

# WINTER STREET CEMETERY CONSERVATION TREATMENT REPORT EXETER, NEW HAMPSHIRE



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#### **COPE OF WORK**

The 2017 preservation efforts included the following:

- CEMETERY SITE REVIEW AND MARKER COUNT
- COMMUNITY PRESERVATION WORKSHOP
- HAZARDOUS MARKER RESETS
- CONDITION ASSESSMENT
- MARKER TREATMENT
- PRESERVATION PLAN (submitted as a separate document)

#### **CEMETERY SITE REVIEW AND MARKER COUNT**

A detailed site review is included in the Preservation Plan.

All markers were counted in the cemetery and tallied by section, marker type, material type and general conditions. A printed summery attached to the end of this document provides a useful overview. Excel spread sheets organized per section, included in the accompanying digital documents, give specific information for each individual marker counted.

The existing map divides the cemetery into six sections, A-F. The database of burial names and dates has plot numbers added to coordinate with the map. The printed list provided by the Historical Society has the following tallies per section.

#### Database Count

Section A:	145
Section B:	107
Section C:	108
Section D:	162
Section E:	117
Section F:	95
	734

The 2017 count of all markers in the cemetery provides the following totals per section. Note the totals are for markers of all types, including monuments, flush markers, headstones and footstones, many of which are rubble without text.

#### Site Count

Section A:	202
Section B:	166
Section C:	185
Section D:	243
Section E:	152
Section F:	117
	1,065

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#### WINTER STREET CEMETERY GRAVEMARKER COUNT

MARKER TYPE	SECTION A	SECTION B	SECTION C	SECTION D	SECTION E	SECTION F	TOTAL
Rubble Headstone With Text	25	6	2	10	0	5	48
Rubble Footstone With Text	1	0	0	0	0	0	1
Rubble Headstone Without Text	10	13	17	36	29	13	118
Rubble Footstone Without Text	3	9	3	1	1	0	17
Tablet Headstone	75	80	100	116	75	58	504
Tablet Footstone	50	48	58	70	45	38	309
Multi Stone Headstone	3	6	1	7	1	1	19
Multi Stone Footstone	2	0	0	0	0	0	2
Flush Headstone	17	0	0	0	0	0	17
Flush Headstone with Base	9	0	1	0	1	0	11
Monument	3	2	0	1	0	1	7
Government Issued Marker	4	2	3	2	0	1	12
TOTAL	202	166	185	243	152	117	1065
MARKER MATERIALS	SECTION A	SECTION B	SECTION C	SECTION D	SECTION E	SECTION F	TOTAL
Fieldstone/Rubble	26	29	22	48	30	18	173
Slate	63	66	71	105	49	58	412
Marble	100	66	01	89	68	27	460
	109	00	91			37	
Granite	109	10	3	4	2	2	36
Granite Limestone	109 15 0	10	3 0	4	2	2 0	36
Granite Limestone Sandstone	109 15 0 1	10 0 0	3 0 0	4 0 0	2 1 0	2 0 0	36 1 1
Granite Limestone Sandstone Concrete	109 15 0 1 1 0	10 0 0	3 0 0 0	4 0 0 0	2 1 0 2	2 0 0 3	36 1 1 5
Granite Limestone Sandstone Concrete	109 15 0 1 1 0	10 0 0	3 0 0 0	4 0 0 0	2 1 0 2	2 0 0 3	36 1 1 5
Granite Limestone Sandstone Concrete MARKER CONDITIONS	109 15 0 1 1 0 SECTION A	00 10 0 0 SECTION B	3 0 0 0 SECTION C	4 0 0 0 SECTION D	2 1 0 2 SECTION E	37 2 0 0 3 SECTION F	36 1 1 5 TOTAL
Granite Limestone Sandstone Concrete MARKER CONDITIONS Prior Repairs	109 15 0 1 0 SECTION A 10	00 10 0 0 SECTION B 16	3 0 0 0 SECTION C 16	4 0 0 0 SECTION D 22	2 1 0 2 <b>SECTION E</b> 16	37 2 0 0 3 3 SECTION F 6	36 1 1 5 TOTAL 86
Granite Limestone Sandstone Concrete MARKER CONDITIONS Prior Repairs Stable	109 15 0 1 1 0 SECTION A 10 86	10 0 0 0 50	3 0 0 0 5 5 5 5 5 5 5 5 5 5 5 5 5	4 0 0 0 <b>SECTION D</b> 22 68	2 1 0 2 <b>SECTION E</b> 16 71	37 2 0 0 3 3 SECTION F 6 49	36 1 1 5 TOTAL 86 397
Granite Limestone Sandstone Concrete MARKER CONDITIONS Prior Repairs Stable Leaning	109 15 0 1 0 SECTION A 10 86 66	10 0 0 0 <b>SECTION B</b> 16 50 73	3 0 0 0 <b>SECTION C</b> 16 73 62	4 0 0 0 <b>SECTION D</b> 22 68 98	2 1 0 2 <b>SECTION E</b> 16 71 38	37 2 0 0 3 3 <b>SECTION F</b> 6 49 35	36 1 1 5 TOTAL 86 397 374
Granite Limestone Sandstone Concrete MARKER CONDITIONS Prior Repairs Stable Leaning Fallen	109 15 0 1 0 <b>SECTION A</b> 10 86 66 7	00 10 0 0 0 <b>SECTION B</b> 16 50 73 16	3 0 0 0 5 5 5 5 5 5 5 5 5 5 5 5 5	4 0 0 0 <b>SECTION D</b> 22 68 98 38	2 1 0 2 <b>SECTION E</b> 16 71 38 29	37 2 0 0 3 3 <b>SECTION F</b> 6 49 35 4	36 1 1 5 TOTAL 86 397 374 119
Granite Limestone Sandstone Concrete MARKER CONDITIONS Prior Repairs Stable Leaning Fallen Buried	109 15 0 1 0 <b>SECTION A</b> 10 86 66 7 16	10 0 0 0 <b>SECTION B</b> 16 50 73 16 9	3 0 0 0 5 5 5 5 7 5 7	4 0 0 0 <b>SECTION D</b> 22 68 98 38 38	2 1 0 2 <b>SECTION E</b> 16 71 38 29 3	37 2 0 0 3 3 <b>SECTION F</b> 6 4 9 35 4 3	36 1 1 5 TOTAL 86 397 374 119 57
Granite Limestone Sandstone Concrete MARKER CONDITIONS Prior Repairs Stable Leaning Fallen Buried Broken	109 15 0 1 0 <b>SECTION A</b> 10 86 66 7 16 29	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 0 0 0 5 0 0 0 5 5 5 7 26	4 0 0 0 <b>SECTION D</b> 22 68 98 38 38 19	2 1 0 2 <b>SECTION E</b> 16 71 38 29 3 3	37 2 0 0 3 3 <b>SECTION F</b> 6 49 35 4 35 4 3 13	36 1 1 5 7 7 7 374 119 57 155
Granite Limestone Sandstone Concrete MARKER CONDITIONS Prior Repairs Stable Leaning Fallen Buried Broken Cracked	109 15 0 1 0 <b>SECTION A</b> 10 86 66 7 16 29 9	10 0 0 0 0 5 50 73 16 9 25 8	3 3 0 0 0 5 5 5 7 26 14	4 0 0 0 <b>SECTION D</b> 22 68 98 38 38 19 38	2 1 0 2 <b>SECTION E</b> 16 71 38 29 3 24 6	37 2 0 0 3 3 <b>SECTION F</b> 6 49 35 4 4 3 3 13 8	36 1 1 5 TOTAL 86 397 374 119 57 155 55

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#### COMMUNITY WORKSHOP

A workshop was designed in coordination with the Town and Heritage Commission to educate a diverse group of community members on the importance of the cemetery and simple actions that can be accomplished by the community for ongoing preservation. Participants included grade school kids, students from Exeter High School and Philips Exeter Academy, local families, descendents, members of the Kiwanis' Club, the Heritage Commission and Town officials.

A short lecture component reviewed the history of the site, the types of markers and carvings found at Winter Street Cemetery, the causes for deterioration and falling markers, general safety, and appropriate "do's and don'ts" for cemetery preservation and documentation. The "hands on" components focused on locating displaced markers, probing for buried markers, and unearthing and resetting leaning, fallen and partially buried markers. Starting in Section A and moving forward, small markers were reset to prevent loss or displacement and to visually unify the site. Each reset was identified with a colored flag to identify the previous condition of the stone. Markers reset in Section B were not flagged; it is estimated that 10-20 stones were reset, mostly comprised of smaller marble and rubble markers. The participants accomplished an impressive amount of work and made a significant visual improvement. The following statistics summarize the efforts in Section A.

- **88% leaning markers** 53 of the remaining 60 markers that were leaning after conservation treatment of the site were reset (those remaining are multi-section headstones and flush markers).
- **86% fallen marker** 6 of 7 fallen markers remaining after conservation treatment were reset (it would **have** been 100%, but marker 135 was too deteriorated to reset vertically ).
- 58% partially buried markers 7 of 12 of partially buried markers remaining after conservation treatment were reset (those remaining are flush markers that may require additional gravel and may have sunken granite bases; the resetting of the granite base for A109 required substantial work that exceeds the scope of the workshop).
- *12% displaced markers* 1 of 8 displaced markers (one of these is a rubble stone without text that will be a challenge to locate).
- 2 *Completely Buried Markers* the ground was probed behind headstones that had no corresponding footstones and two markers were located, unearthed and reset (this is notable given the site was probed by the Dufours and indicates additional markers are likely buried).

Following resetting, a second lecture discussed the small growths found on stone markers and the need for removal or not. A demonstration explained the safest cleaning methods of using antimicrobial solutions, such as ReVive (see Cleaning below) for treating stones without scrubbing. Promoting the safest cleaning methods was emphasized, which is particularly important for colonial era markers. Small teams formed and cleaned all of the markers in Section A and the first 3-4 adjacent rows of section B.

#### HAZARDOUS MARKER RESETS

A walk though the cemetery designated the following hazardous markers for resetting. The markers were identified due to their size and physical condition; some markers were chosen because they have previous repairs and may be relatively unstable if leaning. Many smaller markers and markers in slightly more sound condition are also leaning and not identified here. These stones should be addressed in future preservation campaigns.



