MONUMENT CONSERVATION COLLABORATIVE LLC

Preserving the substance and significance of gravestones

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CONDITIONS SUMMARY, CONSERVATION RECOMMENDATIONS AND CONDITION ASSESSMENTS

FOR

HISTORIC CENTER CEMETERY, CHESTERFIELD, MA

May 2008

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INTRODUCTION

MCC started inspecting the older section of the Historic Center Cemetery on April 28, 2008 shortly after the snow cover melted. A new location map for the markers was made utilizing an aerial photograph of the cemetery taken in 1966.

We discovered that almost 200 markers are in need of repair; almost half this number is hazardous. This is a significant number.

While there may have been vandalism in years past, the numerous excessively tilted markers and the fallen, overgrown markers are due to a combination of ground water conditions, a lack of maintenance and tree root damage.

The early aerial photo shows a significant number of large trees that are no longer there and have since been taken (or fallen) down. The large root systems of these trees no doubt also contributed to disturbing the adjacent markers.

Approximately 50 years ago a number of concrete bases were poured to help stabilize some markers. A trench was dug around the base of the stone and, after resetting the stone plumb, concrete was poured into the trench. This is neither an acceptable practice, nor is it an adequate foundation for long term stabilization. Many of these "foundations" have now cracked and separated from the markers. There does not appear to be any evidence of other recent restoration work.

CONDITIONS SUMMARY

The phased programming of work projects depends on a number of factors, including the severity (and progressive nature) of deterioration, and the nature and complexity of the required treatments. In most cases, the development of a monument conservation plan also incorporates non-technical priorities. This involves the defining of "value" in terms of the artistic quality and/or historic significance of individual monuments, and thus requires collaboration with local experts, including historians and genealogists.

The primary consideration, however, is safety. A monument that is structurally unsound may pose an immediate danger to the cemetery worker, to the visitor, to itself, or to other monuments nearby. For most historic cemeteries, monuments surveyed can be placed into four technical categories, by priority:

1 hazardous—requires immediate action;
2 unstable deterioration—requires treatment as soon as possible;
3 ongoing deterioration—may require treatment in 2 to 5 years (perhaps monitor);
4 stable—no treatment required (re-inspect in 5-10 years).

Non-technical prioritization involves the defining of particular "value" in terms of:

- artistic quality;
- historic significance (national or local);
- visual contribution to the overall appearance of the site.

Monuments in historic cemeteries may be hazardous if they are not plumb and level. Identification of individual monuments that are in hazardous condition is essential, as is the development of a plan to reduce the potential for damage and injury, and to remove the danger entirely. Markers tilting 15° or greater are listed as 1- hazardous. Depending on their size, markers can be listed as 2- unstable when they have a tilt of less than 15°. Frequently, tilted markers less than 15° are listed as hazardous because they are adjacent to hazardous markers and are at risk.

In general, the risks are greater with taller monuments. Tall markers and large monuments can have a high center of gravity when they are tilted which increases the risk of falling at a lower angle of tilt. Because of their greater size they are also more visible than other stones. For these reasons the larger stones are usually classified hazardous or unstable at lower degrees of tilt.

A total of 197 markers were found requiring restoration treatments in the Historic Center Cemetery.

The prioritisation study for the markers determined that more than half of these stones to be in a hazardous condition. The following are the totals of the study; a complete list with a brief condition description is attached:

1. Hazardous	**97**
2- Unstable	**40**
3- Ongoing Deterioration	**60**

Phased work schedule
The work to be done could be spread over 3 - 4 years if necessary, with the first year concentrating on the 97 hazardous markers.

Realistic conservation estimates at 2008 rates for a professional conservator would be:

Restoration to 97 Hazardous markers:	$62,000 to $67,000
Restoration to 40 Unstable markers:	$29,000 to $33,000
Restoration to 60 with Ongoing Deterioration:	$42,000 to $48,000

Total budget $133,000 to $148,000

Maintenance
After the phased work schedule is completed, and because of the on-going ground problems, MCC recommends a budget of $15,000 every 2 years for a maintenance schedule.

