



THE MINUTE MAN TREATMENT REPORT, 2007

Prepared by Carol Warner, Conservator
Northeast Museum Services Center,
Collections Conservation Branch

CONDITION & TREATMENT REPORT
MIMA, The Minute Man

Object : The Minute Man
Artist : Daniel Chester French, 1875
LCS # : 006545
CCS treat : on-site, 6/11-15/2007
Material : Cast bronze on 7' high granite base
Dimensions : H.18.5' W 11.5'
Park : Minute Man NHP
174 Liberty St.
Concord, MA 01742
Curator : Terrie Wallace, Ph.D.
978-318-7841



DESCRIPTION:

The Minute Man sculpture by Daniel Chester French was unveiled at the North Bridge in Concord Massachusetts in 1875. The statue was cast at the Ames Foundry in Chicopee, Massachusetts and is owned by the city of Concord and maintained by the Park through a Cooperative Agreement entered into on June 6, 1963. The over-life-size statue of The Minute Man holding a rifle and standing beside a plow is mounted on a seven foot high granite base that is inscribed on the front with the first lines of the commemorative poem written by Emerson:

THE RUDE BRIDGE THAT
ARCHED THE FLOOD,
THEIR FLAG TO APRIL'S
BREEZE UNFURLED,
HERE ONCE THE EMBATTLED
FARMERS STOOD,
AND FIRED THE SHOT HEARD
ROUND THE WORLD.

TREATMENT HISTORY:

- 2007- NPS, NMSC, CCB Conservators, solvent stripped the existing coatings, and applied a brush coat and spray coat of Incralac. Minor cosmetic toning with pigmented Incralac was brush applied between the two clear coats.
- 2001- NPS, CCB Conservators, at the request of the Curator, painted the incised letters on the stone base with yellow burnish sealer to make the inscription more readable. The letters had pre-existing weathered yellow paint assumed to be a gilding primer. Officials of Concord requested that the letters not be gilded.
- 1999- NPS, CCB Conservators removed the wax coat, renewed the Incralac coat where it had failed and applied Incralac overall by spray gun. Park Curatorial staff applied protective coats of Butcher's clear paste wax on top of the Incralac.

- 1994- NPS, CCB Conservators removed and replaced the protective coatings of Incralac. Twice a year the Park curatorial staff applies and maintains coats of clear paste wax on top of the Incralac.
- 1989- Dennis and Craine Associates (now Daedalus) removed and replaced the protective coatings of Incralac and Butcher's wax. Treatment also consisted of adding a new threaded pin from the underside of the barrel, realigning an old pin and filling the screws and the join area of the musket barrel with PC-7 two component epoxy putty as waterproofing.
- 1983- Dennis and Craine cleaned the sculpture and applied a protective coating of Incralac; an additional protective coating of Butcher's Bowling Alley Wax was applied on top of the acrylic coating.
- 1980 Edward McManus, NPS, NARO Conservator and the firm of Dennis and Crane Associates removed hide-glue lodged in the musket from the 1975 mold-making and applied protective coatings of Incralac and wax.
- 1975 - Adio DiBicarri, Sculpture made an animal glue mold and plaster replica of the statue. (In three pieces)



Terrie Wallace and Steve Neth of the MIMA curatorial staff apply a protective coat of clear paste wax in the spring and the fall.

CONDITION:

As the Treatment History indicates, The Minute Man Statue has a long history of professional conservation treatment including applying and maintaining protective coatings of Inralac and making repairs as needed. The bronze is further protected by bi-annual coats of clear paste wax applied on top of the Inralac coat by the MIMA Curatorial Staff. The condition of the bronze, the weathering of the patina and the presence of scratches and graffiti has changed very little since the first conservation treatment done by NPS Conservators in 1994. Slides document these conditions in 1994 and 1999.

The coating was examined by CRC/CCB conservators in the fall of 2004. The coating had broken down in small circular spots in many areas particularly on top planes that would be most affected by the air-born deposition and acid rain. Examination of coatings in 2007 indicated the same appearance of the Inralac. However the bi-annual wax coatings applied by the Park had protected the patina and bronze from any severe damage or alteration in these locations.