#### **Reset Markers**

All designated makers were reset. Marker A 39 required a cast concrete base. Markers D53, F29 and F73 have below grade conditions that require additional treatment. These markers were reset plumb but are not ideal and should be addressed in future treatment campaigns. *Before* and *After* treatment images are included in the report. *During* treatment images were included to provide additional information as needed.

- A39 Headstone
- B18 Headstone
- B19 Headstone
- B43 Headstone
- B44 Headstone
- C111 Headstone
- D53 Headstone
- D98 Monument Obelisk
- D106 Headstone
- E16 Headstone
- E67 Headstone
- F29 Headstone
- F44 Headstone

#### **Additional Rests**

Flush marker A81 and headstone A135 were badly deteriorated and reset flush on gravel beds to slightly lift the stone from below grade and provide drainage. Marker B45 is a large marble that was leaning and was reset to allow for the resetting of B44. Markers B106 headstone and accompanying B106 footstone were displaced markers whose burial place was identified in the workshop. The headstone required a cast concrete base for support. These markers are documented and included in the Reset Images.

#### **Additional Reset Markers**

- A81 Headstone Flush marker
- A135 Headstone set flush due to deterioration
- B45 Headstone
- B106 Headstone
- B106 Footstone

#### MARKERS SELECTED FOR TREATMENT

The following markers were selected for their obvious need for treatment and the high priority from a conservation perspective. All treatments are located in Section A, with the exceptions of B71, Samuel Leavitt, which is visually distracting and adjoins Section A, and F80, Tobias Cutler, which is a historically significant, African American, Revolutionary War veteran's marker defaced by vandalism.

The budget allowed for two weeks of onsite treatment for the conservator and an assistant, giving a total of 160 combined hours. The work included the resetting of hazardous markers and proceeded to the designated treatments, focusing on Section A with priority 1 markers first. Treatments were batched to maximize efficiency and maximize object preservation.

During treatment, it was discovered that Markers A59 and A136 had concrete poured around the upper portions of the stone that were buried below grade. These markers were not treated at this time and reset plumb. This gave additional time to treat markers A82 and A93, which were designated as Priority 2. Marker A80, also designated as priority 2, was brought to conservation studio for treatment under a separate contract.



Marker A41, a broken, slate footstone, was found below grade during the workshop. The marker was treated and reset.

#### **Completed Treatments**

- A22 Headstone
- A29 Headstone
- A30 Headstone and base
- A41 Footstone
- A71 Headstone
- A76 Headstone
- A82 Flush Marker
- A93 Flush Marker
- A104 Headstone
- A108 Flush Marker
- A109 Flush Marker
- A126 Headstone
- A145 Footstone
- B71 Headstone
- F80 Headstone

#### Reset with no further treatment due to complications found.

- A59 Headstone
- A136 Headstone

#### Brought to studio for treatment over winter 2017/18

A80Flush MarkerA145Headstone

#### GENERAL CONDITION ASSESSMENT

Note

#### This section was copied from the Winter Street Cemetery Condition Assessment and Recommended Treatments submitted in the summer of 2017. It is included here for continuity of the general conditions found and subsequent treatments.

The following is a general assessment of the site, primarily in Section A. Section A was selected due the close proximity of the section to both gates, close proximity to the adjoining play lot which has ongoing daily visitation, and the need for restoration. Detailed assessments of select markers are given below in Detailed Condition Assessment and Treatment Proposal. A more comprehensive site review will be presented after conducting a site survey that will quantify the number of markers, marker types, materials and general condition. All information, including a review of historic documentation will be presented in a Preservation Plan.

#### **Site Maintenance Impact**

Many of the markers have abrasion and losses along the bottom edges from mowing maintenance. Several markers appear to be broken from impact.



#### Vegetation

There are hazardous, dead trees on the site and displacement of markers by live trees. A large branch from a mature oak has fallen, remarkably missing surrounding markers. While minimal, there are additional vines and shrubs that hare causing visual obstruction and damage.

#### **Surface Biological Growth**

Most markers have small growths on the surface. Many of the stones have excessive growth obscuring text and artwork.

If the client is interested in removing the growth a botanist might first be consulted to determine which growths may be damaging and which may be inconsequential and potentially helpful. The National Park Service has found endangered and culturally significant plants growing in and around historic sites and cemeteries that have no detrimental effects to the stone. Any cleaning should be done using the least aggressive means possible. No scrubbing of the stone should be permitted. See Cleaning below.

#### **Soiling and Staining**

The only notable soiling or staining is from fallen markers or those buried too deeply hat have become stained from soil contact.

#### **Prior Repairs**

#### Resetting

Traditionally, markers of this age are directly set in the earth with no added gravel and certainly no added cementitious materials. Rubble stone can be found to help prop markers in sandy soil or aid in support under stones that were not cut/quarried flat on the bottom edges. Many of the markers in Winter Street Cemetery are set directly into concrete, which is not original to the site and can cause long-term damage to the stone. There is no notable damage to the markers at this time. The concrete should be monitored and the material removed as needed if damage is found.

#### Repairs

Many of the markers were previously broken and mended with a range of adhesives and cements. Many of the repairs have failed while others continue to maintain a good bond. Excessively hard cements were applied liberally and are visually unsightly. As with the concrete bases noted above, removal is not recommended unless visible damage is being caused from excessively hard repair materials and the potential harm from the removal process is substantially less than the damage being caused. In the case of current conditions, only surface removal is recommended.

#### **Friable Stone**

Stone grains can lose cohesion and become loosely attached, making the surface friable. The depth of damage depends on the stone type and exposure conditions. Historic marble headstones under normal display conditions develop a "sugared" texture. With added acidic deposition, the degradation can extend further into the stone. Porous sandstones and limestones often experience loss of granular cohesion more deeply. Most of the marble markers are sugared and others have lost granular cohesion.

Complications due to clay bodies and weakly bonded stone grains in Connecticut Valley sandstones lead to pockets of complete disaggregation. The regions with failure can result in loss of surface detail, cracks, delaminations, detached fragments and regional disintegration. Most sandstone is used as base material and no notable damage observed.



Schists and slates can develop scaly surfaces from small delaminations along formation plains and mineral platelets. No substantial damage was observed.

#### Cracks

Cracks in the markers have formed along areas with granular cohesion failure and by stress and physical impact.

#### Losses

Losses to the stone surfaces has occurred due to cohesion failures and detachments of delaminations, and separated fragments along break-lines.

#### Breaks

Breaks have occurred to many of the stones, mostly at grade. The breaks typically result from excessive leaning or by external forces from falling trees, wind blasts, falling stones, maintenance accidents and vandalism. Markers misdesigned by being excessively high for the stone thickness often fail under minor stress and may require support braces for successful repair.

#### **Missing Sections**

If broken markers are not promptly repaired, large pieces can become separated from the site during maintenance (mower contact), gathering fragments and displacement for "safe keeping", burial, mindless clearing, and theft. The flush markers have a high percentage of missing stone fragments.

#### Leaning

Traditionally markers of this age are directly set in the earth with no added gravel and certainly no added cementitious materials. Occasionally rubble stone is found to help prop markers in sandy soil or aid in support under stones that were not cut/quarried flat on the bottom edges. Markers eventually begin to lean due to stone irregularities, uneven soil compaction, groundwater, freeze-thaw cycles, burrowing animals, soil build-up on hillsides, etc. Winter Street Cemetery has many markers with concrete surrounds with direct contact with the stones. Unfortunately, these encased markers are also leaning, complicating an otherwise simple resetting process.

#### **Hazardously Leaning Markers**

The point at which a marker becomes "hazardous" to itself, other markers and the public depends on the physical properties of the stone and conditions, such as the degree of lean, stone dimensions (height, width and thickness), material type, structural integrity, depth of the buried below grade portion, etc. Hazards to the stone, site and public include threat of breaking, falling, and being an obstacle for mowing/maintenance.

Markers can fall when the leaning conditions cross a critical threshold and by physical impact. Once fallen, the markers experience new sets of display conditions. The horizontal stones have greater impact from weather, standing water, continued dampness, soil pH exposure to carved elements, soil staining, possible impact from pedestrians and maintenance crews/equipment, threat of complete burial over time, displacement to new locations and possible theft.

#### Set Below Grade

Rising ground levels, settling, and stones either cut or broken below grade can all contribute to a marker or base being set inappropriately low, obscuring carved features and text. If set too low, markers also contribute to visual anomalies for the site and possible increased threat of mower/maintenance damage to the carved surfaces.



#### Vandalism

Marker F80, Tobias Cutler, is one of the few African American markers in the cemetery. The slate headstone honoring this Revolutionary War veteran is defaced with this tar on the front and back of the stone. No other vandalism was noted.

#### **OBJECTIVE AND APPROACH TO TREATMENT**

#### **Governing Philosophies**

A committee should meet to discuss the history, current conditions and future of the cemetery. From the discussions, conservation parameters should be developed to guide treatment options such as the amount of replication desired for missing carved detail, the desired orderliness of plumb, extent of cleaning, the acceptance or intolerance of more natural grasses, etc. These issues will be discussed and formalized in a Preservation Plan for the cemetery.

#### **General Conservation Guidelines**

The goals of the conservation treatment should emphasize minimal intervention by using the least aggressive means possible to achieve the most successful conservation results. To achieve such results, it will be necessary to test each recommended procedure to determine which approach is most appropriate for the objects and most acceptable to the owner. Therefore, when a procedure is recommended a conservator should only institute it after the proper testing has been done. For this reason, it should be noted that although a specific treatment may be recommended, the actual treatment should rely on the information generated from the tests. The client should be kept informed on the progress of the treatment and notified if deviations are necessary. The client should make all final decisions in the conservation proposal including the aesthetic choices available during the conservation process.

#### TREATMENT PROCEDURES

#### Conservator

The Qualifying Conservator, Francis Miller, was present and actively lead all phases of treatment. Silas Finch assisted with treatments.

#### Water Supply

All water used during the conservation process was municipal water filtered with individual 30 micron sediment and activated charcoal filters. The filters were flushed for approximately 1 minute prior to use.

#### Artifacts

The site contained an unordinary amount of broken glass. No notable fragments were found. A broken, iron, veteran's flag holder/marker was found below grade while resetting marker B43. The object was given to the client.

