

Veterans Memorial Committee
July 31, 2013

Present:

Alan Nickerson, Chair
William Baker
Joseph Grcevic
Paul Menzel
Ragnar Peterson
Paula Ray, Secretary

Call to Order

The Chair called the meeting to order at 7:35 p.m.

Approval of Minutes

Motion was made and seconded (Grcevic/ Menzel) to approve the minutes of the October 24, 2011 Annual Meeting.
Approved unanimously.

Review Financial Statements

The Chair reviewed with the Committee the financial statement recorded with these minutes.

Old Business

1. Unionville Honor Board

Mr. Baker volunteered to speak with Mr. William Wadsworth and Lee Beckwith, Administrative Assistant for the Town Manager to get the status of the Unionville Honor Board.

2. Flag Riverside Cemetery

The Chair reported that he and Mrs. Ray had met with David Dimosky from the Flagman of America of Avon, Connecticut at the Riverside Cemetery. The site for the flag, lighting options, pole and flag options were reviewed with Mr. Dimosky. The Committee reviewed and discussed the options using the report recorded with these minutes

Motion was made and seconded (Baker/Grcevic) to have the Chair sign the contract for 35 foot flag pole and the 6 foot by 10 foot flag.

Adopted unanimously.

New Business

1. Connecticut Trees of Honor Memorial Inc.

The Committee discussed that now that Army Captain Eric Paliwoda was being honored as resident of the Town of Farmington at the Connecticut Trees of Honor Memorial, Inc. and that the criteria of inclusion on the Town Hall Memorial needed to be revisited. The current language was as follows:

Requirement for engraving a name on the Veterans Memorial at Farmington Town Hall a veteran must have died during a National or International conflict and have left for service from residency in Farmington.

The Committee held a discussion of the original criteria and possible amendments.

Motion was made and seconded (Baker/Grcevic) to amend the criteria by adding "or from the historical record was a bonafide "son" or "daughter" of Farmington as determined by this committee" to the last sentence.

Adopted unanimously.

Motion was made and seconded (Baker/Menzel) to update the Town Hall Memorial by including appropriate conflicts and names.

Adopted unanimously.

2. Civil War Memorial at Riverside Cemetery

The Chair reported he had inspected the memorial after the meeting for the flag. He distributed the attached photos showing some cracking of the façade and lichen growth and two articles on gravestone cleaning which are recorded with these minutes. He volunteered to contact professionals to get an estimate for cleaning the memorial if it is possible. He volunteered to research which conflicts needed to be added to the memorial at Town Hall and to make arrangements for their engraving as well as the addition of Captain Paliwoda's name.

Adjournment

Motion was made and seconded (Menzel/Peterson) to adjourn the meeting at 8:45 p.m.
Adopted unanimously.

Respectfully submitted,



Paula B. Ray

**TOWN OF FARMINGTON
VETERAN'S MEMORIAL FUND
FINANCIAL REPORT**

**As of
30-Jun-13**

Balance Sheet

Cash	\$ 24,759.09
Due from Other Funds	\$ 115.00
Total Assets	<u>\$ 24,874.09</u>
 Fund Balance	 \$ 24,874.09

Income & Expense Statement

Revenues	\$ 52.87
Expenditures	<u>\$ 1,500.00</u>
Net Result of Operations	\$ (1,447.13)
 Fund Balance, Beg. of Year	 \$ 26,321.22
Fund Balance, End of Year	<u>\$ 24,874.09</u>