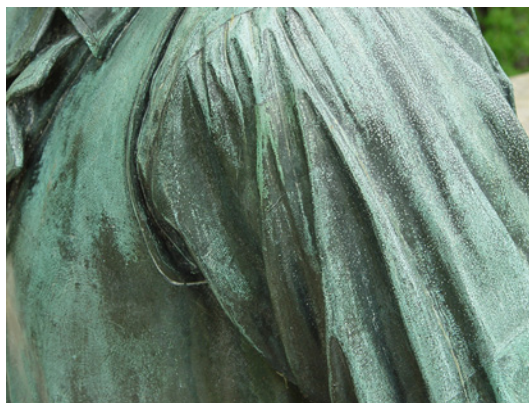
October 2004
Examination of the coating indicated local coating failure (seen as light colored spots) on upper planes of the boots and base.



July 2007
Before treatment, spots of lifted coating on hat.

Patina Appearance, 1994-2007

The Minute Man Statue has a weathered variegated light green/turquoise and black patina with the light green predominantly on exposed areas and the black predominantly in recessed areas. This weathered patina accentuates the sculptural form. The original historic patina is the even dark green/brown visible in the more protected areas such as the face and hair protected by the wide brimmed hat.



Weathered patina is black in recesses and light green on exposed areas.



Face, hair and neck have even dark green patina.

Top planes such as the top of the hat, powder horn and proper left hand, rifle in the right hand and toes of the boots are more weathered and appear light green/turquoise. These upper planes receive deposition of air-born particulates such as pollen and dirt. Acid rain and wind along with deposition wears protective coatings exposing the original patina and metal surface to the elements. Chemical reaction of the copper component of the bronze alloy with acid rain can result in color alteration to the turquoise and black tones presently seen on the Minute Man Statue. This weathered patina is stable and can be maintained indefinitely if protective coatings are maintained. If coatings are not maintained, the run off pattern of acid rain will result in a more pronounced streaky appearance of light green and black and ultimately will result in etching, and erosion of the bronze surface and loss of original sculptural detail.



Weathered patina on powder horn.



Weathered patina on crown and brim of hat.



Weathered patina on shoe and base.



Weathered patina on left hand and plow handle.

Anomalies in the Patina

Anomalies in the surface appearance of the patina are present in several locations and are assumed to be the product of manufacture such as the location of casting faults or sprue sites patched with an alloy that weathered differently than the casting bronze.

Anomalies in the patina assumed to be related to the original casting are present on the seat of the pants, the front of the left thigh and the right lapel.



Graffiti on back, bottom of jacket near jacket.
Anomalies in patina on pants seat



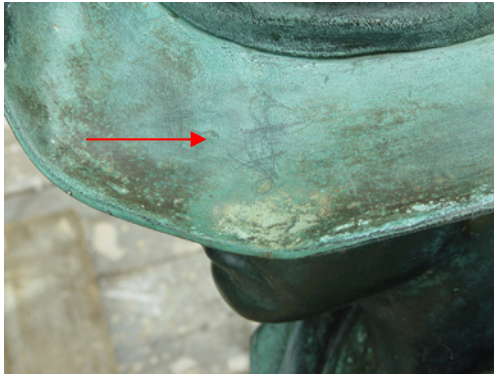
Anomalies in patina on front of left thigh.



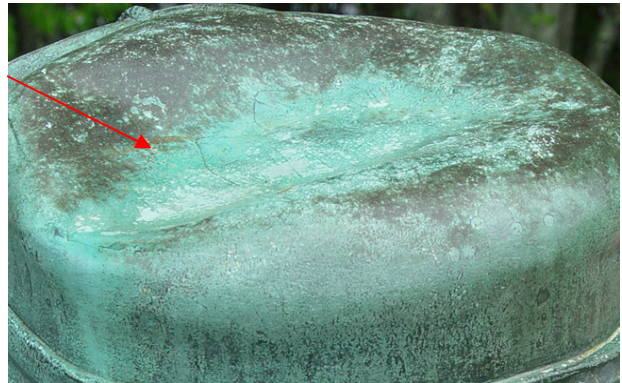
Anomalies in patina on right lapel.

Scratches, Graffiti and Yellow Paint Spatter

The statue has many small areas of graffiti and scratches resulting from vandalism. These were present at the time of the 1994 treatment and are documented in slides from that treatment. Scratches and graffiti are located on the top and brim of the hat, on the back below the shoulders, in the middle of the back above the powder horn, the proper right front of the jacket beside the lapel, butt of the rifle, and back of proper right thigh.