#### Sod and Soil

Sod and soil were retained in plastic sheeting and tubs for reuse onsite, elevating on wood blocks to minimize suffocating surrounding grass as needed. Excess soil was stored on a natural earth rise behind a pine stand near marker A36.

#### Unearthing and Searching for Sections and Fragments

Markers requiring consolidation and other repairs were unearthed prior to treatment, searching the area for fragments as required. Earth disturbance was minimal.



The areas were probed prior to digging to locate buried elements. The stones and elements were unearthed with hand shovels and small digging tools with care not to abrade stone. Small stones were lifted by hand with one to two people depending on weight. Heavy stones were lifted by hoist and clean nylon straps. Unearthed stones were placed on clean board or foam pads.

If the marker had losses of carved elements, the ground surrounding the marker was sieved for fragments. Fragments were placed in plastic bags labeled with the marker # using permanent pen and joined with the parent stone during treatment as possible. Unusable fragments were reburied alongside the marker.

#### **General Cleaning of Biological Growth**

Markers requiring no additional treatment were cleaned of biological growth using Quaternary Ammonium Compounds (QAC's) found in ProSoCo's ReVive. The solution was diluted with 5 parts water and applied using the manufacturer's specifications. The cleaning did not remove all growths; remaining growths will be eradicated and the surfaces slowly cleaned over the course of the following year.

#### **Cleaning for Repairs**

The gravestones were cleaned to the level necessary to continue subsequent treatments. The treatment region of the markers were washed with a solution of ReVive following the manufacturer's recommended procedures and gently scrubbed with natural bristle brushes. All surfaces were thoroughly rinsed with water after cleaning.

#### **Cleaning Heavy Soiling or Stains**

Heavy soiling was removed with a solution of Orvus and tap water. The solution was brushed on the surface with natural fiber brushes and rinsed with water.

#### **Removal of Failing Repair Materials**

Failing repair materials consisted of old adhesives and mortars. They were gently removed with a hammer and chisel, stainless steel scalpels, and Dremel. The adhesive on marker A145 was treated with Klean Strip Strip-X Stripper, a methylene chloride based coating remover. After approximately 6 applications, the outer edges had softened and were removed to a depth of approximately  $\frac{1}{2}$ " - $\frac{3}{4}$ " on the front and back surfaces. However, given the thickness of the stone, the central epoxy held firmly. The fragments were brought to Hamden, Connecticut to be treated in a fume chamber over the winter.

Failed pins were removed with wet diamond core drill and replaced with 316 stainless steel. See Pins below.

#### **Tar Removal**

Tests for tar removal were done with Smart Strip Pro safe stripper, which had minimal effect. Additional tests were done with wood scrappers to remove the bulk of the tar followed by Klean Strip Strip-X Stripper, a methylene chloride based coating remover. The material was brushed onto the surfaces and allowed to dwell for approximately 10-25 minutes. The stripper was removed with pressurized water set a 500 psi with a 40 degree fan tip and working distance of 18-24". Dwell times were dependent on ambient temperature and sun exposure to the stone and varied between 15 minutes up to 60 minutes. The stripper successfully removed all residues after 4 applications.

#### Consolidation

Marble requiring consolidation was treated with Conservare HCT manufactured by ProSoCo. The consolidant is designed for calcareous material. The three application regiment followed manufacturer's recommended procedures.



#### **Crack Injection**

Small cracks in the marble were filled with Void Span Lime Injection Grout or Jahn M30, depending on crack size and configuration. The grouts were pigmented to match parent stone with alkali and light stable pigments.

Cracks were cleaned with pressurized air followed by pressurized water up to 100-psi in a portable tank. The cracks were pre-dampened with a solution of 5% ethanol and water. The grouts were injected by appropriate syringe and gauged needles, to fill voids and to maintain an appropriate set-back for fills. Surrounding, non-treated areas were kept clean. Plastic covering and periodic misting maintained damp conditions for the initial 5 days cure period.

#### **Epoxy Mending**

Selected for outdoor moisture insensitivity, and flexibility, Akemi Akepox 2030 epoxy was used for bonding stones. The stone surfaces were washed with Orvus, rinsed with water and allowed to dry for 24 hours. The mating surfaces were rinsed with acetone using natural fiber brushes, blotted dry with clean cotton towels and air dried for a minimum of 24 hours. The sections were dry fit to determine the epoxy lines, joint thickness and areas with losses. Marking these stone regions with pencils designated the application regions.

An Orvus solution (1:1 with water) was applied to the viewable surfaces to act as an epoxy release to prevent epoxy smears and stains. The epoxy was applied with stiff, natural-bristle brushes over the entire, delineated, bond area and clamped, or set under gravity compression, for a period of 24 hours. During the initial set of the epoxy, when reaching taffy like consistency, stainless scalpel removed the excess epoxy and appropriate set-back levels for fills. The release prevented epoxy from bonding to the viewable areas; extreme care was taken not to abrade the stone. Water removed the Orvus resist after the epoxy cured for 24 hours

#### Fills for Injections, Cracks and Mends

Surfaces were cleaned and mend adhesives cut back to 2x the width of the break-line. The recesses were filled with an appropriate composite patching mortar such as Jahn 120 Marble Patching Mortar for marble. As a preventative measure, fills were made along areas of thin delamination that catch water.

The fill material was tinted with Bayferrox and Solomon and Grind lime insensitive, light fast pigments as needed, not exceeding 2% by dry weight. All fills were tightly packed, tooled flush and textured to match surrounding stone as needed. The fills were covered with plastic and periodically dampened with water for a period of at least three days.

#### Loss Replacement

Losses in stone were made using the same materials and procedures for Fills above. Carved text and designs were replicated in the losses to provide a unified appearance to the marker. Small losses along outer edges and other losses associated with normal outdoor exposure were not filled unless they posed additional threat to trapping water.

#### Pins

If the broken sections, particularly those broken at grade, did not have adequate support and were thick enough to withstand drilling a hole, such as marker A30, the object was pinned using the smallest 316 stainless steel threaded rod possible for the application. The pins are intended to allow the upper stone to free-stand in case of future epoxy failure. The holes were cored with a water-cooled, diamond core bit and flushed with clean water and dried. Degreased with acetone and dried, the 316 grade stainless were set with Hilti Hit epoxy. The pin lengths are dependent on stone dimensions, in general a minimum of 2" long (1" extending into stone on each



side), for small footstones and 4" long (2" extending into stone on each side), for headstones. The exact pin length is dependent on the stone condition and is described on individual sheets attached to this document.

#### **Direct Burial Setting**

Treatments thoughtfully respected the historic character and fabric of Winter Street. Leaning, fallen or displaced stone requiring directed burial setting were reset plumb with as little alteration and introduction of foreign materials as possible. The character of the site, including irregular row patterns and markers facing inconsistent directions was maintained when resetting. If markers appeared to be mis-set from a previous treatment, corrections were made.

Leaning stones were set plumb by removal of earth only on the sides needed. The markers were carefully excavated and not pulled through undug earth. Holes were slowly dug, taking care not to damage buried markers/artifacts. The holes were 4-8" larger in perimeter than the marker's foot print. The removed earth was sieved for marker A145. Marked bags organized the found fragments. Existing sod placed in containers on wood blocks, kept the grasses alive for replanting.

Markers were set to an appropriate height to read text and carved detail and to match the stone cutters' designs. A minimum of 1/3 the stone length extended below grade. Soils were replaced in lifts and tamped for compaction. If the marker did not adequately support itself without obscuring the text then a below grade concrete base was required.

Other than a base needed for appropriate viewing, no additional gravel or other foreign materials were added around the stone for support or drainage. Rubble, and the occasional existing brick found under a marker, was placed under the stone to help level with non-square, irregularly or angularly shaped bottom edge.

The site was raked and cleaned of debris after treatment.

#### **Concrete Bases**

Cast concrete bases were added below grade for markers that were broken, missing lower portions or otherwise configured to not allow for appropriate viewing. The design of the concrete bases is based on the traditional slotted base system commonly used in the 19<sup>th</sup> century for setting marble markers on base stones below grade. It resembles a mortise and tenon, with the mortise being the recess in the middle of the concrete and the tenon being the entire bottom end of marble.

The slope of the concrete followed the contour of the historic marker; stones having angular shaped bottoms had concrete bases with matching surface and slot angles providing consistent slot depth for each historic marker. The central slots were cast with room for the marker and a <sup>1</sup>/<sub>4</sub>" perimeter mortar joint. The wall thicknesses are a minimum of 3" thick for small footstones and 5" thick for headstones. Overall heights of concrete bases are a minimum of 6" for small footstones and 8" for headstones.

Base A39 was cast in place onto a flat, squarely dug, compacted earthen hole. Base B106 was cast in a frame and set level after cure. Bases were cast with Quikrete 5000, a fast setting concrete with high compressive strength. The earth was pre-dampened and the poured concrete tamped to remove excess air. Bases were covered with plastic and misted with water to keep damp for a minimum of 5 days.

The markers were placed on lead shims in mortise bottoms to achieve plumb for the stone. The stones were set with mortar of 1 part Saint Astier Naturally Hydraulic Lime NHL-2 and 2.5 parts fine silica sand. Water added to the concrete slot concrete created a slurry that flowed round the contours of the stone. The vertical



walls were pointed using a normal mortar consistency, keeping mortar application clean and marker clean at all times. The mortar was cover with plastic and kept damp for a minimum of 5 days.

#### **Structural Supports**

Marker A22 was considered for a stainless steel structural support. After reviewing the conditions, it was decided not to add the foreign device. The marker should be monitored, and braces installed if needed. Braces were fabricated and can be set following the guidelines below.

The metal will not contact the stone; a gap will be designated to each side of the marker and filled with setting compound. Stainless steel ends will be set in base with Hilti Hit 200 moisture insensitive epoxy designed for anchor applications.

#### MATERIALS

- 1. Akemi Akepox 2030 Epoxy
- 2. ProSoCo Conservare HCT Consolidant
- 3. ProSoCo ReVive
- 4. Jahn M120 Patching Mortar
- 5. Lehigh White Portland Cement
- 6. VitaCal Calcium Oxide lime
- 7. Quikrete 5000 Concrete
- 8. Hilti Hit 200 Epoxy
- 9. Saint Astier Naturally Hydraulic Lime 2
- 10. Klean Strip Strip-X Stripper





#### **COMMUNITY WORKSHOP IMAGES**



workshop. Note marker A59 orange stake in midground.