Priority 1 - Hazardous immediate action required

5 - Axtell?, Frank - Re-set in existing base
8 - Utley, Zeruah - Re-square bottom edge Construct new base
11 - Parson, Mary - Possible new base
14 - Luce, Olive and Jonathan - Re-set in ground
17 - Luce, Nehemiah - Re-set in existing base
19 - Stephens, - Re-set in ground Possible new base
20 - Tower, Isaac - Construct new base
21 - Tower, Mary - Construct new base
23 - Carpenter, Ezra - Re-set in ground
24 - Harris, Abigail - Re-set in ground
25 - Ludden, Esther - Re-set in ground
29 - na, Thomas - Re-set in ground
40 - Baker, Marion - Re-set in existing base Stabilize foundation
43 - Baker, Levi - Re-set in ground Stabilize foundation
44 - B., A. - Re-set in existing base
45 - Mills, Benjamin - Re-set in ground
46 - Smith, Eunice - Re-set in ground
47 - Stone, Betsey - Re-set in ground
48 - Stone, Laura - Re-set in ground
61 - E. (Edwards), J. - Re-set in ground Possible new base
62 - E. (Edwards), E. - Re-set in ground Possible new base
63 - E. (Edwards), C. - Re-set in ground Possible new base
64 - E. (Edwards), E. - Re-set in ground Possible new base
65 - E. (Edwards), A - Re-set in ground Possible new base
66 - E. (Edwards), L. - Re-set in ground Possible new base
67 - E. (Edwards), H. - Re-set in ground Possible new base
73 - Hatch, John - Re-set in ground Possible new base
74 - Hatch, Harris - Re-set in ground Possible new base
75 - Swift?, - Re-set in ground Possible new base
76 - na, - Re-set in ground Possible new base
77 - Burnell, Martha - Re-set in existing base Stabilize foundation
78 - na, - Re-set in ground Possible new base
79 - Burnell, - Re-set in ground Possible new base
80 - na, - Re-set in ground Possible new base
81 - Burnell, Hannah - Re-set in ground Possible new base
85 - Bancroft, Talcott - Re-set in ground Stabilize foundation
86 - Bancroft, Dyar - Re-set in ground Stabilize foundation
88 - Engram, - Stabilize foundation
90 - Rhoades, Cynthia - Re-set in ground Stabilize foundation
91 - Rhoades, Chapman - Re-set in ground Stabilize foundation
92 - na, - Re-set in ground
93 - Cooswell, Hezikiah - Re-set in ground
94 - , Mary - Re-set in ground
96 - Brett, Ebenezer - Re-set in ground
97 - South, - Re-set in ground
102 - Sylvester, George - Re-set in ground
103 - na, - Re-set in ground
104 - Bryan, Willard - Re-set in ground
106 - Bryant, Susan - Re-set in existing base
108 - Jacobson, Benjamin - Re-set in ground
113 - Rice, Samuel - Re-set in ground Stabilize foundation
114 - Rice, Amasa - Possible new base

Priority 1 – Hazardous (continued)

115 - Kingsley, Daniel - Re-set in ground
116 - Kingsley, Alan - Possible new base Stabilize foundation Structural adhesion Crack fillers
120 - , David - Re-set in ground
121 - Ban?, Eunice - Re-set in ground
129 - Rice, O. - Re-set in ground
130 - na, - Re-set in ground
131 - Anderson, - Re-set in ground
134 - Bryant, William - Re-set in existing base Stabilize foundation
135 - Bryant, Ansel - Possible new base
136 - Litchfield, Lot - Possible new base
137 - Hayden, Noah - Re-set in ground
139 - Witherell, Julia - Re-set in ground
141 - Stetson, Ruth - Re-set in ground
142 - Stetson, Cynthia - Possible new base Stabilize foundation
143 - Stetson, Bela - Construct new base
144 - Sanderson, Hannah - Re-set in ground
146 - , Timothy - Re-set in ground
147 - Rhodes, Marshall - Re-set in ground
148 - Gibbs, Sarah - Re-set in ground
149 - Edwards, Benjamin - Re-set in ground
150 - Beswick, Quire - Re-set in ground
151 - na, - Re-set in ground
155 - Witherell, Joanna - Re-set in ground
159 - Taylor, Clarissa - Re-set in ground
164 - na, - Re-set in ground
165 - Witherell, Sarah - Re-set in ground
166 - Torres, Ruth - Construct new base
167 - Graves, Franklin - Re-set in ground
169 - Culworth, Charles - Re-set in ground
172 - na, - Re-set in ground
174 - Stebbins, Celia - Re-set in ground
176 - Nichols, Jospeh - Re-set in ground
179 - na, - Re-set in existing base Stabilize foundation
181 - Clapp, Francis - Re-set in ground
182 - Stephenson, Nathaniel - Re-set in ground
186 - Johnson, - Re-set in ground
187 - Nichols, - Re-set in ground Stabilize foundation
188 - Johnson, Sylvia - Re-set in existing base Stabilize foundation
189 - Damon, Isaiah - Re-set in ground
191 - Everett, Rachael - Re-set in ground
192 - , Charlotte - Re-set in ground
193 - Rodgers, Julia - Re-set in existing base Stabilize foundation
195 - Burnell, Mehitable - Re-set in ground
196 - Burnell, - Re-set in ground
197 - na, - Re-set in ground