Flagman of America

22 East Main St.
PO Box: 440
Avon, CT 06001
Tel: 860-678-0275



Fax: 860-678-8812
Email: Info@flagman.com
WWW.FLAGMAN.COM

ESTIMATE
79048

Date: 5/9/2013
Rep.: DD

Bill To

Farmington Veterans Mem. Committee
1 Monteith Dr.
Farmington CT 06032-1053

Ship To

Riverside Cemetery
Garden St.
Farmington CT 06032-1053

Cust ID: FARMVETERAN

Cust Phone: RayP@farmington

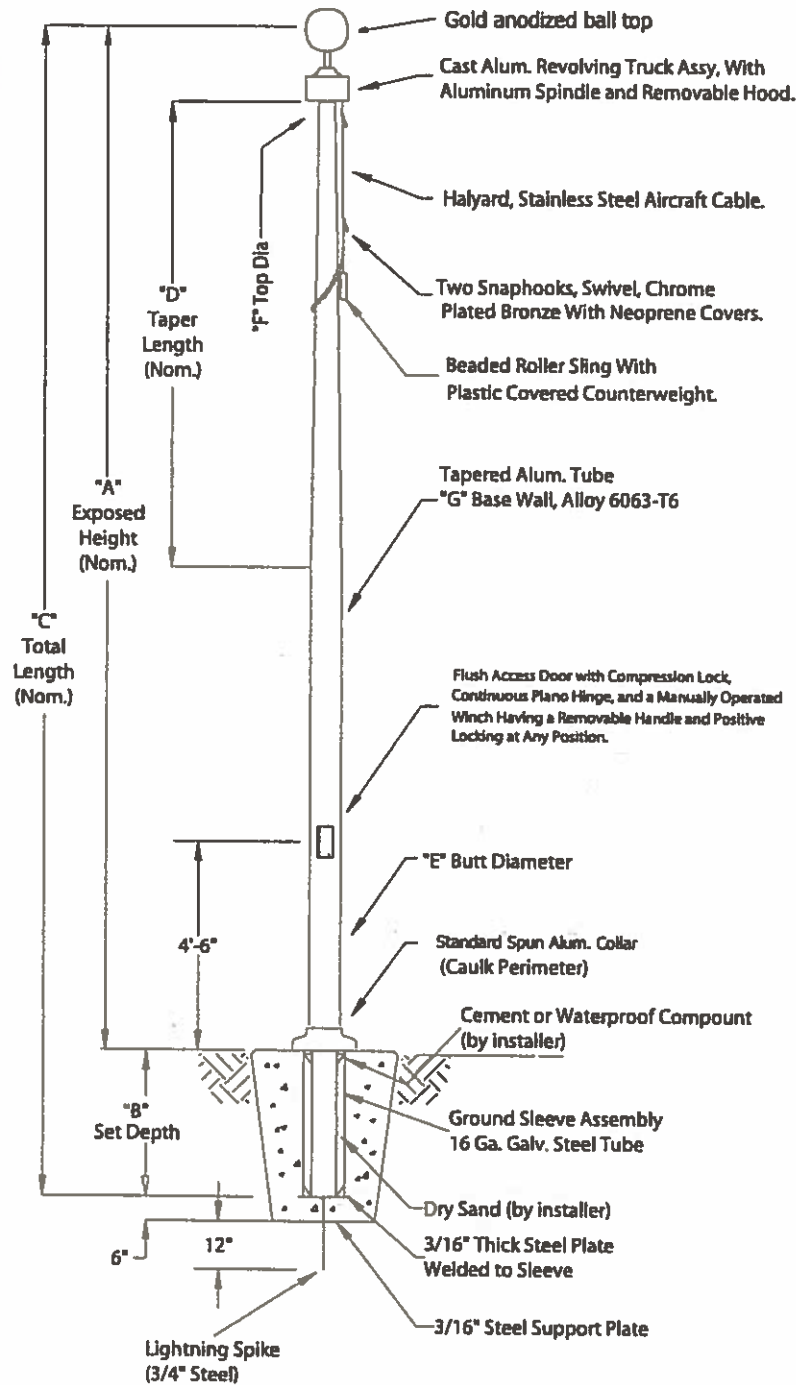
Product ID	Quant.	Description	Price	Extended
2/S	1	ec35ih 35'x7"x.188 clear annodized alum. flagpoole internal ss winch	4170.00	4170.00
1004161	1	US GUARDIAN 6x10' Polyester Flag (h&g)w/ bar tack reinforcement	107.45	107.45
LABOR	1	LABOR-INSTALLATION w/ concrete base & crane service inc.	2900.00	2900.00
2/S	1	Hi intensity 15 w led emitter	299.00	299.00

Thank you!

Subtotal 7476.45
Shipping 550.00

Total 8026.45
Paid On Inv.
Bal. Due 8026.45

X _____
Signature



A	35 ft.	Exposed Height
B	undefined	Set Depth
C	undefined	Total Length
D	undefined	Taper
E	7 in.	Butt Diameter
F	undefined	Top Diameter
G	0.188 in.	Wall Thickness
Finish: Anodize, Clear		Pieces: 2
Accessories: Gold anodized ball top, standard collar		

Customer Name: Town of Farmington
Rep Name:
Architect Name:
Project: Riverside Cemetery
Location: Garden St. Farmington-Rear
PO Number: tbd
Quantity: 1
Notes: 1\

From: Al <alanjnickerson@gmail.com> 
Subject: Flag
Date: July 31, 2013 11:37:16 AM EDT
To: Alan Nickerson <alanjnickerson@gmail.com>



1 Attachment, 2.3 MB



Sent from my iPhone

From: Al <alanjnickerson@gmail.com> 
Subject: Flag
Date: July 31, 2013 11:42:51 AM EDT
To: Alan Nickerson <alanjnickerson@gmail.com>



1 Attachment, 3.6 MB



Sent from my iPhone

Flagman of America

22 East Main St.
PO Box: 440
Avon, CT 06001
Tel: 860-678-0275



Fax: 860-678-8812
Email: Info@flagman.com
WWW.FLAGMAN.COM

ESTIMATE
79048

Date: 5/9/2013
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Bill To

Farmington Veterans Mem. Committee
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Farmington CT 06032-1053

Ship To

Riverside Cemetery
Garden St.
Farmington CT 06032-1053

Cust ID: FARMVETERAN

Cust Phone: RayP@farmington

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Thank you!

Subtotal 7476.45
Shipping 550.00

Total 8026.45
Paid On Inv
Bal. Due 8026.45

X 
Signature
CHAIRMAN

Connecticut Trees of Honor Memorial, Inc.