Front Street after workshop. Note marker A 59 in foreground.

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#### **COMMUNITY WORKSHOP IMAGES**



EWSC Workshop. 5. View from Winter Street facing Front Street before Workshop. Note markers 81 and 82 in foreground.



EWSC Workshop. 6. View from Winter Street facing Front Street after Workshop. Note markers 81 and 82 in foreground.





EWSC Workshop. 7. View from Front Street facing Winter Street before Workshop.

EWSC Workshop. 8. View from Front Street facing Winter Street after Workshop.

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## IN Landow Avenue Hander Connections 06517 202 506 6846 connected and a



#### **COMMUNITY WORKSHOP IMAGES**



EWSC Workshop. 9. Resetting marble headstone.

EWSC Workshop. 10. Resetting marble footstone.





EWSC Workshop. 11. Overview of work in corner of play lot and Front Street.

EWSC Workshop. 12. High School students resetting markers.

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#### **COMMUNITY WORKSHOP IMAGES**



EWSC Workshop. 15. Grades School student cleaning marble with ReVive.

EWSC Workshop. 16. Janvrin family markers before ReVive cleaning.

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#### **COMMUNITY WORKSHOP IMAGES**



EWSC Workshop. 17. Janvrin family markers before ReVive cleaning.

EWSC Workshop. 18. Janvrin family markers before ReVive cleaning.



EWSC Workshop. 19. Janvrin family markers before ReVive cleaning.



EWSC Workshop. 20. Janvrin family markers before ReVive cleaning.

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#### **RESET IMAGES**



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#### **RESET IMAGES**



EWSC A135 2. After Reset. Compromised marble set on gravel for better drainage.

EWSC B18 1. Before Reset.

EWSC B18 2. Reset After.

B18

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#### **RESET IMAGES**



## ANALYSIS RESEARCH TREATMENT 22



#### **RESET IMAGES**







EWSC B43. 2. After Reset

EWSC B44 and B45 1. Before Reset. Note the stone is behind 43, not part of original proposal.

EWSC B44 2. Reset After.







EWSC B45 2. Reset After.

EWSC B106 1. During Reset. Cast concrete base for headstone.

EWSC B106 2. During Reset. Detail of cast concrete base for headstone.

#### ANALYSIS RESEARCH TREATMENT 23 Conserve ART LLC 19 Lansdowne Avenue Hamden, Connecticut 06517 203-506-6846 conserveartllc@gmail.com Conserve-ART.com



#### RESET IMAGES



## ANALYSIS RESEARCH TREATMENT<sup>24</sup>



#### **RESET IMAGES**



EWSC D98 1. Before Reset.

EWSC D98 2. During Reset. Separated with gantry.

EWSC D98 3. During Reset. Removal of earth to original stone foundation.

## ANALYSIS RESEARCH TREATMENT<sup>25</sup>



#### **RESET IMAGES**







EWSC D98 5. During Reset. Detail of crushed stone above original stone foundation.



EWSC D98 6. During Reset. Rigging obelisk onto lead shims on leveled base.







EWSC D98 7. Reset After.

EWSC D106 1. Before Reset.

EWSC D106 2. Reset After.

## ANALYSIS RESEARCH TREATMENT 26



#### **RESET IMAGES**



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#### RESET IMAGES



## ANALYSIS RESEARCH TREATMENT 28



MARKER #:	A22 NA	ME: PRISC	TILLA RUNDLETT	DATE:	1845
DESCRIPTION	V				
Type:	■ Headstone	Given Street Footstone			
Flush	Crypt	<b>Table</b>		- Person	INVESTION OF A DESCRIPTION OF A DESCRIPR
Obelisk	Monument	# sections:		in the second	CREATER CARE
Material(s):	■ Marble	□ Slate		State of the second	
🗖 Granite	Sandstone	<b>Rubble</b>	WWITER STREET		
Limestone	Schist	Concrete	CA A ZZZ 		A Callent
<b>Carving</b>	Good Good	■ Weathered			P TO BEACH
Traces	Lost	Buried			
Hazard (1-5):	1:high - 5:low	NA		112	and the second second second
<u>Priority (1-5</u> ):	1:high - 5:low	NA			
Dimensions: H:	24" W: 15	<b>D:</b> 1 1/2"	1. EWSC A22. BT Front overview before treatment.	2. EWSC	A22. BT Proper left overview before treatment.
MARKER CON	DITION				

- **Surface Growth/Soiling:** Minor biological growths over the surfaces and in grain boundaries.
- Stains: There are soil stains on portions buried below grade.
- Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.

□ Spalls:

- **Cracks:** There is a small crack on the lower proper right, lower edge.
- **Breaks:** Stone has been broken into two sections.
- Losses: There are losses along the break-line and a large loss to the proper left side.
- □ Hazardous Alignment:
- **Previous Repairs:** There is failed epoxy along break-line from previous repair.



MARKER #: A22 NAM	E: PRISCILLA RUNDLETT	DATE: 1845
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvu	s <b>Aggregate:</b> Graded silica sand	
<b>Stain Removal:</b>	Lime: St. Astier 3.5	
<b>Consolidant:</b> ProSoCo HCT	<b>Cement:</b> White Portland	DIVIS CITATION CONTRACTOR
Adhesive: Akemi Akepox 2030	<b>Fills:</b> Jahn M-120	Course ARE TALLENCE
<b>Dowel</b> (s):	■ <b>Pigment:</b> Bayferrox and Solomon Grind	JUSTICI LIGATION
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis M	iller, Silas Finch	
<b>PROJECT DATES</b> Begin: Su	mmer 2017 Complete: Fall 2017	3. EWSC A22. AT Front overview after treatment.

#### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

■ Crack Injection: All cracks were flushed with pressurized water (100 psi max.), using appropriate stainless steel needle gauge for crack opening and fragility of stone. Prewet cracks with 10% ethanol and water solution allowed for successful injection of Jahn M-31, tinted with pigments.

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills:** Losses were filled flush using Jahn M-120, lightly lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** 





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MARKER #:	A29 NA	ME: WILLI	AM AND MARY ROBINSON	DATE: 1802, 1843
DESCRIPTION	V			
<u><b>Type:</b></u>	■ Headstone	Given Stone Footstone		
🗖 Flush	Crypt	<b>Table</b>		
Obelisk	Monument	# sections:		
Material(s):	■ Marble	□ Slate	WINTER STREET	Manager and All and Al
🗖 Granite	Sandstone	<b>Rubble</b>	ECERA de la Marcura de La Companya d	BT A29
Limestone	Schist	Concrete		
<b>Carving</b>	Good Good	■ Weathered		
Traces	Lost	Buried	and the second se	
<u>Hazard (1-5</u> ):	1:high - 5:low	NA		
<u>Priority (1-5</u> ):	1:high - 5:low	NA		
Dimensions: H:	36" W: 24	<b>1" D:</b> 2"	1. EWSC. A29. BT. Front overview before treatment.	2. EWSC. A29. BT. Back overview before treatment.

#### **MARKER CONDITION**

- Surface Growth/Soiling: Minor biological growths over the surfaces and grain in boundaries.
- Stains: There are soil stains on portions buried below grade.
- Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.

□ Spalls:

- **Cracks:** There is a small crack on the lower proper right, lower edge.
- ■Breaks: Stone has been broken into two sections. There are pre-existing breaks
- Losses: There are losses along the break-line and a large loss to the proper left side.
- □ Hazardous Alignment:
- **Other:**

■ **Previous Repairs:** The stone has numerous breaks that were mended with a cement adhesive. The repairs are misaligned and the mating areas not filled well with adhesive nor filled with patching mortar to shed water..



MARKER #: A29 NAME:	WILLIAM AND MARY ROBINSON	DATE: 1802, 1843
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	<b>Aggregate:</b> Graded silica sand	
□ Stain Removal:	Lime: St. Astier 3.5	DIED
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	Jan. 17, 1803.
■ Adhesive: Akemi Akepox 2030	<b>Fills:</b> Jahn M-120	
<b>Dowel(s):</b>	■ <b>Pigment:</b> Bayferrox and Solomon Grind	his mile
□ Injection: Jahn M-31	<b>Foundation:</b> Crushed Stone	Febrias III,
<b>Other:</b>	<b>Other:</b>	R. 65° NS.
<b>PERSONNEL</b> Francis Miller	, Silas Finch	
PROJECT DATES Begin: Summe	er 2017 <b>Complete:</b> Fall 2017	3. EWSC A29. AT. Front overview after treatment.

#### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

■ **Repairs:** Failed adhesive removed by hammer and chisel and by Dremel. Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

■ Fills: Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** 





## SIS 🔳 RESEARCH

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MARKER #:	A30 NA	ME: MA	RY PAGE	DATE: 1855
DESCRIPTION	V			
Type:	■ Headstone	Given Stress Footstone		
🗖 Flush	Crypt	Table		Provide Particular
Obelisk	Monument	# sections:		
<u>Material(s</u> ):	■ Marble	□ Slate		And Andrew Contraction
■ Granite	Sandstone	<b>Rubble</b>	WATER STREET	
Limestone	Schist	Concrete	P. P. & MARY L. PAPER	
<b>Carving</b>	Good Good	■ Weathered	d a state the second seco	
Traces	Lost	Buried		430
<u>Hazard (1-5</u> ):	1:high - 5:low	NA		U U
<u>Priority (1-5</u> ):	1:high - 5:low	NA		
Dimensions: H:	$\frac{36''}{4''}$ W: $\frac{20}{29}$	$\frac{0"}{9"}$ <b>D:</b> $\frac{4"}{13"}$	1. EWSC. A29. BT. Front overview bef treatment.	2. EWSC. A29. BT. Back overview before treatment.

#### MARKER CONDITION

- **Surface Growth/Soiling:** Minor biological growths over the surfaces and in grain boundaries.
- Stains: There are soil stains on portions buried below grade.
- Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.
- □ Spalls:
- **Cracks:** There is a hairline crack on the proper right side of the marble.
- **Breaks:** Stone has preexisting breaks in the lower marble.
- Losses: There are losses along the break-line. The marble mid-base is missing.
- Hazardous Alignment:

■ **Previous Repairs:** The stone was set in concrete along the granite base. Fragments of the marble were incased in the concrete.