Total: 97

Priority 2 Unstable, -treat asap

1 - Angell, Martha - Re-set in ground
3 - Wilder, Nancy - Construct new base
6 - Axtell, Violet - Structural adhesion Repair mortars Crack fillers
7 - Edwards, Alonzo - Re-set in existing base
10 - na, - Re-set in ground
12 - Edwards, Morris - Re-set in ground
15 - Luce, Mehitable - Re-set in ground
16 - Luce, Lydia - Re-set in existing base Structural adhesion Crack fillers
18 - na, - Re-set in existing base Stabilize foundation
22 - Clapp, Dwight - Possible new base
26 - Ludden, Benjamin - Re-set in ground
27 - Baker, - Re-set in existing base Structural adhesion Crack fillers
30 - Baker, - Re-set in existing base Stabilize foundation Structural adhesion Repair mortars
31 - Cudworth, Chloe - Possible new base
32 - Stobbins, Levi - Possible new base
33 - Stobbins, Alva - Possible new base Structural adhesion Repair mortars Crack fillers
34 - , (daughter of) - Possible new base
35 - na, - Possible new base
36 - na, - Possible new base
37 - na, - Possible new base
38 - na, - Re-set in existing base Stabilize foundation
39 - Baker, Addie - Re-set in ground
41 - Baker, Emma - Re-set in ground Stabilize foundation
42 - Baker, Clara - Re-set in existing base Stabilize foundation
50 - na, - Re-set in ground Possible new base
51 - na, - Re-set in ground Possible new base
52 - na, - Re-set in ground Possible new base Structural adhesion Repair mortars Crack fillers
53 - Knight, Lucy & Theo - Re-set in ground Possible new base Structural adhesion Repair mortars
54 - na, - Re-set in ground Possible new base Structural adhesion Repair mortars Crack fillers
55 - Knight, Shurael - Re-set in ground Possible new base
56 - Knight, - Re-set in ground Possible new base
57 - Knight, Marion & Elizabeth - Re-set in ground Possible new base
58 - Baker, Howard - Re-set in existing base
59 - Baker, Andrew - Re-set in existing base Stabilize foundation
68 - na, - Re-set in existing base Stabilize foundation
69 - Igham, - Re-set in existing base Stabilize foundation Structural adhesion Repair mortars
111 - Rice, Lynda - Re-set in ground
161 - Warner, Joseph - Re-set in ground
163 - Warner, Noel - Re-set in ground
171 - na, - Re-set in ground