Graffiti on brim of hat



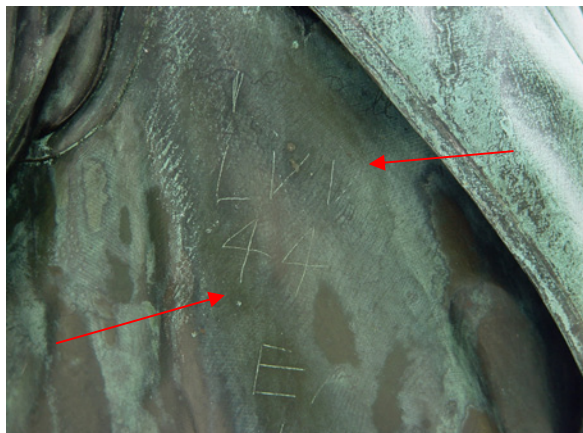
Graffiti on top of hat



Graffiti on proper right leg.



Graffiti on back of jacket above powder horn.



Graffiti on the jacket, front right, near lapel.



Insoluble yellow paint spatters are present on the base in front of the plow by the left foot.

Standing Water

Standing water was present in the concave depression in the base in front of the plow at the time of the site visit for treatment. This occurs every time it rains but does not appear to be an issue if the coatings are properly maintained and intervention to provide drainage is not recommended at this time.



Standing water in recess of base.

TREATMENT:

Treatment to remove and replace the Incralac™ and wax coatings took place June 11-15, 2007. The treatment team consisted of CCB Conservators, Carol Warner and Margaret Breuker. MIMA Curator, Teresa Wallace and Museum Technician, Steve Neth applied a protective wax coating on top of the Incralac on June 18, 2007.

- Brush coats of benzene and cotton rags were employed to remove the existing wax coating on top of the existing Incralac coating. Several cycles of applying solvent and wiping did not appear to be affective in removing all of the wax. This procedure was repeated with xylene which was effective. It is likely that the partial stripping, reforming and recoating done in 1999 resulted in less discreet and continuous layers than a treatment involving complete stripping and replacement of coatings. Both Incralac and wax are soluble in xylene.
- Brush coats of acetone/toluene, 1/1 and cotton rags were employed to remove existing Incralac coatings. Repeated cycles were required to remove the resin coating to the level of the metal surface.
- Moisture in the surface of the bronze was driven off with heat from propane torches.
- Acetone was applied by brush and the statue was wiped down with cotton cloths to degrease it and remove any residual coating before application of a new Incralac coating.

- First coat of Incralac™/ toluene, 1/1 was applied by brush. (Incralac is acryloid B-44S methylmethacrylate copolymer with benzotriazole sold 15% solids in toluene.)
- Pigmented Incralac was applied by small brush on weathered areas in the patina.
- Second coat of Incralac™/ toluene, 1/1 was applied by air gun.
- After the Incralac™ coating had dried, Park Curatorial staff applied Butcher's™ Bowling Alley Paste Wax and buffed it with cotton cloth.

TREATMENT HOURS:

(Includes labor, supplies, written and slide documentation)

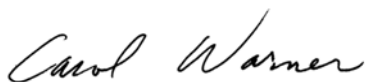
5 days, 2 conservators \$4000.00

MAINTENANCE RECOMMENDATIONS FOR PARK:

The Park has done an excellent job maintaining the wax coating on top of the Incralac coating with the annual fall and spring cleaning of the sculpture and application of clear Butcher's wax. This has extended the recommended 10 year protective life of the Incralac coating.

The Park should continue to follow the Maintenance procedures outlined in the 1999 memo for all of the monuments last treated in 1999.

Following this 2007 treatment of new application of Incralac coating on the Minute Man Statue, the Park can continue with the spring and fall cleaning and wax application as before or perhaps reduce the maintenance cycle to just once a year at this time. CCB conservators would like to make a site visit to inspect the new coatings when the scaffolding is in place for the 2008 maintenance cycle and the yearly protocol can be discussed and determined at that time.



Date

Prepared by: Carol Warner, NMSC/CCB Objects Conservator

October 17, 2007



During Treatment, CCB Conservators stripping coatings.



During treatment, CCB conservators apply heat with propane torches to drive off moisture before applying Incralac coatings.



After brush coat of Incralac was applied, weathered areas in the patina are toned with pigmented Incralac.



CCB Conservators Carol Warner and Margaret Breuker apply spray coats of Incralac.