MARKER #: A30 NAME:	MARY PAGE	DATE: 1855
MATERIALS	■Patch: Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	■ Aggregate: Graded silica sand	
□ Stain Removal:	Lime: St. Astier 3.5	
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	DAUL OF DAUL
Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	əacə Ang. <u>3</u> , 1853.
<b>Dowel(s):</b> 316 stainless Steel	■ <b>Pigment:</b> Bayferrox and Solomon Grind	Algod 2 Lyssell Trings.
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	
<b>Other:</b>	■ Shims: Sheet Lead	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
PROJECT DATES Begin: Summ	er 2017 Complete: Fall 2017	3. EWSC. A30. AT. Front overview after treatment.

#### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

**Crack Injection:** The hairline crack was too tight to inject.

**Repairs:** Concrete was removed by hammer and chisel and by Dremel. Iron pins extracted by core drill. Stainless steel pins used to set stone. Pins extended upward in marble past the hairline crack. Holes cored with diamond core bits, flushed with water and dried. Pins set with Hilti Hit 200 epoxy. Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills/patches:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** Base leveled on crushed stone and tamped prior to joining marble to base.

■ Joint: The marble was set on lead shims. The joint was filled flush with Saint Astier Naturally Hydraulic Lime 3.5 and white silica sands. The pointing was covered with plastic and kept damp for 5 days for cure.






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## S 📕 RESEARCI

TREATMENT

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MARKER #:	A30	NAME:	MARY PAGE	DATE: 1855
		NOR SOLUTION		
16. EWSC. A30. DT. Sett anchors extending past cra	ing marble ack.	with stainless	17. EWSC. A30. DT. Setting stainless anchors with structural epoxy.	18. EWSC. A30. DT. Patching large losses with Jahn M120.



MARKER #:	A41 FS NA	ME: ELIPH	IALET HALE	DATE: 1801
DESCRIPTION	V		いるのである	
Type:	□ Headstone	■ Footstone		
🗖 Flush	Crypt	Table		
Obelisk	Monument	# sections:		
<u>Material(s</u> ):	Marble	■ Slate		TopActor Disk.Fig
Granite	Sandstone	<b>Rubble</b>		
Limestone	Schist	Concrete		
<b>Carving</b>	■ Good	Weathered		
□ Traces	Lost	Buried		
<u>Hazard (1-5</u> ):	1:high - 5:low	NA		
<u>Priority (1-5</u> ):	1:high - 5:low	NA		
Dimensions: H:	12" <b>W</b> : 9'	<b>D:</b> <sup>3</sup> / <sub>4</sub> "	1. EWSC. A41 FS. BT. Front overview before treatment.	2. EWSC. A41 FS. DT. Front overview after bonding.

### MARKER CONDITION

■ Surface Growth/Soiling: There are soil stains on portions buried below grade.

□Stains:

**□**Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.

□ Spalls:

■ **Cracks:** There are hairline cracks in the slate along stone anomalies.

■Breaks: Stone has a central break below grade.

**D**Losses:

□ Hazardous Alignment:

**Other**: The broken marker was located below grade by probing the area during the community preservation workshop.



MARKER #: A41 FS NAME:	ELIPHALET HALE	DATE:	1801
MATERIALS	□Patch:		ME LIK
■ Cleaning: ProSoCo ReVive, Orvus	<b>Aggregate:</b> Graded silica sand		WINTER STREET CEMETERY
Stain Removal:	<b>Lime:</b> St. Astier 3.5		EXETER, NEW HAMPSHIRE AT A41 Conserve ART_FALL 2017
Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland		
Adhesive: Akemi Akepox 2030	<b>Fills:</b> Jahn M-120	and The state	in the set of the set
<b>Dowel(s):</b> 316 stainless Steel	<b>Pigment:</b> Bayferrox and Solomon Grind		
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone		
<b>Other:</b>	□ Shims: Sheet Lead		
<b>PERSONNEL</b> Francis Miller	r, Silas Finch		
PROJECT DATES Begin: Summe	er 2017 Complete: Fall 2017	3. EWSC. A41 treatment.	I FS. AT. Front overview after

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** 

**Crack Injection:** 

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. The mend is below grade; epoxy was not trimmed back

□ Fills/patches:

**Resetting:** Reset in the earth in found location behind headstone.



MARKER #:	A59 NA	ME: HOOK	[	DATE: -
DESCRIPTION	V			
<u>Type:</u>	■ Headstone	Given Street Footstone		
Flush	Crypt	<b>Table</b>	and the second se	
Obelisk	Monument	# sections:	WINATER STREET CEMETERY KETER NEW NAMPSHIRE	
Material(s):	■ Marble	□Slate		
🗖 Granite	Sandstone	<b>Rubble</b>		
Limestone	Schist	Concrete		
<b>Carving</b>	Good	Weathered		
■ Traces	■ Lost	Buried		
Hazard (1-5):	1:high - 5:low	NA		
<u>Priority (1-5</u> ):	1:high - 5:low	NA		
Dimensions: H:	27" <b>W:</b> 18	<b>D:</b> 2"	1. EWSC. A59. BT. Front overview before treatment.	2. EWSC. A59. DT. Unearthing revealed concrete poured around the stone.

### MARKER CONDITION

■ Surface Growth/Soiling: There are soil stains on portions buried below grade.

□Stains:

**□**Friable Stone: Fine grain marble is lightly sugary to the touch, portions have lost all cohesion.

□ Spalls:

**Cracks:** Portions of the stone riddled with cracks.

**Breaks:** Stone has a central break at grade and pre-existing breaks.

**D**Losses:

□ Hazardous Alignment:

■ **Previous Repairs**: The marker has repairs to previous rates.

**Other:** Unearthing stone for repairs uncovered below grade concrete. Given the fragility of the stone and unknown loss associated with the concrete, the marker was reset and no further work done. The marker can be treated in a future campaign where the treatment duration permits full OH-100 consolidation.



MARKER #:	A71 NA	ME: JOSIA	H HALL		DATE:	1847
DESCRIPTION	V			- All Contraction	0	
<u>Type:</u>	■ Headstone	Given Street Footstone	the second			
🗖 Flush	Crypt	Table				
Obelisk	Monument	# sections:	WINTER STREET		8	
<u>Material(s</u> ):	■ Marble	□ Slate	CEMETERY EXETER, NEW HAMPSHIRE			
🗖 Granite	Sandstone	<b>Rubble</b>	CONSERVE ARTELE FALL 2017	The second se		
Limestone	Schist	Concrete				Blank
<u>Carving</u>	Good Good	■ Weathered				
Traces	Lost	Buried				
<u>Hazard (1-5</u> ):	1:high - 5:low	NA	6 . C. 24			
Priority (1-5):	1:high - 5:low	NA				
			1 EWSC 471	PT Quartient before		
Dimensions: H:	24" W: 13	<b>3</b> " <b>D:</b> 1 <sup>3</sup> ⁄ <sub>4</sub> "	T. EWSC. A/T.	eatment.		
	IDITION					
MAKKEK CON	NDIIION					
■ Surface Grow	th/Soiling: Mind	or biological grov	wths over the surfa	ces and grain bound	aries.	
■ Stains: There a	are soil stains on	portions buried b	below grade.			
■ Friable Stone:	Fine grain marb	le is lightly suga	ry to the touch, oth	erwise stone is sour	nd.	
■ <b>Spalls:</b> The stone has small spall on the upper portion.						
Cracks:						
■Breaks: Stone has been broken into two sections.						
■ Losses: There are losses along the break-line.						
Hazardous A	lignment:					
<b>Other:</b> The sto	• Other: The stone was buried too deeply to read the text.					

■ **Previous Repairs:** There is failed epoxy along break-line from previous repair.

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MARKER #: A71 NAME:	JOSIAH HALL	DATE: 1847
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	<b>Aggregate:</b> Graded silica sand	
Stain Removal:	Lime: St. Astier 3.5	Markall Markally Darkan
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	True Lorp FRIVE
Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	
<b>Dowel(s):</b>	Pigment: Bayferrox and Solomon Grind	
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
<b>PROJECT DATES</b> Begin: Summ	er 2017 <b>Complete:</b> Fall 2017	2. EWSC. A71. AT. Overview before treatment.

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** the lower section was reset plumb prior to repairs.



# MARKER #: A71 NAME: JOSIAH HALL **DATE: 1847** 3. EWSC. A71. DT. Overview of epoxy 4. EWSC. A71. DT. Detail of epoxy preparation for 5. EWSC. A71. DT. Epoxy application on bottom preparation for mends. mends. stone.

6. EWSC. A71. DT. Sections clamped for epoxy set.

7. EWSC. A71. DT. Filling losses along breakline with Jahn M120.

8. EWSC. A71. DT. Marker covered with plastic for mortar cure.

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## RESEARCH



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MARKER #:	A76 NA	ME: CHAP	RLES HALL	DATE:	1838	
DESCRIPTION	V					
Type:	■ Headstone	Given Street Footstone		20		
🗖 Flush	Crypt	Table		1.00		
Obelisk	Monument	# sections:				
<u>Material(s</u> ):	■ Marble	□ Slate				
Granite 🛛	Sandstone	<b>Rubble</b>				
Limestone	Schist	Concrete			Blank	
Carving	Good Good	Weathered			2	
Traces	Lost	Buried				
<u>Hazard (1-5</u> ):	1:high - 5:low	NA				
<u>Priority (1-5</u> ):	1:high - 5:low	NA				
Dimensions: H:	36" W: 16	<b>D</b> : 1 <sup>3</sup> /4"	1. EWSC. A76. BT. Overview before treatment.			
MARKER CONDITION						
■ Surface Grow	■ Surface Growth/Soiling: Minor biological growths over the surfaces and grain boundaries.					
■ Stains: There are soil stains on portions buried below grade.						
■ Friable Stone:	■ Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.					
□ Spalls:						
Cracks:						

- **Breaks:** Stone has a break at grade and a break at mid-stone.
- Losses: There are losses along the break-line.
- □ Hazardous Alignment:
- **Other:** The stone was buried too deeply to read the text.
- **Previous Repairs:** There is failed epoxy along break-line at grade from previous repair.

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MARKER #: A76 NAME:	CHARLES HALL	DATE: 1838
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	□Aggregate: Graded silica sand	
□ Stain Removal:	Lime: St. Astier 3.5	
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	
Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	With street
<b>Dowel(s):</b>	Pigment: Bayferrox and Solomon Grind	Attest
■ Injection: Jahn M-31	<b>Foundation:</b> Crushed Stone	August 972
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
<b>PROJECT DATES</b> Begin: Summ	er 2017 <b>Complete:</b> Fall 2017	2. EWSC. A76. AT. Overview before treatment.

