Mosko Cemetery Monument Services
Conservation, Preservation, Restoration
555 Baltimore Street, Hanover, Pennsylvania

Conservation Preservation Treatment Report

Fredericksburg, Virginia

Prepared for:

St. Georges Episcopal Church
905 Princess Ann Street
Fredericksburg, Virginia 22401

Prepared by:

Robert Mosko, Chief Conservator
Mosko Cemetery Monument Services
555 Baltimore St.
Hanover, PA 17331

January 2021

Abstract

Mosko Cemetery Monument Services was contacted by church members Gina Moriarty and Benda Hynson regarding the condition of two prominent sandstone tablets located within St. Georges Episcopal Church Cemetery.
A consultation was conducted and a full assessment of both gravestones was performed.

Introduction

St. George Episcopal Church can trace its history as far back as 1730 when it was originally wooden structure. George Washington and his family moved into the area in 1738 and attended church there and in 1815 a brick structure was built to replace the wooden structure.

During the Civil War in 1862, the church was hit by cannon ball fire at least 25 times during the Battle of Fredericksburg. 1863 during the same war, the troops of General Robert E. Lee held a religious revival at the church. Later in 1864, the church was used as hospital for more than 10,000 Union Soldiers that had been injured during the Battle of the Wilderness.

The church is currently 291 years old and contains approximately 125 marked graves within the cemetery. Efforts are being made by two members of the congregation to properly preserve and conserve the at risk and most deteriorated stones within the cemetery.

Most recently, two of the oldest sandstones tablets had been selected.

Background

Due to deterioration of the stone's surface and exposure of the underlying substrate and weakened mineral plains, an individual protective covering for each stone was constructed of wood and placed over each stone to protect them during the winter months from ice wedging and sustaining further damage.

Gravestone # 1

John Jones

Gravestone Type: Sandstone

Gravestone Style: Simple Tablet

Location: West most side of the cemetery along the wall just inside the gate at the end of the line of four upright tablets.

Inscription:

JOHN JONES

1752

Description: Sandstone tablet, with a flat top and concaved shoulders. Hand quarried and carved.

Dimensions:

Width: 26 ¼" at the bottom, 25 ¼" at the top

Thickness: 4 7/8"

Height: 35 ¼" from grade to highest point in center

Condition: Gravestone was found to be standing firmly and solidly upright with moderate loss due to spalling across the top, and down the left side facing the stones and one fourth the way down along the right side facing the stone.

Condition Continued

There are obvious chips and dents along with other mineral elements visible within the substrate.

There is a raised badge in the center of the face of the stone that replicates the actual gravestone itself that measures: 15” wide x 17 ¾” high x ¼” raised.

The shoulder drops 2 5/8 of an inch, with a 5 inch indent and 5 ½ inches at the top.

It is 10 ¾” up from the soil grade, 5 ¾” from the left edge, 5 ½” from the right edge and 5 5/8” from the top.

There is a small hairline fracture that is 11 ¾” from the left and 14” from the right running 5 ¾ long.

This is pitting on the face.

There is approximately 1 inch loss of material along the top. 1 1/8 inch delaminated width at the top and tapers ¼ at the bottom. The delaminate tapers left to right 17 ¾” ground and 12 inches to the top. It has a 5/8 inch depth of loss, and runs 12 ¾ inch across the top and curves left before it fades into the substrate along the right.

There is a crevice along the top ¼” at the widest point and 1/16 of an inch at the narrowest.

The shoulder drops 2 5/8 of an inch, with a 5 inch indent and 5 ½ inches at the top.

The lettering is approximately 1 1/8” from the bottom edge of the badge.

The numbers are 2 ¼” tall with an 1/8” incision.

The ‘J’s of the lettering are 2 5/8” tall with the remaining letters being 2 3/8” tall, 1/8” incised.

The back of the stone measured a distance of 7 ½” from the wall at the top and 5” at the bottom.

It was found to be spalled off to a max depth of 3/8” , 25 ¼” wide by 19 ½” high and 8 ¾” up from the bottom presented with mild spalling.

The severe spalling on the back of the stone was considered as a possible factor for the unequal numbers of the distance being from the wall as opposed to leaning alone.

Treatment: Upon completion of the assessment, a course of action was determined.

