Historic Cemetery Preservation

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Definitions

• **Preservation.** The act of protecting, maintaining, and saving.

• **Conservation**. A specialized field involved with the stabilization, protection from deterioration, and preservation from loss of objects of historic and artistic value.

• **Restoration.** The act of restoring – that is, of reconstructing, repairing, renewing.

ASSESSING THE PROBLEM

- 1. Who controls the cemetery and what are the rules and laws that apply?
- 2. Is the cemetery secure?
- 3. Is there documentation?
- 4. What conservation work needs to be done?
- 5. Is archaeology necessary?
- 6. What landscaping is required?
- 7. How can you promote interest in cemetery preservation?
- 8. How do you fund the project?

DEVELOPING A PLAN

Once the problems have been identified, prioritization should take place.

Priorities will vary from cemetery to cemetery.

Overall scope of the project, funding, manpower, and seasonal weather are just some of the factors to consider when establishing priorities.

Depending on the size of the project, a phased approach may be necessary.

Do not forget, any good plan also addresses the future maintenance and oversight of the cemetery.

DOCUMENTATION

This is an essential early step in preservation.

There may be existing documents, but they must be reviewed for accuracy and changes.

A survey of the entire cemetery and the individual markers should be made.

These tasks can be performed by volunteers with a little training and guidance.

A map based on gridlines can be drawn .



The state

Information about individual gravestones and monuments should be recorded.

Name of Burial Ground:			Marker Number:
Contact Pers	son:	بالله وجدولي الأذاري	Other I.D.:
Marker Orie	ntation: E SE S SW W NW	N NE	
Name/DDate	e:		Photo Number:
Dimensions:	high wide	thick	
Marker Type	:: 🗆 tablet 🔹 tablet-on-base	Severity of Condition:	(least) 1 2 3 4 5 (most)
	Labre Gotensk tomb mausoleum cradle grave depression statuary barrel vault monument grave	Causes:	settling weathering vegetation paint graffiti vandalism other: other
	☐ goods ☐ plaque ☐ modern flat ☐ other:	Previous Repair:	□ cement □ adhesive □ iron pins □ iron braces
Material:	marble limestone brownstone sandstone slate granite dolomite fieldstone		□ stucco □ mortar □ rebuilt □ encased □ coatings □ other:
	cast stone Drick stucco white bronze iron wood pottery other:	Enclosure Type:	 □ none □ iron/wood fence □ brick/stucco/stone wall □ brick/stucco/concrete/stone copir
Motif(s):	death's head soul effigy fraternal portrait clasped hands open book dove lamb cross floral	Vegetation:	 vegetation other: none shrubbery trees ground cover bulbs
	□ cross and crown □ urn and willow □ other (<i>describe</i>):		□ other (species, variety or describe
Maker's Signature:		Complete Inscription:	inscribed raised painted
Condition:	 sound sound but lying on the ground cracked eroded broken # of pieces sunken/tilted flaking 		☐ other: (on back of survey form, copy exactly as found on marker)
	 ☐ delaminated □ voids/losses □ stained □ moss/lichen □ structure of footing unsound □ other: 		

PHOTOS

Probably the best and the easiest methods of recording the condition of a marker is through photography. With the invention of digital photos it has become even easier and much less expensive. Hard copies should be kept with the survey form, and multiple copies can be stored electronically. Before and after photos can document the work performed on the cemetery as a whole and on the individual gravestones and monuments.

Lighting is key ...



In Memory of Mrs. PHIEBE SETACKMAPLE Widow of Cap. JOPIN SHACKMAPLE She died June 3⁴1770. in the 31th Year of her Age.

Stone Identification

The following are the most common stone types found in American cemeteries.

Slate: 1650-1800 Metamorphic Shale

The earliest stone used extensively in American gravestones. The Boston, MA area was the hub of American gravestone carving activity, from approximately 1660 – 1800. Luckily there was a supply of very high quality slate to carve into stones. Many still survive and are most often a gray color.

They tend to be thinner then marble, but are mostly unaffected by the acid rain. There inscriptions tend to be shallow, but are often very readable. Nearly all of the oldest gravestones in Old Kings Chapel and the Granary, both in Boston, are composed of slate.



Sandstone (Brownstone) 1650-1890 A sedimentary rock of compressed sand, etc

The most commonly used stone throughout the Connecticut River valley. The largest group of Brownstone quarries in America was in the East Middletown CT. area, now Portland, CT. There is today one active Brownstone quarry in America, which has recently resumed it operation in Portland. Brownstone was transported via railroads, during the later part of the 1800's, throughout the Eastern United States and beyond.

Brownstone is a type on sandstone which ranges in color form a dark blond, to varying shades of brown. It tends to delaminate, or separate along its bedding planes. It can deteriorate quickly, turning back into the sand from which it was formed.



Marble or Limestone: 1780-1930 - A Metamorphic or Sedimentary rock of Compressed Shells, etc

The stone of choice in antiquity. Most desired in its purest white form.

Marble was white with a satin finish, when first installed in graveyards. Limestone was usually darker and tended towards gray. They are both composed from calcium carbonate, therefore are adversely affected by acid rain.

Once weathered, they may be hard to read. They are likely to be stained and darker in color than when new. The surface is likely to be pitted to some degree. Marble was most common throughout the 1800's, but was also used in the late 1700's and in the early 1900's.



Granite: 1860- Current Day - Igneous rock- Liquid Rock, cooled under ground

By far, the most durable of all natural rocks. One of the strongest and most long lasting materials which exist in nature, hence the largest quarry's name, "Rock of Ages".