Total: 40

Priority 3 Ongoing deterioration, treat within 2-5 years

2 - Prince, James - Possible new base Structural adhesion Crack fillers
4 - Wilder, Nathan - Re-square bottom edge Construct new base Structural adhesion Crack fillers
9 - Torrey, Joseph - Possible new base Structural adhesion Crack fillers
13 - Edwards, Maria - Possible new base Structural adhesion Repair mortars Crack fillers
28 - na, - Re-set in existing base
49 - na, - Re-set in ground Possible new base
60 - Edwards, Oliver - Re-set in existing base Stabilize foundation
70 - Bates, Abner - Re-square bottom edge Construct new base
71 - Witherell, Chauncey - Re-set in existing base Stabilize foundation
72 - Hatch, Ellen - Possible new base Structural adhesion Repair mortars Crack fillers
82 - Bunell, - Re-square bottom edge Construct new base
83 - Bunell, - Construct new base
84 - na, - Re-set in existing base Stabilize foundation
87 - na, - Re-set in existing base Stabilize foundation
89 - na, - Re-set in existing base Stabilize foundation
95 - na, - Construct new base
98 - , Douglas - Re-set in existing base Stabilize foundation
99 - na, - Re-set in existing base Stabilize foundation
100 - na, - Construct new base
101 - na, - Construct new base
105 - Bryant, Mary - Re-set in ground Possible new base
107 - Bryant, Eli - Re-set in ground
109 - Pynchon, Francis - Re-set in existing base Stabilize foundation
110 - na, - Re-set in existing base Stabilize foundation
112 - Rice, Mary - Possible new base Structural adhesion Repair mortars Crack fillers
117 - H. (Higgins), J. - Re-set in ground
118 - H. (Higgin), J. - Re-set in ground
119 - H. (Higgin), A. - Re-set in ground
122 - King, - Possible new base
123 - King, George - Possible new base
124 - King, na - Possible new base
125 - King, Eleazer - Re-set in ground Possible new base
126 - na, - Construct new base
127 - na, - Construct new base Structural adhesion Crack fillers
128 - Banister, Jothan - Re-set in existing base Stabilize foundation
132 - na, - Construct new base
133 - Baker, Mary - Re-set in existing base Stabilize foundation
138 - na, - Possible new base Structural adhesion Crack fillers
140 - Mayhew, - Re-set in ground
145 - Phelps, Spencer - Re-set in existing base Structural adhesion Repair mortars Crack fillers
152 - na, - Construct new base Structural adhesion Crack fillers
153 - na, - Construct new base
154 - na, - Re-set in existing base Stabilize foundation
156 - na, - Construct new base
157 - , Frank - Re-set in ground
158 - Taylor, - Construct new base Structural adhesion Crack fillers
160 - , Julia - Re-set in ground
162 - Warner, Beulah - Re-set in ground Structural adhesion Repair mortars Crack fillers
168 - na, - Re-set in existing base Stabilize foundation
170 - , Lizzie - Re-set in ground
173 - Stebbins, Howard - Re-set in existing base Stabilize foundation

Priority 3 Ongoing deterioration (continued)

175 - Nichols, Joshua - Re-set in ground
177 - na, - Construct new base
178 - na, - Construct new base
180 - na, - Construct new base
183 - Bryant, - Re-set in ground Stabilize foundation
184 - Bryant, - Re-set in ground Stabilize foundation
185 - na, - Re-set in ground
190 - Damon, Lucinda - Structural adhesion Repair mortars Crack fillers
194 - , Theodany - Construct new base

Total: 60

Cemetery Total: 197

CONSERVATION RECOMMENDATIONS

CLEANING

In general, we do not recommend cleaning unless necessary to perform repairs. Most of the soiling is biological, and while it is slowly attacking the surface of the stone, most cleaning procedures are more aggressive than the micro-organism and additional surface material would be lost. In some instances, discoloration may be associated with the degradation of the older repair materials, such as iron fixings or unstable surface treatments.

Having all the stones clean is not historically accurate. Because of the wide range of death dates in the cemetery and continuing soiling, at no time in its history did all the stones appear "clean".
In the case of marbles, cleaning does not necessarily make the inscriptions more legible, and many times the "whiteness" makes it harder to decipher. Thus cleaning is a complicated issue involving both aesthetic and technical considerations.

If cleaning is necessary for repairing the stone the surfaces to be cleaned should be sprayed with water and brushed lightly with natural bristles. Repeat as necessary. The use of biocides for partial cleaning is not recommended.

Removal of failed repairs

Repairs are considered as having failed if they are no longer functional, are unsightly, or have induced damage to adjacent original stone. Failed adhesives, mortars and pins require careful removal before proceeding with conservation treatment. Some temporary stabilization may be necessary as poorly attached fragments are disassembled.

Removal of degraded structural resins (and of the associated discoloration within the stone) may be particularly difficult and time-consuming. Mechanical removal is generally done with small hand tools. The cutting of pins and fasteners may require power tools. Ferrous metal pins are most often locked in place by corrosion expansion; their removal is best done by careful drilling with a properly-sized coring bit.

RESETTING

Eighteenth and early nineteenth century New England gravestones are typically long panels of stone that were set directly in the ground. By the first half of the 19th century, it appears that many headstones were set onto bases, some composed of several individual elements. Some bases were designed with a setting slot; others have pins. Although the re-setting of these stones is relatively straight-forward, inept handling practices can cause great harm.

For larger monuments, this work is considerably more complicated, and often involves the use of specialized lifting techniques. The input of architectural conservators and structural engineers may prove to be essential.