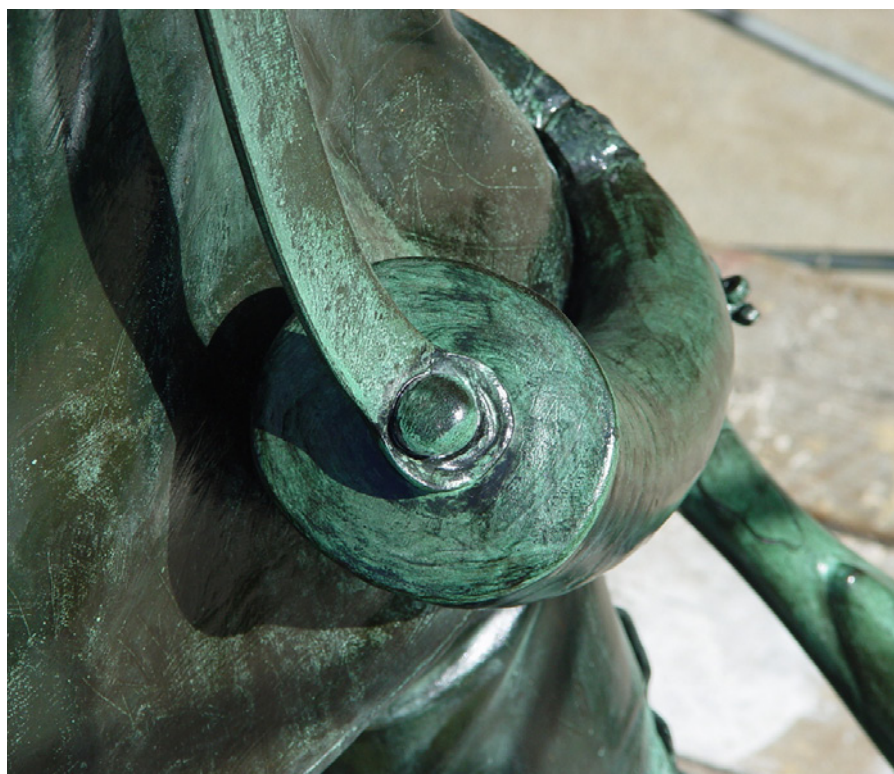
Before Treatment, 6/11/2007



After Treatment, 6/15/ 2007



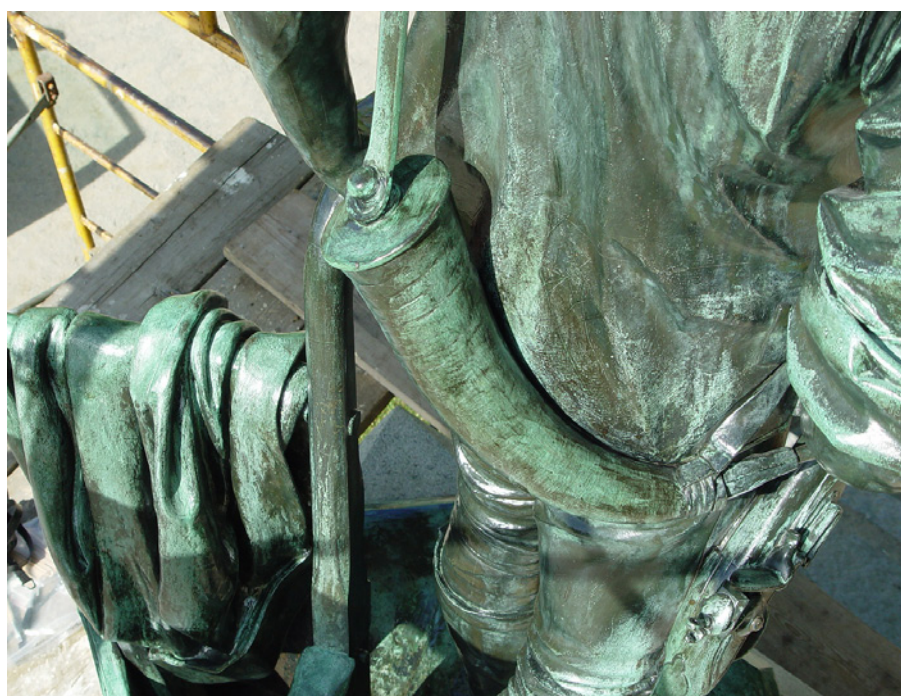
Before Treatment, 6/11/2007



After Treatment, 6/15/ 2007



Before Treatment, 6/11/2007



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