The stone was determined to be leaning from sound uniform surfaces that were intact. A trench was dug in front at the bottom of the stone 8” out, 27” across the front to a depth of 10” at which the unfinished bottom was exposed.

It was then ‘walked’ forward 4’ and positioned plumb and level. .5 cubic feet of drainage rock was poured in at both sides with the top soil replaced and tamped.

The stone was then precleaned with water provided from a tap from the church.

Initial chemical tasting of the water revealed:

0 ppm Cyanuric acid (which is a precursor or a component of bleaches, disinfectants and herbicides.

200 ppm Hardness (which is the amount of dissolved calcium and magnesium)

120 ppm Akali (which is the amount of dissolved carbonates, bicarbonates, hydroxides and cyanurates present within the water)

Ph of 7.2 – 7.5 (which is basically neutral and non-acidic.

0 ppm Chloride/bromide (which is an industrial disinfectant/sanitizer for pool water and water in general)

After the water was applied to the stone and the stone thoroughly saturated with the same water the readings were as follows”

0 ppm Cyanuric acid

100 ppm Hardness which dropped by 100ppm. (the stone absorbed the calcium and magnesium)

120 ppm Alkali

6.4 Ph (the calcium contained with the stone neutralized the water further)

0 ppm Chloride/bromide

The entire stone was saturated with copious amounts of water and then gently scrubbed with synthetic, plastic bristle brushes. The moisture revealed a considerable amount of biological growth that would not be removed with brushing. The stone was rinsed with water from the same source and a cleaning solution of quaternary ammonium was thoroughly applied upon the stone and within the cracks and crevasses of the stone to kill and biological growth within them.

The application of the chemical cleaning solution exposed some white paint that had apparently dripped on the stone from when the wall on which it was leaning was painted.

The stone was rinsed and allowed to dry and attention was diverted to the paint stains.

A highly volatile solvent was precisely applied directly onto the paint and them scrubbed with a tooth brush. This process was repeated several times until the paint was removed.

Once the paint was removed, attention was then diverted the friable areas of the stone.

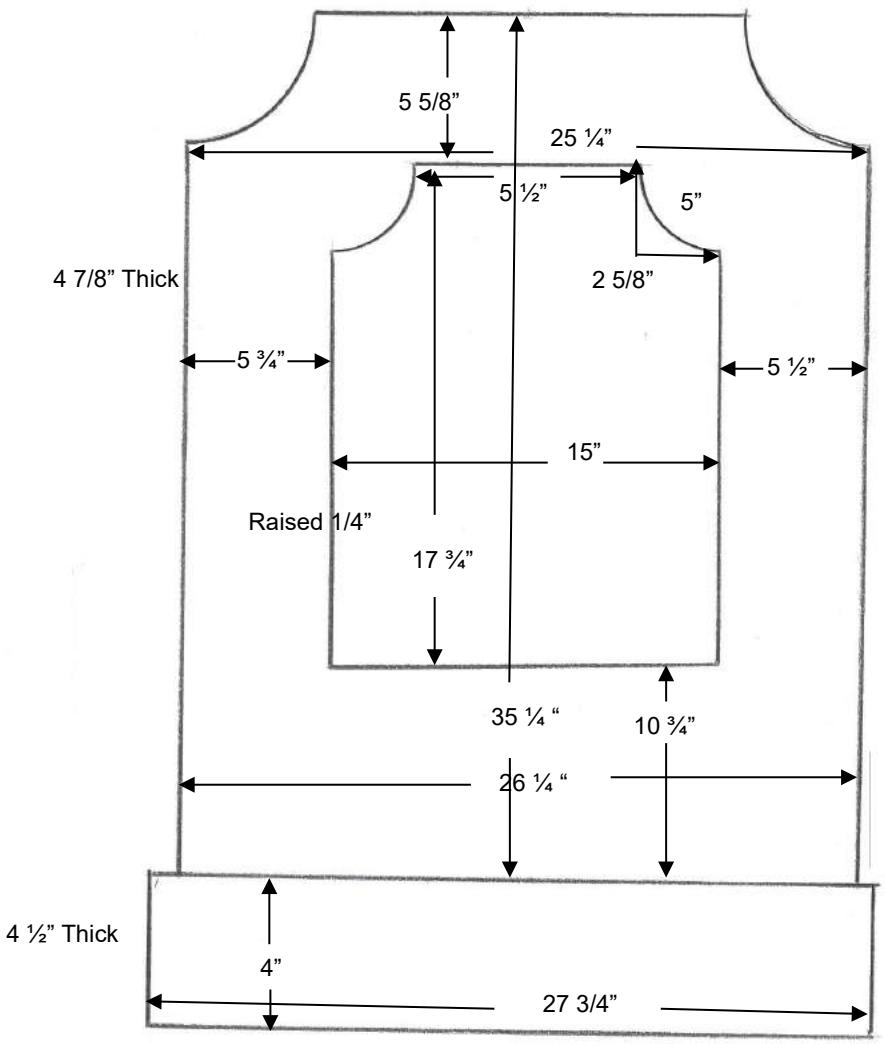
With the aide of picks and chisels and other various hand tools, any and all soft and friable substrate material was manually removed. 90 psi of compressed air was then used to blow out loosened debris and any other loose matter from within the crevasses and cracks of the stone.