May They Never Be Forgotten



Army Captain. Eric Paliwoda

33rd Brigade Combat Team, 4th Infantry Division
(Mechanized). Died January 2, 2004



[Home](#) [Our Dream](#) [Ways You Can Help](#) [Our Heroes](#) [Thank You](#) [Media](#) [Contact Us](#)

Connecticut Trees of Honor Memorial

501 (C) 3 Public Charity

Connecticut Trees of Honor Memorial, Inc. is pleased to announce plans to construct a living trees memorial in Veterans' Memorial Park in Middletown, CT. The memorial will encompass a beautifully designed space that will include a tree planted for each of our State's heroes who gave their life serving in Iraq or Afghanistan. A personalized plaque will be displayed next to each tree.

The memorial will be funded and constructed with public donations and volunteer efforts. It will also feature walkways, flower gardens, benches, flagpoles, statues and lighting.

It will be a serene, reflective area where families, friends, and visitors can be reminded of the vallant courage, bravery, and selflessness of our Connecticut men and women who paid the ultimate sacrifice with their lives in military service to our country.

A monument to honor all Connecticut veterans will also be a part of this memorial design as a lasting record of the unselfish devotion to duty and inspiration to future generations.



CTHM Display at Bradley Airport. Please click here for the [WFSB CH 03 Story](#)

CTHM Display at Bradley Airport. Please click here for the [Bradley Display](#)

[Click here to view CTHM Display at Bradley Airport](#)

Latest News

Corp. Sponsors, Indv. Sponsors,
and Donations are needed to
make this Memorial a Reality.

Please help us Honor and
Remember our CT men and
women who gave their lives for us.

Go to [Ways You Can Help](#)
or mail to address on flyer.

Click here read about our [QR Code](#).



HONOR THE FALLEN

Honoring those who fought and died in Operation Enduring Freedom, Operation Iraqi Freedom and Operation New Dawn



SHARE

Army Capt. Eric T. Paliwoda Died January 2, 2004 Serving During Operation Iraqi Freedom

28, of Texas, assigned to 4th Engineer Battalion, 3rd Brigade Combat Team, 4th Infantry Division (Mechanized) based in Fort Carson, Colo., killed in action when his command post when it came under mortar attack, on Jan. 2 in Balad, Iraq.

Capt. Eric T. Paliwoda had a busy life ahead of him. There was a wedding to plan, a master's degree to earn and a teaching position to pursue.

"He was very excited. He'd be a wonderful teacher, he had a very commanding presence," said his mother, Mary Paliwoda.

Paliwoda, 28, of Goodyear, Ariz., was killed Jan. 2 when his command post came under a mortar attack in Balad, about 50 miles northwest of Baghdad. An engineer, he was based at Fort Carson, Colo. Paliwoda and his fiancée, Wendy Rosen, were planning a June wedding, said his father, Alfred Paliwoda. He also wanted to earn a master's degree and teach at his alma mater, West Point, said his mother.

Paliwoda grew up in Farmington, Conn., and was a standout basketball player in high school.

Many universities sought the 6-foot-7 player, and he chose the prestigious military college. Mary Paliwoda said "Originally, he did go there to play basketball. But he was always willing to devote himself for our country," she said.

— Associated Press

HOME

OPERATION ENDURING FREEDOM

OPERATION IRAQI FREEDOM

OPERATION NEW DAWN

THE PEOPLE BEHIND THE SACRIFICE

SEARCH OUR DATABASE

First Name

Last Name

Date Range

Conflict

Home State

Home Town

SEARCH

View By Year & Month

- | | | | | |
|--|--|--|--|--|
| <p>2013
January February March
April May June July
August September
October November
December</p> | <p>2012
January February March
April May June July
August September
October November
December</p> | <p>2011
January February March
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October November
December</p> |
| <p>2003
January February March
April May June July
August September
October November
December</p> | <p>2002 2001</p> | | | |

6707

Number of Enduring Freedom, Operation Iraqi Freedom and Operation New Dawn

The Hall of Valor includes citations related to actions during the Global War on Terror.

It has a total of valor award citations.

