Fieldwork:  Start  7-18-2012  End  7-19-2012  Total Area Surveyed (fill in one) ______ hectares ______ acres
Number of Distinct Tracts or Areas Surveyed  1
If Corridor (fill in one for each)  Width ______ meters ______ feet  Length ______ kilometers ______ miles

HRID: 0000100107 Florida Master Site File, Division of Historical Resources, Gray Building, 500 South Bough Boulevard, Tallahassee, Florida 32399-0250
Phone: (850) 245-6440, FAX: (850) 245-6439, Email: SiteInfo@dos.state.fl.us
Survey Log Sheet

Research and Field Methods

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Scope/Intensity/Procedures: 
No subsurface testing; sub-meter GPS points collected; site location unchanged. No artifacts collected. 3D laser scanning and imaging of structure.

Preliminary Methods (check as many as apply to the project as a whole):
- Florida Archives (gray building)
- Florida Special Collections - non-local
- Site file property search
- Site file survey search
- Library research - local public
- Library research - non-local
- Public lands survey (maps at DEP)
- Other historic maps
- Local property or tax records
- Soil or data maps
- Newspaper files
- Literature search
- Windshield survey
- National Archives
- Other (describe): sub-meter GPS data, laser scanning

Archaeological Methods (check as many as apply to the project as a whole):
- Excavation of test unit
- Excavation of test unit (with controlled screen)
- Excavation of test unit (unscreened)
- Shovel test
- Shovel test (water screen)
- Shovel test (1/4" screen)
- Shovel test (1/16" screen)
- Other (describe): sub-meter GPS data, laser scanning

Historical/Architectural Methods (check as many as apply to the project as a whole):
- Building permits
- Demolition permits
- Building plans
- Building documentation
- Historic documentation
- Architectural plans
- Local property records
- Other (describe): sub-meter GPS data, laser scanning

Survey Results (cultural resources recorded)

Site Significance Evaluated? Yes [ ] No [ ]
Count of Previously Recorded Sites: 2
Count of Newly Recorded Sites: 0
Previously Recorded Site #s with Site File Update Forms (List site #s without "0". Attach additional pages if necessary): V0190, V0246

Newly Recorded Site #s (Are all originals and not updates? List site #s without "0". Attach additional pages if necessary): 0

Site Forms Used:
- Site File Paper Form
- Site File Electronic Recording Form

***REQUIRED: ATTACH PLOT OF SURVEY AREA ON PHOTOCOPY OF USGS 1:24,000 MAP(S)***

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HR/806/0909/10/07 Florida Master Site File, Division of Historical Resources, Gray Building, 509 South Bronough Street, Tallahassee, Florida 32399-0250 Phone (850) 245-6416, FAX (850) 245-6430, Email: SitesFile@dos.state.fl.us

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### ARCHAEOLOGICAL SITE FORM

**Florida Master Site File**

**Version 4.0  1/87**

**Site #8  V000193**

**Field Date**  8-2-2011

**Form Date**  2-2-2013

**Recorder #**

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#### Site Information

- **Site Name(s):** Addison Blockhouse
- **Multiple Listing (CHR only):**
- **Project Name:** Terrestrial Laser Scanning Documentation Survey
- **Survey # (CHR only):**
- **Ownership:**
  - Private
    - Private: Non-profit
    - Private: Individual
    - Private: Private group
- **County:**
  - State:
  - Federal:
  - Native American:
  - Foreign:
  - Unknown:

#### LOCATION & MAPPING

- **USGS 7.5 Map Name:** Ormond Beach
- **USGS Date:** 1951
- **Past or Other Map:**
- **City/Town:** Ormond Beach
- **Within 3 miles:** Ormond Beach
- **City Limit(s):** Yes
- **UTM Coordinates:** Zone
- **Zone:** 16
- **Section:** 17
- **Other Coordinates:** X:
- **Y:**
- **Coordinate System & Datum:**
- **Address / Vicinity / Route:** US 1 north from Ormond Beach, east to Tomoka State Park; approximately 3/4 miles from entrance.
- **Name of Public Tract (e.g., park):** Addison Blockhouse Historic State Park

#### TYPE OF SITE

- **Select all that apply:**

  - Land (improvement)
  - Lake
  - Pond
  - River
  - Stream
  - Creek
  - Ridge
  - Valley