The stone was then thoroughly rinsed one last time prior to application of mortar.

Once all the surfaces were thoroughly cleaned, a lime based thin setting mortar was mixed and poured into the cracks, crevasses, and delaminations.

After that mortar was allowed to cure and set, a lime based, color matched sandstone, restoration grade mortar was mixed and applied to the top, and both upper sides where the substrate was missing and packed and sculpted to match the dimensions and contours of the existing substrate.

The tablet had one unusual feature which involved the letter ‘N’, which appeared to have a faint ‘X’ engraved into it which appears to have had something to do with the alignment of that particular letter.


5 5/8”
25 ¼”
5 ½”
5”
4 7/8” Thick
2 5/8”
5 ¾”
5 ½”
15”
Raised 1/4”
17 ¾”
35 ¼ “
10 ¾”
26 ¼ “
4 ½” Thick
4”
27 3/4”
Unfinished

Gravestone #2

Mrs. Winfred Richardson

Gravestone Type: Sandstone

Gravestone Style: Multi lobed simple tablet

Location: West most side of the cemetery along the wall just inside the gate at the second to the end of the line of four upright tablets.

Inscription:

Here lies the body of
Winefrid the wife of Daniel
Richardson who died Oct^{r}:
The 16th: 1763, aged 23
Years. Also 3 children lies
Entered by Her. Remember
man as you pass by So you
are now so once was I So as
I am so must you be
Therefore prepare to follow
me

Description: A simple, multi lobed, sandstone tablet that is hand quarried, cut and carved.

Dimensions:

Width: 27 ½" across the bottom; 27 ¾" across the top

Thickness: 4" on the right side; 3 ¾" on the left side

Height: 36 ½" from ground level to highest point of the tablet

Condition: The stone presents with approximately 25% of the face on the left side. Field of loss measures 14 ¾" long at the top of the face to the very edge of the bottom along the top and 35 ½" high from the bottom to the left shoulder.

Depth of delamination of 5/16" on the left edge and tapers to a 1/16".

The sheet of delaminate that still remains intact has a ½" gap at the widest point and a 3/8" gap at its narrowest, depth is unknown as was not taken due to fear of causing it to break off.

Stone is missing 26 3/8" of substrate along the left outer edge. 13 7/8" at the front, 19 ¼" at the back, 1 ¾" up from the ground line with an area of 14 3/8" with 1 13/16" of substrate remaining intact.

The tablet was found to be leaning backward 5° with a 4" distance from the wall at the bottom left side and 4 1/16" at the right side. The top right side is actually touching the wall which flares out 2 ¾" due to missing material.

There is a 'chip' on the right side of the tablet approximately 3 ¾" wide, 5" long 1 13/16" deep.

Treatment: Upon completion of the assessment, a course of action was determined.

A trench was dug in front at the bottom of the stone 8” out, 27” across the front to a depth of 10” at which the unfinished bottom was exposed.

It was then shifted forward approximately 4 ½” without any additional damage being sustained. It was positioned plumb and level. Approximately .5 cubic feet of drainage rock was poured in at both sides with the top soil replaced and tamped.

Due to the high fragility of the tablet, manual cleaning / scrubbing was not performed. The tablet was pre soaked on all sides with copious amounts of water from the same source as previously mentioned. Then copious amounts of biocide in the form of quintenary ammonium was applied and allowed to dry.