Eric Thomas Paliwoda

PALIWODA, Capt. Eric Thomas

United States Army Captain Eric Thomas Paliwoda, 28, formerly of West Hartford and Farmington, was killed in action on Friday, (January 2, 2004) in Balad, Iraq. Born February 23, 1975 in Hartford, Eric was the beloved son of Alfred and Mary Paliwoda of Sedona, AZ. In addition to his parents, his sister and brother-in-law Allison and Captain Jeff Csoka of Clarksville, TN, his fiancée Wendy Rosen of Hartsdale, NY, and his uncle, aunt, and cousins Thomas, Susan, Michael, and Cailin Luneburg of Danville, CA survive him. Eric is predeceased by his maternal grandparents Phyllis and Thomas Luneburg and paternal grandparents Helen and Jan Paliwoda. Growing up in Farmington, Eric attended West District Elementary School and Irving A. Robbins Middle School. Eric graduated from West Hartford's Conard High School in 1993, where he was an exceptional student and an All-State and All-American honored basketball player. During high school, he received a congressional nomination and was accepted to attend the United States Military Academy at West Point, New York. Eric entered the Academy in 1993 and over his four years there was a member of Army's Division I Basketball and Track & Field teams. He graduated from West Point in 1997 with a Bachelor of Science degree and was commissioned as a Second Lieutenant in the United States Army. Following graduation from the Academy, Eric traveled to Fort Hood, TX where he served as both a Platoon Leader and an Executive Officer for an Engineering Battalion. He then moved to Fort Carson, CO where he was the Battalion Personnel Officer and Assistant Brigade Engineer for the 3rd Engineering Battalion. Eric's extensive military education included graduation from the Engineer Officer Basic course, the Scout Platoon Leaders Course, the Armor Officer Advanced Course, the Combined Arms Services Staff School, and the Cavalry Leaders Course. Over the course of his career, Eric was awarded both the Army Commendation Medal and the Army Achievement Medal twice, the National Defense Service Medal, and the Army Service Ribbon. He will also be honored with a Purple Heart and a Bronze Star posthumously. Eric had served as Company Commander for Bravo Company, 3rd Engineering Battalion, 4th Infantry Division, Fort Carson, CO as part of Operation Iraqi Freedom since April 2003. He had also recently been chosen to return to West Point as an instructor in the Department of Environmental Studies. Eric will be terribly missed by all of those who knew, loved, and cherished him. As a special leader and friend, he reached, touched, and changed many lives during his brief time on this earth. Services will be held Monday, January 12, 1:30 p.m. in the Old Cadet Chapel at West Point, New York. Burial will follow at West Point Military Cemetery. Flowers may be sent to the William F. Hogan Funeral Home, 135 Main Street, Highland Falls, New York, (845) 446-2868.

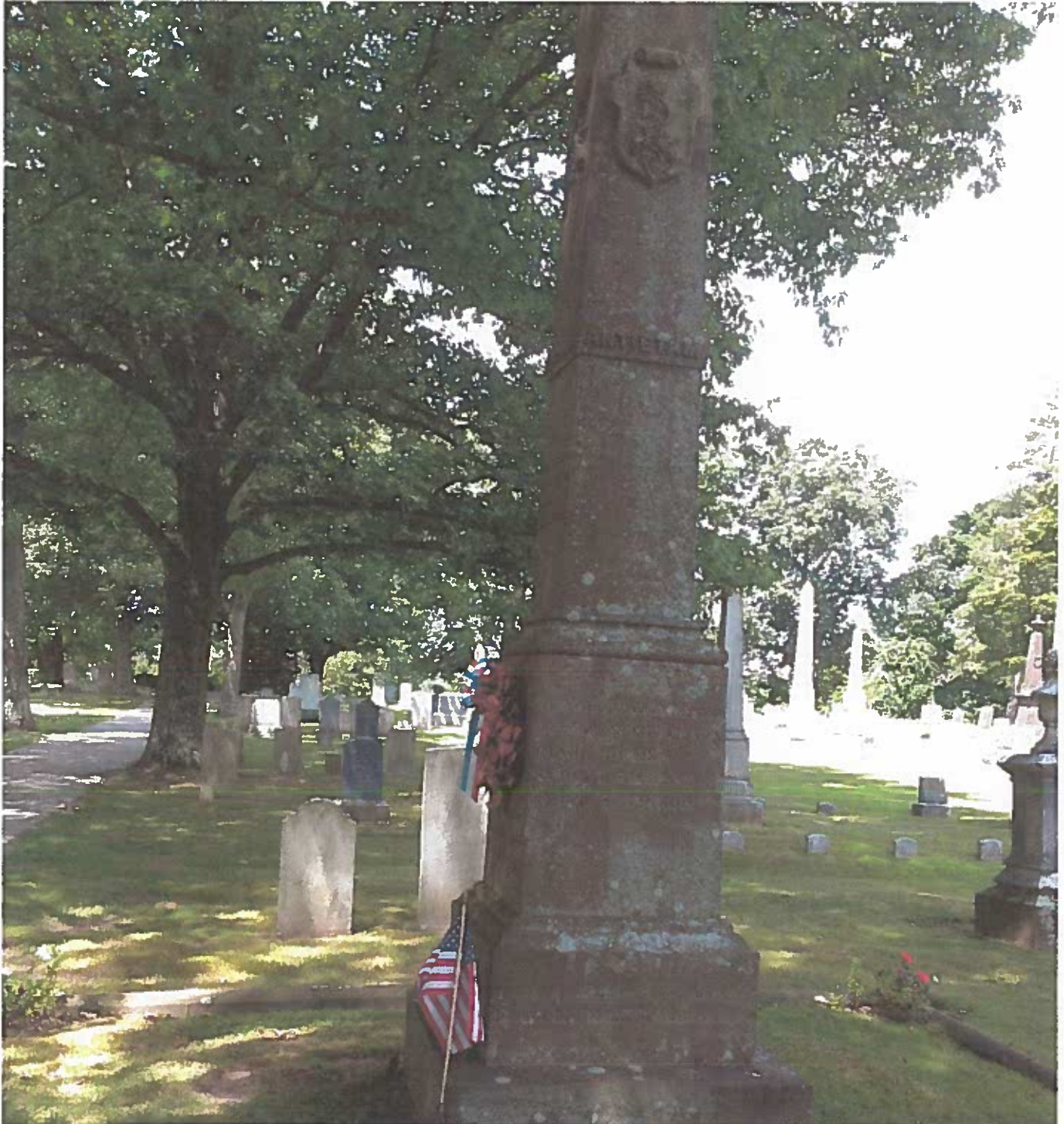


Published in The Hartford Courant on January 8, 2004

From: Al <alanjnickerson@gmail.com> 
Subject: Civil war monument
Date: July 31, 2013 12:41:05 PM EDT
To: Alan Nickerson <alanjnickerson@gmail.com>