Resetting in ground

Tilted stones sitting directly in the ground can be made plumb by careful excavation of soil with hand tools, to permit re-setting in the proper position. The concrete around many of the tilted markers in Historic Center Cemetery will have to be removed. In most cases the concrete has become separated from the marker, any remnants should be carefully removed with hand chisels. If there is not an adequate length of below grade material to adequately support the marker a new cast concrete below grade base will be required (See below: New cast concrete base).

Once the stone is carefully placed into vertical position at the proper depth, the stone is made plumb and level, and aligned with adjacent markers. Backfill with a mixture of sand and small gravel, wetted and compacted. Disturbed areas of the ground are re-graded with topsoil, which is then seeded if required.

Resetting on/in existing base

Unsecured stones with existing bases should be re-set, but often require re-leveling and aligning of some or all base elements, and the removal of failed pins. For larger stones, which can weigh more than 300 pounds, lifting can be the most difficult and expensive portion of the operation. This work requires the careful use of hoisting equipment, and can be dangerous.

Re-setting is on a full bed of modified lime (or hydraulic lime) mortar, with fine sand; 3 parts cement, 2 parts high calcium lime and 5 parts fine sand (000 is preferred if available) all measured by volume. For maximum bond the mating surfaces should be primed with Acryl 60 diluted 1:3.

For more massive stones, small squares of thick lead sheet are used as corner shims, to establish a reasonable joint dimension, and for minor adjustments to level. A commercial setting compound (Bicknell) is used for re-setting the larger elements. Pins, if required, should be threaded stainless steel, 10 to 25 mm in diameter for most situations. They are secured in a moisture-insensitive structural adhesive.

Stones that require insertion into existing slotted bases can be set with the same mortar mix 3:2:5 as above made fluid with a high-range water reducer. This is poured and/or injected into the base slot. Stones are set plumb and level, and are braced for a minimum of five days to limit movement during curing of the grout.

Resetting into new cast concrete base

Fractures at (or just below) grade are relatively common for thinner headstones, but the success of structural adhesion in these situations is limited. In the past, the upper portions of these monuments have simply been inserted further into

the ground. A better solution is the fabrication of a new below-grade base, to re-set the stone at a more reasonable height, allowing for the viewing of inscriptions and decoration. These are fabricated on site by casting in the ground with concrete, using a removable form insert to create a setting slot (½" thicker and ½" wider than the marker); the finished top surface of the base should be entirely concealed by new topsoil, which is then seeded.
The bases are minimally 12 inches deep, 12 inches greater in thickness and 6 inches wider than the stone itself. Once the concrete has cured, forms are removed and the stones are reset into the slot as above.

On left, a new base partially filled with concrete and foam setting form in background.

On the right, the poured base with setting form in place

When lower fragments are missing or there is a fracture at or below grade the lower edge of the stone will have to be re-squared prior to re-setting keeping losses at a minimum. Any inscriptions that will be lost or hidden are to be recorded.

Resetting Larger monuments

As the scale of cemetery monuments increases, so does the difficulty of their conservation, even for a highly skilled memorial mason. This is due, in part, to the structural inter-relationship of elements, and the greater number of concealed metal fixings. These factors often make it impossible to re-set one or two pieces of stone that are out of alignment. What may actually be required is partial disassembly and re-building of the monument, which is a serious task. Some slender monuments, such as obelisks, exhibit a particular problem of instability. Their small "footprint" and solid construction makes them especially sensitive to the load bearing capacity of the soil beneath, and to the soundness of their foundations. Over time, the high center of gravity of a tilted obelisk can easily lead to progressive tilting. Re-levelling can be done with small hydraulic jacks, but this is a difficult and dangerous operation, requiring considerable skill. Lead shims together with a commercial setting compound (Bicknell) can be used to reset the larger elements.

REPAIR

Repair programs deal with the reassembly of fractures, and the filling of open joints, cracks and delaminations, and larger areas of materials loss. Most broken stones can be re-assembled with structural adhesives. Depending on the geometry of the break, reinforcement with pins may or may not be required.

Structural adhesion

Potential bonding surfaces are carefully cleaned and the pieces dry fitted to test for conformation, identifying contact areas. All fragments found nearby should be examined at this point; systematic soil probing in the general vicinity is frequently successful in locating missing pieces. (As noted earlier, structural adhesives do not perform adequately when used below or near grade.)