All loose and friable portions and areas of the substrate were then manually removed with stone picks, and various stone chisels, files and masonry rasps. Once all the loose debris was gone, compressed air set at 90 psi was then used to clean out deep enclosed areas and crevasses.

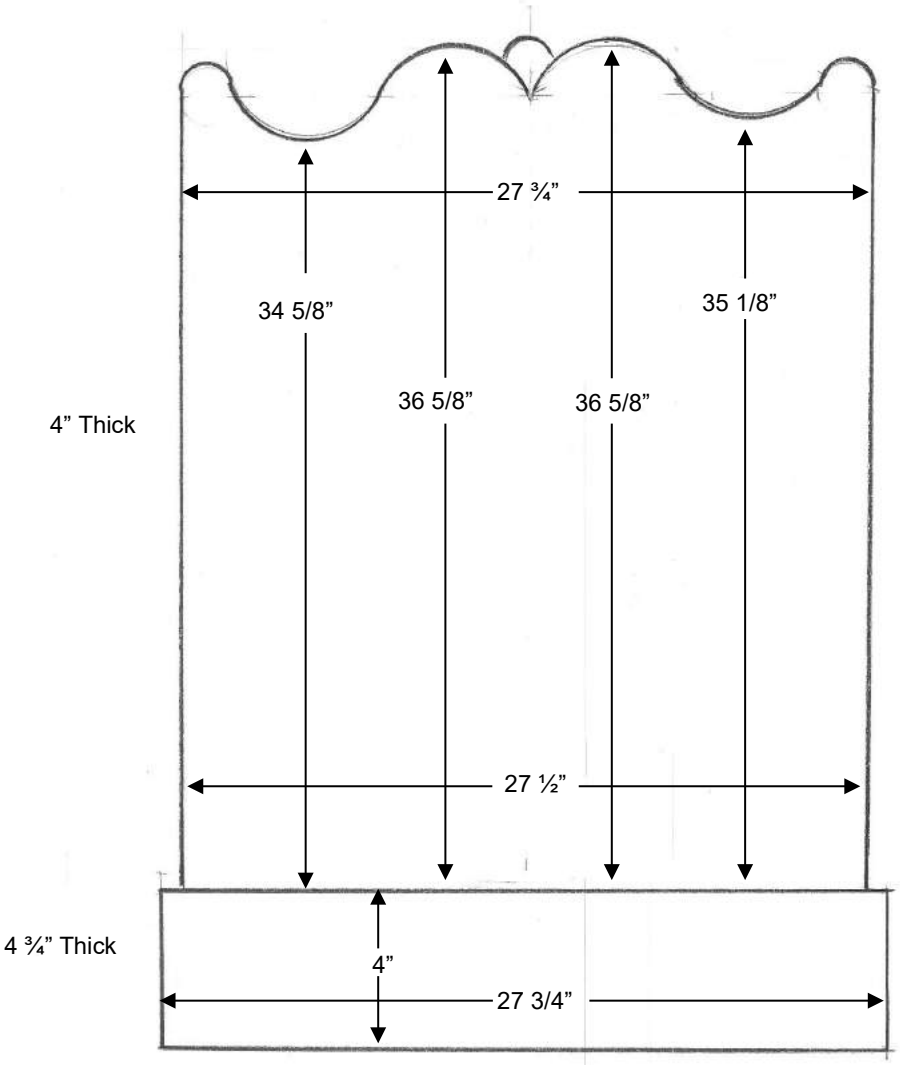
Low open / bottom areas were dammed off with a non-petroleum based clay packed into the open areas that would allow water to run out. A slurry of lime based, sandstone mortar was then poured behind delaminated areas until it permeated and packed to the top. Mild vibration was exerted upon the exterior area where the slurry was being applied to assure that it would pack evenly, tightly, and eliminate any bubbles or air pockets from forming.

The packing material as well as the tablet was given time to cure and dry. Once completed, the surface area from where the mortar was poured behind was again ‘sounded’ to assure there were no hollow areas.

Once confirmed, a lime based, restoration grade, color matched, sandstone mortar was then applied to the areas that was void of any substrate and sculpted to match the dimensions and contours of the existing tablet substrate.

Effort was made to ‘re-engrave’ the missing portions of the inscription, however; the weather forecast was no conducive for such an effort.

A stencil will be made and effort to engrave the missing portions of the inscription will be attempted in the Spring.