1 Attachment, 3.9 MB



From: Al <alanjnickerson@gmail.com> 
Subject: Civil war monument
Date: July 31, 2013 12:40:34 PM EDT
To: Alan Nickerson <alanjnickerson@gmail.com>



1 Attachment, 3.8 MB



Cemetery expert offers gravestone cleaning tips

By MICHAEL LEAMY

For The Daily Astorian | Posted: Friday, May 24, 2013 4:08 pm

Historic burial sites are scattered throughout Clatsop County. Most, but not all, are within our many historic cemeteries.

Some sites have vanished, or are vanishing, as nature reclaims those that lack care. Some have been vandalized, with monuments overturned, broken, and in some cases, smashed beyond repair. Ironically, many gravestones are being systematically and lovingly damaged or destroyed by those who care about them the most.

As Memorial Weekend draws near, well-meaning people head to the cemeteries to clean gravestones. Unfortunately, knowledge of proper cleaning techniques seems to be in short supply. They are stones, after all. How can a bit of cleaning hurt them?

I was in a pioneer cemetery in Grants Pass recently. The quiet of the afternoon was shattered by screeching and rasping sounds as someone was cleaning an old marble monument. The tool of choice was a wire brush with a metal scraper attached, the kind usually used in preparing a surface to be painted. In another cemetery, I saw someone with a bottle of bleach in hand, sloshing it, undiluted, over a marble gravestone. The stone was darkened with an encrustation of algae and lichens.

Afterward, it looked white. But within a year, the once-smooth surface had changed to the texture of coarse sandpaper. The one in Grants Pass had a crosshatch pattern of rust stains, with rust streaks where the rain had washed down the face of the stone.

The question

To clean, or not to clean? That is the question. Before trying to clean a stone, there are several things you must know. First, is it cleanable? If it shows any sign of chipping, flaking, scaling, sugaring, or any other form of deterioration, do not clean it. You may do more harm than good. Tap it gently with a knuckle. If you hear any hollow sound, do not clean it. Nearly all kinds of stone used to make memorial stones are porous, and water seeps through the stone, flowing down through its crystalline structure. Anything the water carries with it can do surface damage, internal damage, or both.

Next, what kind of stone is it? Depending on the era, it may be marble or limestone, sandstone, slate or granite. The first three are the most fragile. Sandstone is a concretion of grains of sand, tan or brown in color, and subject to flaking and delamination. Most marble stones were cut from white marble, and polished. Bluish, gray or black limestone was used extensively for obelisks, smooth but unpolished.

Slate and granite, though harder, are still subject to damage by improper cleaning. Slate markers are

usually dark, thin, plainly shaped tablets. Granite of a variety of colors has been used not only in massive, highly polished memorials, but more recently in ornately formed dies on bases as well.

The word massive relates to the cleanability question as well. Many upright gravestones in historic cemeteries have had whatever mortar or mastic that was used to assemble them deteriorate over time. They may be unstable stacks of stone, poised to topple on the unwary. Gravestones weigh between 150 and 180 pounds per cubic foot, and if they fall, they can cause serious injury or death. If the stone wobbles, do not clean it. It must first be secured, using an adhesive that will not react with the stone. But gravestone restoration is a topic for another discussion.

The most important tool to use in cleaning gravestones is old-fashioned elbow grease. There are no shortcuts that will not damage the stones. Preservation-oriented groups, including the Oregon Commission on Historic Cemeteries and the Association for Gravestone Studies, offer several precautions:

- Do not use a pressure washer.
- Do not use any acids, or acid-based solutions.
- Do not use any kind of abrasives or scouring pads.
- Do not use a sandblaster.
- Do not use any metal tools or wire brushes.
- Do not use bleach or any other form of household cleaner.

Even though we are dealing with stone, the rule is a simple one: always be as gentle as possible. Always use the least aggressive approach. The recommended cleaning agent is plenty of clean water. Clean water and elbow grease will accomplish wonders. Once you have determined that an ancestor's gravestone can indeed be safely cleaned, assemble a cleaning kit. It is listed in the box accompanying this story.

Begin by thoroughly wetting the stone. The pump sprayer allows you to use less water, both while wetting and rinsing. Keep it wet while you are cleaning. If the stone has lichens, moss or algae on it, let it soak a bit, then wet it again before starting to scrub. If it has live ivy attached, do not attempt to remove it. It can tear away part of the stone. Clip the stem and leave the attached part to die, and come back another day. Once it is withered, the adhering fibers will easily break, and then you can soak it and scour away the remaining traces with a brush, or a plastic scraper.

When the stone is thoroughly wet, start scrubbing in a random orbit pattern. Clean the back of the stone first. Many people start with the front of the stone, and run out of energy before they get to the back. Work from the bottom to the top, rinsing frequently. Be sure to keep the stone completely wet as you work. Stubborn lichens may take more soaking and scrubbing. Whatever tools you use from your cleaning kit, be sure only to work on a very wet stone. When you are finished, rinse, and rinse again. The

process requires time, patience, persistence and, above all, gentleness.