Most commonly found in a gray color. Many other regions also produced distinctly colored granites which were more common, closest to their source. Westerly, RI produced a large amount of high quality granite which is tanner in color. Another popular granite was Quincy, which was used throughout the Boston area.

Today, granite is used throughout the world in cemeteries and building facades. It is considered the stone of choice due to its exceptional strength and permanence. Many modern cemeteries allow only granite headstones and markers to be installed. Through extensive world trade, granite is now available in a wide range of colors.



Conserving the stones

Survey the stones
Record the condition
Identify problems

Decide on the treatments and who can do them
Keep records of what is done

Do no harm
Use reversible techniques and materials
Preserve original material

Problems – Treatments

Cleaning stone.

The cleaning of gravestones and monuments is a controversial issue. Are we doing it to improve appearance or is it to stop progressive damage?

- Carefully done the stone surface will not be significantly compromised and its appearance will be improved.
- Before beginning, you must make sure that the stone is stable; not only checking for its ability to remain upright (for your safety and the stone's safety), but for vulnerability due to flaking, spalling, delaminating, sugaring or other delicate condition.

Always use the gentlest means possible.

Test-clean a small inconspicuous area to make sure treatment does no harm.

Cleaning stone (all types) with water

- First remove loose dry materials with a soft bristled brush.
 Test-clean a small inconspicuous area to make sure treatment does no harm.
- Always wet the stone thoroughly with water.
- Starting at the bottom, gently scrub with brush (natural or synthetic bristles NOT wire) working your way to the top.
- For tough to reach areas, toothbrushes, Q-tips, tongue depressors, or craft (popsicle) sticks may help.
- Rinse with clean water. (If the cemetery does not have a water source for a hose, use garden type pump sprayers.)
 If this yields the desired result you are done.

Can just water really clean?



Scrub from the bottom up.



Rinse from the bottom up.



Clean with just water.



Be aware that stones exposed to the environment for many years will likely not come entirely clean. Removal of ambient soiling and biological material (algae, moss, and lichen) is the objective of cleaning.

Cleaning – beyond water.

- Non-ionic detergent such as Kodak Photo-Flo, Triton-X, or Igepal. Use 1 teaspoon per 1 gallon water.
- Vulpex (conservator's soap for almost any material)
 1 part to 6 parts water.
- Household ammonia. Use 1 cup per gallon water.
- Biocide solution, i.e. D/2 Biological Solution.
 Use neat or 50/50 with water.

Listed in order from the safest, or least aggressive, to the most aggressive:

- **Slate:** Clean water, non-ionic detergent, biocide solution
- **Sandstone:** Clean water, non-ionic detergent, biocide solution
- Marble/ Limestone: Clean water, non-ionic detergent, biocide solution, ammonia and water solution
- **Granite:** Clean water, non-ionic detergent, biocide solution

Gravestone Cleaning - Do <u>Not</u> Do List

- Do not employ pressure washers. They work great on modern granite memorials, but can deface and erode the softer aged tombstones.
- Do not use any type of acids or acid based solutions.
- Do not use any kind of abrasives, especially sand blasting.
- Do not use metal or wire brushes, leave them in the garage.
- Do not use bleach or any other household cleaners, leave them in the kitchen!
- Do not attempt to clean any stone that appears to be flaking, crumbling, or weakened in any way.
- Do not clean stones often. No matter how careful you are, some loss will occur.
- Do not use sealers or protective coatings. The stone must breathe.
- Use your better judgment. If in doubt, it is better left undone.

When do you reset a tablet stone?

Anytime you reset a stone there is the danger of damaging the stone.

Resetting should only be done when the stone is in danger of falling or breaking or when the inscription is markedly obscured by its sunken state.





Before you begin, remember that there may be as much stone in the ground as above ground. Marble weighs about 160-170 pounds per cubic foot.

Do not attempt to reset unless you have the training, manpower or lifting equipment to safely perform the task, and that the stone is in stable condition to withstand the move. Otherwise you or the stone could be seriously injured in the process.

In cases where the stone is severely leaning, it will be necessary to support it during the process, in order to avoid breakage.

Here a tripod hoist with nylon slings is used to provide stabilization and later will be used to lift the stone into its rightful place.



Once the stone is stable, remove the earth on the side of the stone which is away from the lean. That is, if it leans backwards remove soil on front side.

Do not remove more than is necessary to maintain the compaction of the soil.

The stone can only be removed when it is completely excavated to the bottom. If not, when you try to lift it, breakage can easily occur.

After to stone is in place, plumb and level, backfill the hole using a mixture of sand and pea stone or gravel for drainage, then topsoil and sod.



Complications to resetting

• Stones broken below ground or at ground level

• Stones set in concrete during previous work

Irregular bottom edges on stone

• Tree roots and large rocks below grade

Resetting monuments

Any grave marker of two or more pieces is considered a monument.

There are many ways that monuments are held together: Stacked with mortar joints Mortise and tenon joints Pinned together Leaded together Modern setting compound

Stacked with mortar joints





Mortise and tenon joint





Pinned together





Pinning damage.





Leaded together



Setting compound





















Epoxy repair



Epoxy repair





Epoxy repair





Infill of losses





Materials for repair and resetting

- NHL mortar 3.5 or 5 mixed with sharp mason sand i.e. St. Astier or Otterbein brands
- Monument Setting Compound i.e. Miles Supply Set-Rite
- Stone Epoxy
 - i.e. Akemi Akepox 2030 or Tenax Rivo 15
- Restortation mortar i.e. St Astier Lithomex or Jahn mortars

Questions?

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