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

#### **Resetting:**





### S RESEARCH

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MARKER #:	A76	NAME:	CHARLES HALL	DATE:	1838
9. EWSC. A76. DT. F M120.	illing break-l	ine with Jahn	With the second secon		

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MARKER #:	A80 NA	ME: BENJ	GILMAN	DATE:	1835
DESCRIPTION	V				
Type: Flush Obelisk <u>Material(s)</u> : Granite Limestone <u>Carving</u> Traces <u>Hazard (1-5)</u> : <u>Priority (1-5)</u> :	<ul> <li>Headstone</li> <li>Crypt</li> <li>Monument</li> <li>Marble</li> <li>Sandstone</li> <li>Schist</li> <li>Good</li> <li>Lost</li> <li>1:high - 5:low</li> <li>1:high - 5:low</li> </ul>	<ul> <li>Footstone</li> <li>Table</li> <li># sections: 2</li> <li>Slate</li> <li>Rubble</li> <li>Concrete</li> <li>Weathered</li> <li>Buried</li> <li>NA</li> <li>NA</li> </ul>			
Dimensions: H:	$\frac{18"}{24"}$ W: $\frac{24}{20}$	$\frac{n}{7}$ , <b>D</b> : $\frac{2^{n}}{7^{n}}$	1. EWSC. A80. BT. Overvie treatment.	ew before	
<ul> <li>MARKER CONDITION</li> <li>Surface Growth/Soiling: Minor biological growths over the surfaces and grain boundaries.</li> <li>Stains: There are soil stains on portions buried below grade.</li> </ul>					
■ Friable Stone:	■ Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.				
□ Spalls:.					
■ Cracks: The fragmented marble is riddled with cracks.					
■ Breaks: The m	arble is broken i	nto at least 7 sect	tions. 4 sections were found	on the base.	
■ Losses: There	are losses along	the break-lines.	The bottom, proper left corn	ner is missing and the	top proper right.

**Hazardous Alignment:** The granite is misaligned.

• Other: The marker was an alternate and required too much treatment for the 2017 treatment period. The marker was brought to Hamden, CT for treatment over the winter.



MARKER #:	A82 NA	ME: CHAR	RLES GILMAN	DATE:	1835
DESCRIPTION	V				
Type: Flush Obelisk Material(s): Granite Limestone Carving Traces Hazard (1-5): Priority (1-5):	<ul> <li>Headstone</li> <li>Crypt</li> <li>Monument</li> <li>Marble</li> <li>Sandstone</li> <li>Schist</li> <li>Good</li> <li>Lost</li> <li>1:high - 5:low</li> <li>1:high - 5:low</li> </ul>	<ul> <li>Footstone</li> <li>Table</li> <li># sections: 2</li> <li>Slate</li> <li>Rubble</li> <li>Concrete</li> <li>Weathered</li> <li>Buried</li> <li>NA</li> <li>NA</li> </ul>			Blank
Dimensions: H:	$\frac{18"}{24"}$ W: $\frac{24}{30}$	$\frac{2}{7}$ , <b>D:</b> $\frac{2}{7}$	1. EWSC. A82. BT. Overview before treatment.		
<ul> <li>MARKER CONDITION</li> <li>Surface Growth/Soiling: Minor biological growths over the surfaces and in grain boundaries.</li> <li>Stains: There are soil stains on portions buried below grade.</li> <li>Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.</li> <li>Spalls:.</li> </ul>					

- **Cracks:**
- **Breaks:** The marble is broken into at least four sections; three were located on the base.
- **Losses:** There are losses along the break-line. The top proper left corner is missing.
- **Hazardous Alignment:** The granite is misaligned.
- **Other:** The stone was buried too deeply to read the text.
- **Previous Repairs:** There is failed epoxy along break-line at grade from previous repair.



MARKER #: A82 NAME:	CHARLES GILMAN	DATE: 1835
MATERIALS	■ Patch: Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	■ Aggregate: Graded silica sand	
Stain Removal:	Lime: St. Astier 3.5	ATT AS A CONTRACT OF A CONTRAC
<b>Consolidant:</b> ProSoCo HCT	<b>Cement:</b> White Portland	To the memory
Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	CEANELSIS WAL 2nd wood V Benef & Mary Etilinian
<b>Dowel(s):</b>	■ <b>Pigment:</b> Bayferrox and Solomon Grind	Born Februaria Died Oct. 13, 1840. Auged 78.
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	Print and the second second
<b>Other:</b>	<b>Other:</b>	A ALAS
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
PROJECT DATES Begin: Summ	er 2017 <b>Complete:</b> Fall 2017	2. EWSC. A76. AT. Overview after treatment.

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills and Replacements:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** The granite was raised and leveled on a crushed stone bed.

■ Joint: The marble was set in a bed of mortar consisting of 1 part Saint Astier Naturally Hydraulic Lime 3.5 and 2.5 parts white silica sands. The end joints were pointed flush.





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MARKER #:	A82	NAME:	CHARLES GILMAN	DATE:	1835
10. Marble prior to sett base.	List 1790 to 171 150 to 172 150 to 172 150 to 173 150 150 150 150 150 150 150 150 150 150	bed on granite	To the menory of CRARLAS With Born Feb. 11.1795 Bied Oct. 13, 1570 Aged 75:		

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MARKER #:	A109 NA	ME: MARY	' RINDGE	D	ATE:	1850
DESCRIPTION	V					
Type: Flush Obelisk <u>Material(s)</u> : Granite Limestone <u>Carving</u> Traces <u>Hazard (1-5</u> ): <u>Priority (1-5</u> ):	<ul> <li>Headstone</li> <li>Crypt</li> <li>Monument</li> <li>Marble</li> <li>Sandstone</li> <li>Schist</li> <li>Good</li> <li>Lost</li> <li>1:high - 5:low</li> <li>1:high - 5:low</li> </ul>	<ul> <li>Footstone</li> <li>Table</li> <li># sections: 2</li> <li>Slate</li> <li>Rubble</li> <li>Concrete</li> <li>Weathered</li> <li>Buried</li> <li>NA</li> <li>NA</li> </ul>		Anon A GRAD DORAN May 8, 1836 777 31, 1834		Blank
Dimensions: H:	$\frac{24"}{30"}$ W: $\frac{18}{24}$	$\frac{2^{"}}{7^{"}}$ <b>D:</b> $\frac{2^{"}}{7^{"}}$	1. EWSC. 109. BT treatr	. Overview before nent.		
<ul> <li>MARKER CONDITION</li> <li>Surface Growth/Soiling: Minor biological growths over the surfaces and in grain boundaries.</li> <li>Stains: There are soil stains on portions buried below grade.</li> <li>Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.</li> <li>Spalls:.</li> </ul>						
Cracks:						
■ Breaks: The m	narble is broken i	nto at least four s	sections; three were l	ocated on the base.		
<b>Losses:</b> There are losses along the break-line. The bottom, proper left corner is missing.						
■ Hazardous Al	■ Hazardous Alignment: The granite is misaligned.					
<b>Other:</b> The sto	one was buried to	to deeply to read	the text.			
Previous Repaired Previous	<ul> <li>Other: The stone was buried too deeply to read the text.</li> <li>Previous Repairs: There is failed epoxy along break-line at grade from previous repair.</li> </ul>					





### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills and Replacements:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** The granite was raised and leveled on a crushed stone bed.

■ Joint: The marble was set in a bed of mortar consisting of 1 part Saint Astier Naturally Hydraulic Lime 3.5 and 2.5 parts white silica sands. The end joints were pointed flush.





TREATMENT <sup>3</sup>

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MARKER #:	A104 NA	ME: M	IARY FURBER	DATE:	1832
DESCRIPTION	V			and a second	
Type: Flush Obelisk <u>Material(s)</u> : Granite Limestone <u>Carving</u> Traces <u>Hazard (1-5</u> ): <u>Priority (1-5</u> ):	<ul> <li>Headstone</li> <li>Crypt</li> <li>Monument</li> <li>Marble</li> <li>Sandstone</li> <li>Schist</li> <li>Good</li> <li>Lost</li> <li>1:high - 5:low</li> <li>1:high - 5:low</li> </ul>	<ul> <li>Footsto</li> <li>Table</li> <li># sections:</li> <li>Slate</li> <li>Rubble</li> <li>Concrete</li> <li>Weather</li> <li>Buried</li> <li>NA</li> <li>NA</li> </ul>	ene li al		Blank
Dimensions: H:	24" W: 16	" <b>D:</b>	2", 1. EWSC. A104. BT. Over treatment.	view before	
<ul> <li>MARKER CONDITION</li> <li>Surface Growth/Soiling: Minor biological growths over the surfaces and in grain boundaries.</li> <li>Stains: There are soil stains on portions buried below grade.</li> <li>Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.</li> </ul>					

**Galls:** 

- **Cracks:**
- **Breaks:** Stone has a break at mid-stone.
- Losses: There are losses along the break-line.
- □ Hazardous Alignment:
- Other: The stone was buried too deeply to read the text.
- **Previous Repairs:** There is failed epoxy along break-line at grade from previous repair.

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MARKER #: A104 NAME:	MARY FURBER	DATE: 1832
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	□ Aggregate: Graded silica sand	
□ Stain Removal:	<b>Lime:</b> St. Astier 3.5	
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	ALL ALLA
Adhesive: Akemi Akepox 2030	■ <b>Fills:</b> Jahn M-120	White street
Dowel(s):	Pigment: Bayferrox and Solomon Grind	ATTACK
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	Agent STar
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
PROJECT DATES Begin: Summ	er 2017 <b>Complete:</b> Fall 2017	2. EWSC. A76. AT. Overview before treatment.

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** Marker reset in earth to read text.





8. EWSC. A104. DT. Cleaning marble with ReVive.

6. EWSC. A104. DT. Stone mended. Note release on marble faces.

and epoxy filling crack.