Remember, even though you might not see it, even the gentlest cleaning removes part of the surface of the stone. It is recommended that gravestones only be cleaned every five to seven years.

More information can be found online on the Oregon Heritage website at www.oregonheritage.org or www.gravestonestudies.org .

Michael Leamy operates Greenwood Cemetery, and serves on the Oregon Commission on Historic Cemeteries.



Best Practice Recommendations for Cleaning Government Issued Headstones¹

This document was developed as general guidance for the cleaning of government issued headstones based on research undertaken by the National Park Service National Center for Preservation Technology and Training and funded by the Department of Veterans Affairs National Cemetery Administration. Recommendations are intended to be used by cemetery directors, operations staff, foremen, maintenance staff, contractors and headquarters staff. The document focuses on general cleaning and regular maintenance of marble headstones that are soiled from dirt and biological growth. Recommendations do not address cleaning needs from unusual events such as removal of road tar, mower scars, vandalism, or other accidental damage. Cleaning recommendations for other stone types such as granite, sandstone, or limestone are not presented here.

One of the critical components of maintaining the appearance of a national cemetery is the cleaning of headstones. Many of the more than 3 million gravesites in 131 national cemeteries are historic headstones and markers which should be protected and treasured. Also, today's new headstone will be tomorrow's historic grave marker.

Headstone cleaning must take into consideration the operational standards set forth by the National Cemetery Administration. [1] The following standards are among those designated for headstones:

- Headstones, markers, and niche covers are clean, free of debris and objectionable accumulations.
- Headstones, markers, and niche covers are not damaged by cemetery operations (e.g., interment, grounds maintenance, headstone, marker, niche cover, maintenance, and facility maintenance operations).

Maintenance practices must have an eye toward the future. Many cleaning methods may be able to remove soiling from headstones. Some will be more effective than others. But the long-term effects must also be considered. Anyone developing a cleaning method must look at the soiling agent to be removed, the potential threats caused by the soiling, and the possible unintended results of cleaning.

¹ This document, released for distribution on May 23, 2011, is part of a forthcoming report of research undertaken by the National Park Service's National Center for Preservation Technology and Training for the Department of Veterans Affairs National Cemetery Administration.

Soiling Agents or Accumulations

Soiling agents are accumulations on stone that alter the appearance of the stone and may cause additional damage. Different soiling agents may respond better to a particular cleaning method. Soiling agents include:

- **Dirt**, including soil and mud, often arises from transferring the topsoil to headstone surface. Dirt can lead to dark staining on the surface or an overall dingy appearance. Dirt can penetrate into the pores of the stone and be difficult to remove. Minerals containing iron can leach into the marble surface and leave rust colored stains behind. If the headstone has sunk into the ground over time, then is raised and realigned, a distinct line of soiling can be seen. Dirt can retain moisture after rainfall and lead to the growth of mold or mildew on the stone surface.
- **Air pollution**, including particles from vehicle exhaust, can deposit on the surface of marble. Nearby factories or industrial activities can generate pollutants that can change the appearance of the stone or chemically interact with the stone over time. For example, sulfur dioxide produced through manufacturing processes and vehicle exhaust can interact with marble surfaces to cause gypsum crusts. These crusts can capture soil and pollution particles to create rough, gray surfaces.[2]
- **Biological organisms**, such as bacteria, mold, mildew, algae, mosses, or lichen can adhere to the headstone and result in appearance changes. Microorganisms are capable of establishing a biofilm on the surface of the stone. Biofilms include proteins and sugars that are hard to remove through standard cleaning practices and provide food for regrowth of organisms.[3] Bacteria can consume air pollutants and produce acids that can attack the stone. Fungi can penetrate the pore system of stone and carry bacteria further into the stone.[4]
- **Bird droppings** or other animal secretions can stain the stone. Depending on the animal's diet, the stains may be difficult to remove. Urine seeps into porous materials and with time produces yellow stains.
- **Plant or tree sap** is a sticky substance that drips from overhanging trees. The material may contain resins that are not easily dissolved in water. The sugars in the sap may attract insects or provide food for molds and mildews. Shrubs have falling berries that can stain surfaces.

Other threats to headstones

- ***Salt damage*** can cause disintegration of a stone surface. The presence of salts within the stone, in the grounds surrounding the stone, in irrigation water, in some herbicides, and in some cleaners, can migrate through the stone's porous network and cause damage. Salts are dissolved and transported by water. They can recrystallize and exert pressures in the pores that may exceed the strength of the stone.[5, 6] Thus, do not use cleaners that leave behind salts to clean marble headstones.
- ***Freeze thaw cycles*** can increase stone weathering. Water can enter into openings, cracks, and pores of stone. If freezing temperatures exist, the water can freeze and expand. With many freeze thaw cycles, water can damage stone.[7] Since most cleaning efforts require saturating the stone with water or liquids, do not clean headstones during freezing temperatures or when a freeze is expected within 48 hours of the cleaning.
- ***Improper cleaning*** can stain the surface or accelerate stone deterioration. Well-meaning but ill-informed custodians of cemetery headstones do damage through poor selection of cleaning methods. This would include use of power-washing equipment too close to the stone, not rinsing after application of cleaner, and using products in a greater strength than the manufacturer recommends.