27 ¾”
34 5/8”
36 5/8”
36 5/8”
35 1/8”
4” Thick
27 ½”
4 ¾” Thick
4”
27 3/4”

Treatment Summary

Both stones are standing secure and upright and should remain that way just as long as no one intervenes and pushes against them.

Cleaning with water should be sufficient enough for cleaning them in the future.

Other than the lettering, the stones should not require any further treatment in the future other than the replacement of mortar which would be approximately 80 to 100 years from the year of application unless there is an unforeseeable condition unknown by the parties involved.

Both stones are warranted for the next seven (7) years against leaning and tilted, and mortar failure.

Conservation Treatment Summary

Cemetery conservation requires the practice of multiple disciplines. Mosko Cemetery Monument Services takes an extremely, non-aggressive approach in regards to administering, applying and practicing conservation treatments, methods, and techniques. Careful consideration is given to the available budget, as well as to the needs of the cemetery and client as well as to what the results would be.

All treatments are in compliance to the Code of Ethics and Standards of Practice of the American Institute for Conservation of Historic and Artistic Works and to the standards of the Secretary of the Interior, and The National Park Services' Standards for Preservation.

The materials that Mosko Cemetery Monument Services utilizes are specific to the particular application, applicable to the specific condition, tested for the applications applied and have a proven track record with historical and antiquated gravestones. It must be noted and understood that the materials used to complete masonry are not what you would find at a local hardware store.

Synthetic adhesives and epoxies were not utilized alone or as the primary bonding agent in the repair of broken stones. Depending upon the size, age, and cleanliness of the break, a thin water flowing or inject able grout, or mortar was be used in collaboration with synthetic materials to seal the voids and cracks and to protect the synthetic materials from moisture and exposure to ultra violet rays which would weaken them.

Setting, repair, and filling mortars and compounds were matched with the existing substrate in texture, color, and tooling. The mineral content matches the same mineral content of the type of stone that was being mended or reset. The material also has a greater vapor permeability than the material that is being matched and is softer than the existing substrate.

All materials utilized to mechanically repair or reset stones have compatible modulus elasticity to the physical characteristics of the mineral substrate that they were applied to.

Mosko Cemetery Monument Services reserves the use of synthetic monument setting compound only for those application where it had been previously used and oil residue from the compound remains and is visible within the substrate.

The primary mortars that were used to make the repairs were Jahn M120, and Lithomex (thin setting mortar).

The pigments that were used to color the mortar were dry powder suspended in water with potassium silicate used as a binder. Theses pigments were applied to the new mortar only.

Recommendations

Like with any structure, mortar can and sometimes does fail and of course it does react / respond to environmental elements such as the weather. Due to various environmental conditions, the various varieties of the same stone types, and the many variables associated with broken gravestones, a certain level of ‘maintenance’ will need to be practiced in order to better to preserve the stones and to assure their permanence for the longest amount of time possible.
If the mortar is to fail, it will fail within the first year. The manner in which the stones were set will allow for them to continue to remain upright and intact if failure would occur. Repair will be rather simple being that documentation exists as to what was done to the gravestone, when it was done and with what material.

The material is designed to allow for broken stones to sustain a break within the same spot as opposed to allowing for a new break within another part of the substrate. The material can be manually removed, the surfaces cleaned and them reapplied again and pigment can also be added.

Steps that the client should take in order to better preserve and protect the work that was completed:

1- Assure that all documentation associated with the project is kept safe on file. Documentation is a record, valuable resource, as well as guide for future conservation treatments and maintenance of the gravestone(s).

2- Assure that any and all gravestones regardless of any conservation / preservation treatment is not climbed upon, leaned upon, or handled aggressively in any way. Gravestones were intended to be looked at, not physically handled.

3- Advise, and instruct, all maintenance crews to be highly conscientious and avoid striking, hitting, knocking, or scrapping the gravestones, especially the ones that have been repaired. Cemetery maintenance is the number one cause of hardscape damage with vandalism being second.

4- Hold maintenance crews accountable to the damage they cause.

5- Visit and walk through the cemetery at least twice a year (every six months) or once every three months, four times a year to assess what is going on with not only the hardscape but the landscape as well and to better stay abreast to any changes as well as to any problems that could or may present.

Taking and following these five simple steps will go a long way in maintaining the cemetery as well as protecting and preserving the work that was done.