- **Setting:**
  - Inhabited
  - Abandoned
  - Ruined
  - Tilled
  - Uncultivated
  - Flooded
  - Seasonal

- **Function:**
  -Corporate
  - Instructive site
  - Relic (prehistoric)
  - Reburied
  - Reconstructed
  - Remains
  - Site (prehistoric)

#### CULTURE PERIODS

- **Select all that apply:**

  - Aboriginal
  - Euro-American
  - Non-Aboriginal

- **Other Cultures:**
  - Early Woodland
  - Middle Woodland
  - Late Woodland

#### OPINION OF RESOURCE SIGNIFICANCE

- **Potentially eligible individually for National Register of Historic Places?**
  - Yes
  - No
  - Insufficient information

- **Potentially eligible as contributor to a National Register district?**
  - Yes
  - No
  - Insufficient information

- **Explanation of Evaluation (required if evaluated; use separate sheet if needed):**

- **Listed as eligible by previous surveyor:**

#### Recommendations for Owner or SHPO Action

---

#### DHR USE ONLY

<table>
<thead>
<tr>
<th>NR List Date</th>
<th>SHPO - Appears to meet criteria for NR listing</th>
<th>Yes</th>
<th>No</th>
<th>Insufficient info</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Owner Objection</td>
<td>NR Criteria for Evaluation: Yes</td>
<td>No</td>
<td>Yes</td>
<td>(see National Register Bulletin 15, p. 2)</td>
<td></td>
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</table>
ARCHAEOLOGICAL SITE FORM

FIELD METHODS (select all that apply)

- No field check
- Literature search
- Informant report
- Remote sensing

SITE DETECTION
- Exposed ground
- Posthole tests
- Screened shovel
- Remote sensing

OTHER METHODS: Number, size, depth, pattern of units; screen size (attach site plan)

SITE BOUNDARY
- Boundaries unknown
- None by recorder
- Literature search
- Informant report

Other methods; number, size, depth, pattern of units; screen size (attach site plan)

No subsurface testing; sub-meter GPS points collected; site location unchanged. No artifacts collected. 3D laser scanning and imaging of structure.

SITE DESCRIPTION

Extent Size (m²): Depth/hydrometer of cultural deposit

Temporal Interpretation - Components (check one): Single component

Integrity - Overall disturbance: None

Surface collection: Area collected: 0 m²

Excavation: # noncontiguous blocks: 0

ARTIFACTS

Total Artifacts #:

Artifact Selection:
- Mix selective

SPATIAL CONTROL
- Uncontrolled

Artifactual Categories and Dispositions

DIAGNOSTICS (type or mode, and frequency: e.g., Suwanee ppk, heat-treated chert, Delphi Check-stamped, ironstone/whiteware)

ENVIRONMENT

Nearest freshwater: Type River

Natural community: Topography

Local vegetation: Present land use: State park

SCS soil series: Soil association

DOCUMENTATION

Accessible Documentation: Not Filled with the Site File

1) Document type: Photographs

2) Document type: Field notes

RECORDER & INFORMANT INFORMATION

Required Attachments

PHOTOCOPY OF 7.5' USGS QUAD MAP WITH SITE BOUNDARIES MARKED and SITE PLAN

Plan at 1:3,600 or larger. Show boundaries, scale, north arrow, test collection units, landmarks, and date.
**ARCHAEOLOGICAL SITE FORM**

**FLORIDA MASTER SITE FILE**

**Version 4.0 1/97**

Consult Guide to Archaeological Site Form for detailed instructions

<table>
<thead>
<tr>
<th>Site Name(s)</th>
<th>AddisonSugarMill/MacSec Sugar Work Ruins</th>
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</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Terrestrial Laser Scanning Documentation Survey</td>
</tr>
<tr>
<td>Site ID</td>
<td>V007496</td>
</tr>
<tr>
<td>Recorders' Name</td>
<td>Addisson Blockhouse Historic State Park</td>
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</table>