Important factors to consider

- ***Use the gentlest, least invasive method***
Select cleaning methods and materials that, to the best of your knowledge, do not affect the headstone. Chemicals and physical treatments should be undertaken using the gentlest means possible to insure the longevity of the headstone and to minimize the need to replace the stone.
- ***Do no harm to the stone***
Do no harm to the headstone during its care or the care of the cemetery. A headstone is placed on a soldier's grave as a marker to identify burial site, but serves other roles as well. It is intended to honor the deceased and thus should be treated with respect. Over time the headstone takes on meaning to the loved ones who visit. By its very nature, it possesses added value and association to the veteran's service.

- ***Consider long-term effects***

Recognize that cleaning efforts are part of a continuum of cleaning that will be applied to the headstone. All efforts to clean headstones affect the surface in ways that are not always obvious. Marble is made up of interlocking grains of carbonate mineral which is bound together in a network that includes varying amounts of pores. When the surfaces are cleaned, some of the grains can be loosened and lost. Sometimes the mineral binder that holds the stone together can be affected. Over time and many cleaning campaigns, the surface can be altered noticeably and result in a sugaring appearance. Some marble is more prone to this type of deterioration than others. For example, Colorado Yule marble is more affected by cleaning than Cherokee White marble from Georgia.

- ***Don't remove the original surface***

The original surface may be polished and smooth. The inscriptions are generally carved into the headstone. If the original surface is altered, the way the headstone subsequently weathers may be changed. As the surface roughens, it will soil more easily. The inscriptions can be eroded away, making the headstone harder to read. Never aggressively scrub the surface, or use wire brushes or mechanical methods such as sanders or grinders to clean the surface. See also –mechanical cleaning: power tools, below.

- ***Minimize cleaning impacts***

Minimize the number of times a headstone is cleaned in its lifetime. While a cyclic maintenance plan is needed to maintain the appearance of the headstone, over-cleaning should be avoided. If possible, historic headstones should not be cleaned more frequently than once a year.

- ***Test cleaner first***

ALWAYS TEST the cleaner for suitability and results before overall cleaning. Conduct the test using the recommended application procedures. Let test area dry thoroughly before inspection. When using a biocidal cleaner, it may take several days before the full cleaning effect is realized. When practical, allow two or more weeks for biological soiling to disappear.

- ***Consider Environmental Conditions***

Environmental conditions may dictate the frequency of cleaning. For example, headstones that are located in shady and damp areas under trees may need to be cleaned more frequently than headstones in sunny areas.

Cleaning techniques known to damage stone

- ***Bleach or bleach-like products***

Household bleach or other oxidizing cleaners, such as Daybreak cleaner or HTH Shock 'N Swim pool treatment may chemically react with the stone surface and leave soluble salts in the pores of the stone which will lead to decay. Check the label of the cleaner or the Materials Safety Data Sheet (MSDS) for active cleaning ingredients. If the products contain sodium hypochlorite (NaClO), sodium perborate, sodium percarbonate, sodium persulfate, tetrasodium pyrophosphate, calcium hypochlorite or urea peroxide, do not use them for cleaning the headstone. For example, Daybreak cleaner contains 14% sodium hypochlorite and is not recommended.

- ***Strong acids or bases***

Strong acids, including muriatic acid, hydrochloric acid, or others are too harsh and will dissolve the stone surface. Because they are corrosive, they can also be hazardous to workers. Strong bases, such as concentrated ammonia, sodium hydroxide, calcium hydroxide, potassium hydroxide, or others may be aggressive on the surface of the stone and may be hazardous to workers.

- ***Mechanical cleaning: Power tools***

Harsh mechanical devices such as sand blasting, or power tools such as sanders or drills equipped with a wire brush remove the original material of the grave marker.

- ***Mechanical cleaning: High-pressure washing***

Pressure washing systems are mechanical sprayers that use water under high pressures to clean surfaces. Commercially available pressure washers operate at pressures between 750 psi and 30,000 psi that will damage marble headstones. This technique can cut into and mar the surface of the stone. The appropriate distance and pressure needed to properly clean an individual headstone is generally about 12 inches with a pressure of 500 psi or less. Some stones may not be able to tolerate these conditions depending on their condition. A test patch in a small unobtrusive area on the headstone is recommended prior to cleaning.

Cleaning methodology

A cleaning regimen for headstones should be based on environmental considerations such as humidity, biological growth rates, tree cover and vegetation, precipitation and other factors that influence the frequency of cleaning necessary to maintain an appropriate appearance.

- ***Choosing the cleaner***

Cleaning should be undertaken with the mildest, least-abrasive method. Improper cleaning can lead to accelerated deterioration or loss of original materials. Always begin by reviewing the Materials Data Safety Sheet (MSDS) for any chemical product to be used. The MSDS may be found by searching online or by contacting the manufacturer or distributor. The MSDS contains important chemical information and necessary safety precautions needed for use of the product.