TREATMENT

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7. EWSC. A104. DT. Release on marble faces





## SIS RESEARCH





MARKER #:	A108 NA	ME: MARY	COGSWELL	DATE:	1813	
DESCRIPTION	V					
<u>Type:</u>	■ Headstone	Given Street Footstone				
■ Flush	Crypt	Table				
Obelisk	Monument	# sections:		WINTER STREET CEMETERY		
<u>Material(s</u> ):	■ Marble	Slate		EXETER, NEW HAMPSHIR BT A108		
Granite Granite	Sandstone	<b>Rubble</b>	and the state of the			
Limestone	Schist	Concrete	Fig. 1			
<u>Carving</u>	Good Good	Weathered			Blank	
Traces	Lost	Buried		N NAME		
<u>Hazard (1-5</u> ):	1:high - 5:low	NA				
Priority (1-5):	1:high - 5:low	NA		ALC: NO		
Dimensions: H:	24" W: 18	<b>D:</b> 2"	1. EWSC. A108. BT. Overvie treatment.	w before		
<ul> <li>MARKER CONDITION</li> <li>■ Surface Growth/Soiling: Minor biological growths over the surfaces and grain in boundaries.</li> </ul>						
	= Surface Growin/Soming. White biological growins over the surfaces and grain in boundaries.					
■ Stains: There a	are soil stains on	portions buried b	elow grade.			
■ Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.						
Spalls:						
□ Cracks: ■Breaks: Stone I	nas a break at m	id-stone.				
■ Losses: There	are losses along	the break-line.				
■ Hazardous Ali	ignment:					

• Other: The stone had three levels of foundations below grade. The lowest level was stone, the mid-level was brick and the upper level was concrete and rubble.

■ **Previous Repairs:** There is failed cement along break-line from previous repair.



MARKER #: A108 NAME:	MARY COGSWELL	DATE: 1813
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	□ Aggregate: Graded silica sand	
Stain Removal:	Lime: St. Astier 3.5	WINTER STREET CENTER TANY OCCOGANUALL, CENTER HAMPSHEE
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	Departed this life AT A108 July 16 1812
Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	in the 25 year
<b>Dowel(s):</b>	■ <b>Pigment:</b> Bayferrox and Solomon Grind	
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
<b>PROJECT DATES</b> Begin: Summ	er 2017 Complete: Fall 2017	2. EWSC. A108. AT. Overview after treatment.

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** The various levels of foundation were reset and the marble brought to grade in a bed of crushed stone. Crushed stone was used to enhance drainage for the horizontal marble slab.





### **RESEARCH**

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MARKER #:	A108	NAME:	MARY COGSWELL	DATE: 1813
9. EWSC. A108. DT. BO	COGSWI I this lif IG" 1818, 28"year PI Arc	with epoxy.	10. EWSC. A108. DT. Detail of excess epoxy.	11. EWSC. A108. DT. Dremel removal of epoxy
7. LWSC. A100. D1. D	maning stone v	with cpoxy.	10. Ewse. A106. D1. Detail of excess epoxy.	with set back for fill.
12. EWSC. A108. DT	. Mortar fill e	along break-		

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MARKER #:	A109 NA	ME: MARY	RINDGE	DATE: 1850
DESCRIPTION	V			
Type: Flush Obelisk <u>Material(s</u> ): Granite Limestone	<ul> <li>Headstone</li> <li>Crypt</li> <li>Monument</li> <li>Marble</li> <li>Sandstone</li> <li>Schist</li> </ul>	<ul> <li>Footstone</li> <li>Table</li> <li># sections: 2</li> <li>Slate</li> <li>Rubble</li> <li>Concrete</li> </ul>	WINTER STREET CEMETERY DETER NOT NAME TE AID OUT OF THE STREET	
Carving Traces	<ul><li>Good</li><li>Lost</li></ul>	<ul> <li>Weathered</li> <li>Buried</li> </ul>		
<u>Hazard (1-5</u> ): <u>Priority (1-5</u> ):	1:high - 5:low 1:high - 5:low	NA NA		
Dimensions: H:	$\frac{24"}{30"}$ W: $\frac{18}{24}$	$\frac{2}{5}$ <b>D:</b> $\frac{2}{7}$	1. EWSC. 109. BT. Overview before treatment.	2. EWSC. A109. DT. Granite base found below grade.

### MARKER CONDITION

- Surface Growth/Soiling: Minor biological growths over the surfaces and in grain boundaries.
- **Stains:** There are soil stains on portions buried below grade.
- Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.
- □ Spalls:
- **Cracks:**
- **Breaks:** The marble has a single break.
- Losses: There are losses along the break-line.
- Hazardous Alignment: The marble was partially buried
- Other: During removal of the marble it was found that the flush marker has a granite base.
- **Previous Repairs:** There is failed epoxy along break-line at grade from previous repair.



MARKER #: A109 NAME:	MARY RINDGE	DATE: 1850
MATERIALS	■ Patch: Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	■ Aggregate: Graded silica sand	
□ Stain Removal:	<b>Lime:</b> St. Astier 3.5	An and State State
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	
■ Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	uns alar s divino
<b>Dowel</b> (s):	■ <b>Pigment:</b> Bayferrox and Solomon Grind	And a state and a second state a
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	C. C
<b>PROJECT DATES</b> Begin: Summ	er 2017 <b>Complete:</b> Fall 2017	3. EWSC. A109. AT. Overview after treatment.

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills and Replacements:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** The granite was raised and leveled on a crushed stone bed.

■ Joint: The marble was set in a bed of mortar consisting of 1 part Saint Astier Naturally Hydraulic Lime 3.5 and 2.5 parts white silica sands. The end joints were pointed flush.







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MARKER #:	A126 NA	ME: ISAAC	LEAVITT	DATE:	1834
DESCRIPTION	V			10. 19P	
Type:	■ Headstone	Given Strategy Footstone			
Flush	Crypt	<b>Table</b>			
Obelisk	Monument	# sections:		and the second s	
Material(s):	■ Marble	□ Slate	MARLAN STREET		
Granite 🛛	□ Sandstone	<b>Rubble</b>	WINTER STREET CEMETERY	A COLOR	
Limestone	Schist	Concrete	BT A126 Connect AUT for Table BUT		Blank
<b>Carving</b>	Good Good	■ Weathered	Sector Barrier		
□ Traces	Lost	Buried	2/2 200		
<u>Hazard (1-5</u> ):	1:high - 5:low	NA	A Carlos Maria	A DECEMBER OF	
<u>Priority (1-5</u> ):	1:high - 5:low	NA			
Dimensions: H:	22" W: 18	<b>D:</b> 1 ½"	1. EWSC. A126. BT. Over treatment.	view before	
MARKER CONDITION ■ Surface Growth/Soiling: Minor biological growths over the surfaces and in grain boundaries.					
■ Stains: There are soil stains on portions buried below grade.					
■ Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.					
□ Spalls:					
□ Cracks: ■Breaks: Stone	has a break at mi	id-stone.			

- Losses: There are losses along the break-line.
- □ Hazardous Alignment:
- Other: The stone was buried too deeply to read the text.
- **Previous Repairs:** There is failed epoxy along break-line at grade from previous repair.

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MARKER #: A126 NAME:	ISAAC LEAVITT	DATE: 1834
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	□ Aggregate: Graded silica sand	EN WE
□ Stain Removal:	Lime: St. Astier 3.5	- VANZA
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	WINTER STREET COMMETERY EXTER NEW NAMASHIRE
Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	AT A126 Conserve ARE, FALL 2017
<b>Dowel(s):</b>	■ <b>Pigment:</b> Bayferrox and Solomon Grind	DIED A
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	Mar. 10, 1834.
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
<b>PROJECT DATES</b> Begin: Summ	er 2017 Complete: Fall 2017	2. EWSC. A76. AT. Overview after treatment.

### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** Marker reset with earth.




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MARKER #:	A126	NAME:	ISAAC LEAVITT	DATE:	1834
9. EWSC. A126. DT. B	ackfilling wit	h earth.	10. EWSC. A126. DT. Tamping earth around marble.	11. EWSC. A126.	DT. Tamping earth around marble.

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MARKER #:	A136 NA	ME: MARY	LEAVITT	DATE:	1844
DESCRIPTION	V		STATE STATE	100	North Add
<u>Type:</u>	■ Headstone	Given Street Footstone			CONTRACTOR OF
Flush	Crypt	Table		1	Wallacin Rischleren
Obelisk	Monument	# sections:			2 Barriston Barriston
Material(s):	■ Marble	□Slate		in the	MARY S.
Granite	□ Sandstone	<b>Rubble</b>		-	nife of
Limestone	Schist	Concrete			DAVIEL S. LEAVING
<b>Carving</b>	Good Good	Weathered	MITER STREET CEMETERY NABY	and and a second	died July 1811
■ Traces	■ Lost	Buried	en automaticate and affine furger		fed 43 yes.
<u>Hazard (1-5</u> ):	1:high - 5:low	NA	DANIEL S. LEAVIET		
<u>Priority (1-5</u> ):	1:high - 5:low	NA	per died July - 1811		
Dimensions: H:	36" W: 20	" <b>D:</b> 2"	1. EWSC. A59. BT. Front overview before treatment.	2. EWS0 conc	C. A59. DT. Unearthing revealed rete poured around the stone.

#### MARKER CONDITION

■ Surface Growth/Soiling: There are soil stains on portions buried below grade.

□Stains:

**□**Friable Stone: Fine grain marble is lightly sugary to the touch, portions have lost substaintial cohesion.

□ Spalls:

**Cracks:** 

■Breaks: Stone has a central break at grade..

**D**Losses:

□ Hazardous Alignment:

■ **Previous Repairs**: The marker has repairs to previous rates.

■ Other: Unearthing stone for repairs uncovered below grade concrete. Given the fragility of the stone and unknown loss associated with the concrete, the marker was reset and no further work done. The marker can be treated in a future campaign where the treatment duration permits full HCT & OH-100 consolidation.





#### MARKER CONDITION

■ Surface Growth/Soiling: There are soil stains on portions buried below grade.

□Stains:

**□**Friable Stone:

□ Spalls:

■ **Cracks:** There are hairline cracks in the slate along stone anomalies.

**Breaks:** Stone has a central break grade.

□Losses: .