A thixotropic, moisture-insensitive two-part epoxy (Aboweld 55-22, Abatron) is applied along both surfaces of the glue line, keeping the adhesive slightly back from the edge of the break. Most of these adhesives require a minimum air and surface temperature of 10^{o} C. Properly-aligned fragments are joined with clamps, and the assembly braced during curing of the epoxy, typically a week or so. Any excess adhesive flowing from the glue lines should be allowed to partially cure, then carefully cut or chipped away with sharp hand tools. A recent fracture of sound material generally requires less epoxy than a weathered surface with poorer "fit". When fully cured, areas along the glue line are concealed with a lime-based repair mortar.

Reinforcement

The extensive and routine use of pinning to repair fractured stones is controversial. There are many variables to consider before drilling. The cross-section of stone, the type and soundness of material, and the location and shape of the fracture can all influence the decision to reinforce a structural repair. If the fractured stone is sound and/or recently broken, the attachment of fragments with a structural adhesive should be sufficient.

The use of pins has sometimes been recommended to provide a "slow failure" if the adhesive should fail in the future. This assumes that if the monument were to fail again it would be along the previous failure line. This may or may not be the case. In fact, the use of pins can increase the length of the moment arm when force is applied at some distance from the repair. This means that a lesser force can fracture the stone, and that failure will not occur at the glue line, but rather at the end of the pins.

Complex breaks, however, may require some drilling and structural pinning for safer reassembly. If there are missing fragments, voids can be spanned by these pins to provide an armature for the subsequent installation of repair mortars.

Where pinning is required, holes should be drilled at slow speed, using an appropriately sized masonry bit. Water should be liberally applied into the hole

while drilling. Before inserting pins, the drilling debris should be thoroughly flushed out with water and the hole allowed to dry fully, or (alternatively) blown clean with compressed air. The drilling of holes into the edge of a weak, deteriorated stone may be very destructive, and is often impossible.

Threaded stainless steel rods are recommended for pinning. The diameter of the drill hole should be less than 1/3 of the thickness of the stone, and the total length of the pin equal to 6 to 10 times its diameter. Pins are secured in a moisture-insensitive structural adhesive.

Repair mortars/ crack fillers

Losses designated for compensation can be filled with commercially-available cementitious restoration mortars (Jahn Restoration Mortars, Replical, both from Cathedral Stone), or a pigmented lime mortar, using colored aggregates. Mortar color and texture should be matched to that of the unsoiled stone, seen after cleaning or (more often) where fractured. If the stone will not be cleaned, artificial "soiling" of the cured mortar surfaces can be done by a variety of means, including use of a pigmented, transparent potassium silicate coating (Silin, Cathedral Stone), or a diluted acrylic dispersion). Dry colors for this purpose and for incorporation into the mortar itself must be alkali-stable oxides, as used in the construction industry.

These materials and methods are also useful for crack filling. In this instance, however, the aggregates must be considerably finer in size. As for pointing, work with repair mortars should not be undertaken when there is a risk of freezing temperatures in the following 14 days.

Filing of delaminations

Repair of delamination is designed to prevent further detachment of stone, by re-establishing cohesion between layers, and preventing the penetration of water.

Best practice begins with the careful removal of loose debris in the voids, using hand tools and the cautious use of compressed air. Interior surfaces are then saturated with a wetting solution, such as isopropanol/water. Commercial products are available (Relical Crack Filler, Cathedral Stone) or a low strength cement/lime (3:2:5) grout, with fine aggregates is used to fill the voids.

When it is necessary to pour the grout it is made fluid with a high-range water reducer or commercial flowable grouts (M-40, Cathedral Stone) can be used. The filled areas and surrounding surfaces are lightly misted with water and kept covered for a minimum of 3 days. After a partial cure the covering is removed and the filled areas and adjoining surfaces of the stone are treated with a weak acetic acid wash applied with a soft brush to remove excess grout and fully rinsed with water.

PRODUCTS/SUPPLIERS

*RepliCal™
*Jahn™ Restoration Mortars
*M-40 Flowable grouts
*Silin

from: Cathedral Stone Products Inc.
7266 Park Circle Drive
Hanover MD 21076 USA
800 684 0901 fax 800 684 0904

*Aboweld 55-22

from: Abatron Inc
5501 95th Avenue
Kenosha, WI 53144
262 653 2000 fax 262 653 2019

*BBB Setting Compound
*Lead Strip

from: Bicknell Manufacturing Company
Elberton, Georgia
800 241 7105