Make sure to note the manufacturer's application recommendations. The two most important features to note are the dilution ratio and the dwell time. If the manufacturer recommends diluting the cleaner, use the recommended dilution ratio. A small amount of the cleaner should be added to water to create the required ratio. Using the cleaner in a more concentrated form may increase the risk of damage to the headstone. The dwell time is the amount of time that the cleaner is left on the surface of the stone before scrubbing and rinsing the stone. The dwell time varies depending on the cleaner.

Biocidal cleaners are available for use on stones that have biological growth, such as algae, mildew, moss, and lichen. Most biocidal additives also help to keep biological from returning to the stone for an extended period of time. Recommended biocidal cleaners include D/2 Biological Solution manufactured by Sunshine Makers,² Enviro Klean® BioWash®,³ or other cleaners that contain quaternary ammonium compounds. Consult with the product manufacturer to determine if the biocidal cleaner contains buffers that may leave salts behind on the stone. Follow directions as specified by the biocide manufacturer, making sure to rinse thoroughly. It is important to know that marble cleaned with biocides should continue to lighten over the next few days. The advantage of a biocidal cleaner is that it helps remove a wide range of soiling including

² Exclusively distributed by Cathedral Stone® Products, Inc., 7266 Park Circle Drive, Hanover, MD 21076, Telephone: 410-782-9150, Fax: 410-782-9155.

³ Manufactured and distributed by PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Telephone: 800-255-4255; Fax: 785-830-9797. E-mail: CustomerCare@prosoco.com.

biological growth. The disadvantage is that the cleaners are more expensive than other products on the market.

- ***Equipment needed***

- Personal Protective Equipment***

- While no special equipment is required under normal use, gloves and eye protection are recommended. Avoid eye contact where splashing of the cleaner may occur, such as during spray applications. Wash hands thoroughly after handling any cleaner and before eating, drinking or smoking.

- Brushes***

- Soft bristle brushes are required when cleaning stones. They can have natural or synthetic bristles. Vegetable brushes or soft grooming brushes for large animals are a few that can be found in chain or farm supply stores. All rough or metal edges must be covered with tape to reduce the chance of scratching the stone.

- Hand or Backpack Sprayers***

- A variety of hand-pump sprayers can be used for cleaning headstones. Make sure that the sprayer is dedicated to the cleaners to be used and not used for other functions like applying pesticides. Backpack sprayers are useful when cleaning a large number of headstones typical in the national cemeteries. These consist of a holding tank, hose, and wand with adjustable nozzle. The sprayers generally operate in a 15-80 psi pressure range.

- Clean Water***

- One of the most important things to locate in the cemetery is the nearest source of water. It takes a lot of water to properly clean stone. If the cemetery does not have clean running water then it is important to bring barreled or bucketed water to the site.

- ***Pre-wetting the stone***

- Soak the stone liberally with water before applying the cleaner with a hand or backpack sprayer. Stone is a very porous material and will absorb the cleaner. By soaking it beforehand, the cleaner will stay on the surface of the stone and minimize penetration of the cleaner in to the stone. This action minimizes potential adverse effects by the cleaner, such as salt crystallization in the pores of the stone. It makes it easier to rinse the cleaner from the stone surface.

- ***Applying the cleaner***
Always keep the stone wet during cleaning and thoroughly rinse afterwards. Do not allow the cleaner to dry on the stone. Apply the cleaner according to the manufacturer's recommendations. Changes to the dilution or dwell time are considered "off-label" and the effectiveness of the cleaning method cannot be guaranteed. Evenly apply the cleaner with a sprayer to saturate the surface.
- ***Agitating the surface***
Agitate the surface gently in a circular motion using a soft bristle brush. Work in small areas, starting from the bottom and moving toward the top of the headstone. Agitation will loosen soiling from the surface of the stone.
- ***Rinsing the stone***
Remember to rinse after cleaning each area and to thoroughly rinse the stone at the end to make sure that no cleaner is left behind.

A typical cleaning regime may include a three-person team. The first person thoroughly wets the stone with clean water using a hose or a portable backpack sprayer. A second person sprays the stone surface with the biocidal cleaner. After the appropriate dwell time, a third person gently agitates the cleaner on the stone surface with a soft bristle brush, then rinses the stone with clean tap water.

Glossary of Terms

Ionic cleaner: A substance that aids in the removal of dirt and serves as an emulsifier by bridging between water and oil. The substance is a long chain chemical that has a charge on one terminal.

Non-ionic cleaner: A substance that is similar to an ionic cleaner, except that it does not have a charge.

Surfactant: A compound that is a surface active agent. It reduces the surface tension between liquids that do not normally mix together. It aids in the cleaning of a surface.

Biocide: A chemical capable of killing living organisms.

Pressure washer: a mechanical sprayer that uses high-pressure water to clean and remove dirt and other accretions from surfaces and objects.

Dilution ratio: reduction of the concentration of a chemical by mixing with water or another solvent by a specific portion. A useful reference chart for specific dilution ratios can be found at [http://www.tomorrowchemicals.com/files/Dilution Ratios TC.pdf](http://www.tomorrowchemicals.com/files/Dilution_Ratios_TC.pdf).

Dwell time: The time a cleaner remains on the surface of a stone before agitation or rinsing.

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