**LOCATION & MAPPING**

<table>
<thead>
<tr>
<th>USGS 7.5 Map Name</th>
<th>ORMOND BEACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/Town (within 3 miles)</td>
<td>Grand Beach</td>
</tr>
<tr>
<td>Township</td>
<td>Range 32N</td>
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<tr>
<td>Range</td>
<td>Section 40</td>
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<tr>
<td>UTM Coordinates</td>
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<tr>
<td>X:</td>
<td>Y:</td>
</tr>
<tr>
<td>Address / Vicinity / Route</td>
<td>south of Addison Blockhouse</td>
</tr>
</tbody>
</table>

**TYPE OF SITE (select all that apply)**

<table>
<thead>
<tr>
<th>CULTURAL PERIODS (select all that apply)</th>
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<tbody>
<tr>
<td>ABORIGINAL</td>
</tr>
<tr>
<td>Non-ABORIGINAL</td>
</tr>
</tbody>
</table>

**OPINION OF RESOURCE SIGNIFICANCE**

Potentially eligible individually for National Register of Historic Places? | yes | no | insufficient information
--- | --- | --- | ---
Potentially eligible as contributor to a National Register district? | yes | no | insufficient information
Explanation of Evaluation (required if evaluated; use separate sheet if needed) |

**DHR USE ONLY**

NR List Date | SHPO - Appears to meet criteria for NR listing
--- | ---
| yes | no |
| insufficient info | Date |
| Owner Protection NR Criteria for Evaluation: | yes | no | Insufficient information
| (see National Register Bulletin 15, p. 2) |

HRRE085391057 Florida Master Site File / Div. of Historical Resources / R. A. Gray Bldg / 150 S Bronough St, Tallahassee, FL 32390-6260 Phone (850) 245-6460 / Fax (850) 245-6429 / E-mail SiteFiles@dos.state.fl.us
**ARCHAEOLOGICAL SITE FORM**

**SITE DETECTION**
- No field check
- Literature search
- Informant report
- Remote sensing

**SITE BOUNDARY**
- Exposed ground
- Screened shovel
- Unscreened shovel

**SITE DESCRIPTION**

**FIELD METHODS** (select all that apply)
- Literature search
- Posthole tests
- Literature search
- Informant report
- Remote sensing

**SITE DESCRIPTION**

**ARTIFACTS**

<table>
<thead>
<tr>
<th>Total Artifacts</th>
<th>Count</th>
<th>Estimate</th>
<th>Surface Area</th>
<th>Subsurface Area</th>
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<tbody>
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<tr>
<td>Selective</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mixed Selective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SPATIAL CONTROL**
- Uncollected
- General (not by subarea)
- Unknown
- Variable spatial control

**DIAGNOSTICS**
- Type: Unrelated
- Frequency: 1

**ENVIRONMENT**
- Nearest fresh water: Well
- Name: n/a
- Distance from site (m): 0
- Natural community: Oak hammock
- Topography: Elevations: Min: 1, Max: 2
- Local vegetation: Oak hammock
- Present land use: State park

**DOCUMENTATION**
- Accessible documentation not filed with the site file: Including field notes, analysis notes, photos, plans and other important documents

**RECRDER & INFORMANT INFORMATION**

- Recorder Information: AIST
- Address: 4202 E Fowler Ave, CCR 107, Tampa, FL 33620, 813-974-8613, aist@usf.edu

**Required Attachments**
- Photocopy of 7.5' USGS Quad Map with Site Boundaries Marked and Site Plan
  - Plan at 1:3,600 or larger. Show boundaries, scale, north arrow, test collection units, landmarks, and date.
Appendix B

Additional Images and Modeling, Addison Block House (8Vo193) and MacRae Sugar Works Ruins (8Vo7496)
MacRae Sugar Works Ruins (8Vo7496)

Looking toward east wall in the 3D model

East profile using TLS data in CAD

Previous CAD rendering (Shepard et al. 2000)
North wall elevation using TLS data

TLS CAD rendering (above and middle) showing differences and deterioration since earlier recording and CAD drawing (below) (Shepard et al. 2000).
Addison-MacRae Sugar works feature (8VO7496) as noted during the GPS survey in April 2010 (Collins et al. 2010).

Structural bracing of extant wall elements at the MacRae Sugar works feature (8VO7496) as noted during the GPS survey in April 2010 (Collins et al. 2010).
MacRae Sugar works feature (8VO7496) east wall elevation portion as noted during the current survey (2012).

Structural bracing of extant wall as noted during this current survey (2012)