□ Hazardous Alignment:

**Other**:



MARKER #: A145 FS NAME:	ANNA BOARDMAN	DATE: 1847
MATERIALS	□Patch:	the second se
■ Cleaning: ProSoCo ReVive, Orvus	<b>Aggregate:</b> Graded silica sand	WINTER STREET CEMETERY EXETER. NEW HAMPSHIRE
Stain Removal:	Lime: St. Astier 3.5	AI AI45 Conserve ART. FAIL 2017
Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	
■ Adhesive: Akemi Akepox 2030	<b>Fills:</b> Jahn M-120	
<b>Dowel(s):</b> 316 stainless Steel	<b>Pigment:</b> Bayferrox and Solomon Grind	
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	Some and
<b>Other:</b>	□ Shims: Sheet Lead	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
PROJECT DATES Begin: Summ	er 2017 Complete: Fall 2017	3. EWSC. A145 FS. AT. Front overview after treatment.

#### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** 

**Crack Injection:** 

**Repairs:** Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel. The trim was flush and left minor fill with additional epoxy.

#### □ Fills/patches:

**Resetting:** Reset in the earth in found location behind headstone.



# MARKER #: A145 FS NAME: ANNA BOARDMAN **DATE: 1847** 4. EWSC. A145 FS. DT. Cleaning slate with 5. EWSC. A145 FS. DT. Cleaning slate with 6. EWSC. A145 FS. DT. Application of Orvus ReVive. ReVive, detail. resist prior to epoxy mend.

7. EWSC. A145 FS. DT. Sections joined with epoxy.

8. EWSC. A145 FS. DT. Detail of excess epoxy and resist.

9. EWSC. A145 FS. DT. Removal of excess epoxy prior to full gel.

# RESEARCH

REATMENT <sup>3</sup>



MARKER #:	A145 NA	ME: ANNA	BOARDMAN	DATE:	1847
DESCRIPTION	<ul> <li>Headstone</li> <li>Crypt</li> <li>Monument</li> <li>Marble</li> <li>Sandstone</li> <li>Schist</li> <li>Good</li> <li>Lost</li> <li>1:high - 5:low</li> <li>1:high - 5:low</li> <li>30" W: 20<sup>3</sup></li> </ul>	<ul> <li>Footstone</li> <li>Table</li> <li>sections:</li> <li>Slate</li> <li>Rubble</li> <li>Concrete</li> <li>Weathered</li> <li>Buried</li> <li>NA</li> <li>NA<!--</td--><td><image/></td><td></td><td>Blank</td></li></ul>	<image/>		Blank
Dimensions: H: 30" W: 20" D: 2"       1. EWSC. A145 FS. BT. Front overview before treatment.         MARKER CONDITION         • Surface Growth/Soiling: There are soil stains on portions buried below grade.         Stains:         □Friable Stone:         □ Spalls:         • Cracks: There are hairline cracks in the slate along stone anomalies.         • Breaks: Stone is broken into five sections. Two of the breaks are still well adhered with epoxy.         • Losses: There are losses along the break-lines.         • Hazardous Alignment: The marker was misaligned and leaning         • Other: The stones joined by a previous epoxy repair are misaligned, not allowing to adhere the currently detached sections in appropriate alignment with carved text and detail. The existing epoxy fragments are being separated with organic solvents before proceeding with additional treatment.					



MARKER #:	B71 NA	ME: SAMU	VEL LEAVITT	DATE:	1855	
DESCRIPTION						
Type: Flush Obelisk <u>Material(s)</u> : Granite Limestone <u>Carving</u> Traces <u>Hazard (1-5</u> ): <u>Priority (1-5</u> ):	<ul> <li>Headstone</li> <li>Crypt</li> <li>Monument</li> <li>Marble</li> <li>Sandstone</li> <li>Schist</li> <li>Good</li> <li>Lost</li> <li>1:high - 5:low</li> <li>1:high - 5:low</li> </ul>	<ul> <li>Footstone</li> <li>Table</li> <li># sections:</li> <li>Slate</li> <li>Rubble</li> <li>Concrete</li> <li>Weathered</li> <li>Buried</li> <li>NA</li> <li>NA</li> </ul>	1 EWC P21 P2 Ouerien before		Blank	
Dimensions: H:	22" W: 18	<b>D:</b> 1 <sup>1</sup> / <sub>2</sub> "	1. EWSC. B/1. BT. Overview before treatment.			
<ul> <li>MARKER CONDITION</li> <li>Surface Growth/Soiling: Minor biological growths over the surfaces and grain in boundaries.</li> </ul>						
■ Stains: There are soil stains on portions buried below grade.						
■ Friable Stone: Fine grain marble is lightly sugary to the touch, otherwise stone is sound.						
□ Spalls:						
□ Cracks: ■Breaks: Stone has a break at mid-stone.						
■ Losses: There are losses along the break-line.						
□ Hazardous Alignment:						

■ Other: The stone was buried too deeply to read the text.

**Previous Repairs:** There is failed epoxy along break-line at grade from previous repair.

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MARKER #: B71 NAME:	SAMUEL LEAVITT	DATE: 1855
MATERIALS	<b>Patch:</b> Jahn M120	
■ Cleaning: ProSoCo ReVive, Orvus	□ Aggregate: Graded silica sand	
□ Stain Removal:	Lime: St. Astier 3.5	
■ Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	
■ Adhesive: Akemi Akepox 2030	■ Fills: Jahn M-120	WINTER STREET CLARENCY THE
<b>Dowel(s):</b>	■ <b>Pigment:</b> Bayferrox and Solomon Grind	May 10, 1855 agod 5 Labor 100
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	
<b>Other:</b>	<b>Other:</b>	
<b>PERSONNEL</b> Francis Mille	r, Silas Finch	
PROJECT DATES Begin: Summ	er 2017 <b>Complete:</b> Fall 2017	2. EWSC. B71. AT. Overview after treatment.

#### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** Marble was treated with ProSoCo HCT (Hydroxylating Conversion Treatment) a water borne treatment that provides bonds between weakened calcium carbonate stone grains. The material was applied in three cycles following the manufacturer's recommended procedures.

#### **Crack Injection:**

■ **Repairs:** Failed adhesive removed by hammer and chisel and by Dremel. Stone fragments were mended using Akemi Akepox 2030 two part epoxy. Epoxy was allowed to cure to taffy like consistency and excess was trimmed back using a stainless steel scalpel for mortar fills.

**Fills:** Losses were filled flush using Jahn M-120, lightly tinted with pigments, covered with plastic and misted for a minimum of three days. All original, decorative surfaces kept clean of over-smear.

**Resetting:** Marker reset with earth.





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adhesive on break-line with Dremel.

epoxy.





MARKER #:	F80 NA	ME: TOBIA	AS CUTLER	DATE:	1834
DESCRIPTION	V			2 de	
<u>Type:</u>	■ Headstone	Given Street Footstone			
Flush	Crypt	<b>Table</b>	17 1.354	Carlos	THE REAL PROPERTY AND
Obelisk	Monument	# sections:			MARK GAR FREE
Material(s):	Marble	■ Slate			
Granite	□ Sandstone	<b>Rubble</b>	Start Start Start		
Limestone	Schist	Concrete	INTER STREET		
<b>Carving</b>	■ Good	Weathered	CENETERY TER.NEW HAMPSHIRE		WINTER STREET CEMETERY ENTER, NEW HARPSHIRE
Traces	Lost	Buried		a starting	BT F80 Committee Factor
<u>Hazard (1-5</u> ):	1:high - 5:low	NA			
<u>Priority (1-5</u> ):	1:high - 5:low	NA		548 T 10	
			STO WORK CAR		
			1. EWSC. F80. BT. Front overview befor	e 2. EWSC.	F80. BT. Back overview before
Dimensions: H:	48" W: 20	<b>D:</b> 1 <sup>1</sup> / <sub>2</sub> "		treatment.	

#### MARKER CONDITION

■ Surface Growth/Soiling: There are small organic growths on the purple marble.

**Stains:** 

**Generation** Friable Stone:

□ Spalls:

Cracks:

Breaks:

**D**Losses:

**Hazardous** Alignment:

• Other: The marker had thick tar poured over the top that defaced the front and back of the slate.





MARKER #: F80 NAME:	TOBIAS CUTLER	DATE: 1834
MATERIALS	□Patch:	
■ Cleaning: ProSoCo ReVive, Orvus	<b>Aggregate:</b> Graded silica sand	TORIAS CUTLER.
□ Stain Removal:	Lime: St. Astier 3.5	
Consolidant: ProSoCo HCT	<b>Cement:</b> White Portland	aged 67. White street
<b>Adhesive:</b> Akemi Akepox 2030	<b>Fills:</b> Jahn M-120	AT F80 Centry ART FAIT 2017
<b>Dowel(s):</b> 316 stainless Steel	<b>D Pigment:</b> Bayferrox and Solomon Grind	
<b>Injection:</b> Jahn M-31	<b>Foundation:</b> Crushed Stone	
<b>Other:</b> Klean Strip Strip X Stripper	□ Shims: Sheet Lead	Contraction of the
<b>PERSONNEL</b> Francis Miller	r, Silas Finch	
PROJECT DATES Begin: Summe	er 2017 <b>Complete:</b> Fall 2017	3. EWSC. F80. AT. Front overview after treatment.

#### MARKER TREATMENTS

■ General Soiling & Biological Growth Removal: Surfaces washed with ProSoCo ReVive biological and atmospheric stain remover followed by water rinse.

**Consolidation:** 

**Crack Injection:** 

**Repairs:** 

□ Fills/patches:

**Resetting:** 

**Other:** Tar removal tests were done on the back, lower portion of the slate. The first test was with Smart Strip Pro, an environmentally safe stripper. The stripper was applied by natural fiber brush and allowed to dwell for 2 hours. The stripper was rinsed with a pressure washer set at 1000 psi, using a  $40^{\circ}$  fan tip at a working distance of 16-20". The stripper dissolved a small amount of the tar but had little effect over all.

The stripper softened the thick tar, which was removed using a wood popsicle stick. It was discovered that all of the thick tar softened during a warm day to a consistency that could allowed for removal of the bulk of the material with wood scrappers. Extreme care was taken not to abrade the stone; only the outer, thick accumulations were removed; the process left thin tar on the surfaces.

A second test was done with methylene chloride based Klean Strip Strip X Stripper. The stripper was also applied by natural fiber brush and cover with a dwell time of 1 hour. Following the same rinsing procedures the tar was substantially removed. The process was repeated 4 times, applied in more and more specific locations, to remove all the tar residues.





# RESEARCI

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# **RESEARCH**







# I RESEARCH

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