



# Sculpture

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## 2.1

### Introduction

This document describes cyclic maintenance procedures for common types of sculpture. Cyclic maintenance consists of actions by untrained or semi-trained staff—often building maintenance personnel—that should be performed *repeatedly* and can be safely performed *repeatedly* to prolong good appearance and physical condition. The work is generally cost-effective and can delay the need for more costly specialized attention or involved procedures. Sculpture in most collections has not often received regular maintenance, so the effects of these well-meaning measures on the sculpture need to be evaluated after several years by a conservator. The best maintenance may be to do nothing at all. Never allow overzealous, misguided or erroneous work to be performed.

Only the most common problems, those that need to be addressed several times a year or at least once a year, are presented. All other problems must be individually addressed by conservators or collections managers.

**The cyclic maintenance instructions presented in this document are purposely designed to be succinct as well as safe to perform for those with limited training or no training at all. Where procedures do call for some minimal training, these are so identified. The instructions are formatted in a way that makes them suitable for use in a maintenance procedures database or as hand-outs for maintenance personnel.**

All those performing maintenance should have a supervisor assigned and available to assure, through follow-up inspection, that the maintenance was performed and that no damage has occurred as well as to be available to answer questions. The supervisor should have contact with a collections manager or other preservation authority to get questions from maintenance personnel answered correctly and promptly. Maintenance personnel should be encouraged to ask questions.

A maintenance record sheet, much like a washroom maintenance sheet, should be created as both a record and a reminder. These also clearly establish the tasks as formally assigned so they are not considered a casual undertaking.

## 2.2

### Four maintenance principles for all cases

The following four principles apply to the maintenance of all sculpture in all situations:

- 1. Watch for unusual situations.** Be alert for situations out of the ordinary and seek advice before acting. Because sculpture could be made from a variety of art, industrial or other materials, there could be as many specialized maintenance needs. Clearly, an encyclopedia of art materials, forms of deterioration, and maintenance needs is not appropriate for this form of quickly accessed maintenance instructions. Therefore, when a condition or situation is encountered that is not addressed here, the maintenance personnel must seek advice from a superior or available conservator.
- 2. Use common sense.** Do not perform any recommended maintenance action presented here if your common sense tells you it may be harmful or if you are unsure about an effect. You may be encountering a special situation and your common sense could be correct. Abide by your common sense and seek advice from a supervisor.
- 3. Proceed gradually.** Proceed with caution, always in a gradual manner and perform small initial tests of maintenance materials and procedures.
- 4. Observe conditions before working.** Look over the sculpture before proceeding and record observations. Recording condition information is an important part of maintenance. Observations recorded should be on paper and placed in the file for the artwork as a permanent record.

## 2.3

### Weathering steel

Outdoors

#### Understanding:

The following advice applies when a sculpture is composed totally or partially of weathering steel. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Corten is one brand of weathering steel and the word is often used to identify all weathering steels. Almost all weathering steel sculpture is placed outdoors. Weathering steel is usually left uncoated to purposely corrode. While the corrosion generally looks like rust, weathering steel can often be identified by a purple color in some of its corrosion. Generally, it is a darker color than the corrosion on mild steel. The corrosion should be thin, hard, and tightly bonded when mature and stable. When left exposed to air, the corrosion, which looks like rust, actually builds to a protective layer that prevents further corrosion. When this protective layer is disturbed, by scrapes for example, the corrosion process will begin again and “heal” itself. Removal of some forms of graffiti from weathering steel may require the thinning or other disturbance of this protective corrosion. If so, the film will develop again, though it may take two years for it to match the oldest film. However, this disruption of the stable corrosion is to be avoided. When the weathering steel is constantly exposed to moisture, such as near the ground, in shade, or where water puddles, the corrosion activity may not cease but continue in a metal-depleting process that is more aggressive than the rust on common steel. Weathering steel constructions that form hollow containers often have holes drilled to allow condensed moisture to escape. These holes, if present, should be kept open. Also, salts used for ice control lead to damaging corrosion processes. Salting of sidewalks should be kept as far from weathering steel as possible. Weathering steel is sometimes painted. Paint can hold moisture in place against the steel and create the damaging corrosive environment just mentioned. Painted weathering steel must be inspected carefully for this condition and must always be completely coated. The following problems and maintenance actions are the only ones that can safely be performed by those with no specific training.

*Force One: Consciousness is Crucial* by John Paul Rietta  
Richard H. Poff Federal Building  
Roanoke, VA  
McKay Lodge Fine Arts  
Conservation Laboratory, Inc.

**Left:** Before conservation: Note the evidence of loose, flaky corrosion called “pack out” due to poor drainage and moisture.

**Right:** During conservation: Note how the sculpture is elevated to allow airflow.



**Cyclic actions:**

**Soiling.** Hose off accumulated dust, bird droppings, salts from ice control, and other materials. Rain alone does not do this effectively. Soils and invisible contaminants can be damaging. Only if there is physical weakness, such as from broken welds, is it not safe to direct a stream of hose water on a weathering steel sculpture. Forceful sprays of water using a jet nozzle are otherwise safe and desired. Use the force of the water to remove thick accumulations in pockets where rain does not reach. Rinse thoroughly from top to bottom. This washing can be every week if necessary but should be at least once a year. Frequency depends on rate of soiling accumulation. Washing more frequently than the average frequency of rain storms in the area where the sculpture is located may not be desirable. However, during a dry summer, keep up the washing as the average annual frequency of rain storms may be once every two to three weeks. Observed soiling should largely drive the frequency of washing. A general rule calls for rinsing sculpture whenever the plaza is washed down with a hose.

**Graffiti.** Paint and pen graffiti, oil stains, and tar deposits are difficult to remove completely from weathering steel because these media often penetrate into the corrosion layer. It is important, however, to try to remove as much as possible, as some graffiti seems to attract more. Restrict your removal method to cloths and solvents. Use knit fabric cloth instead of woven or terry cloth as coarse corrosion will collect fibers. Solvents available from hardware stores that would be effective include acetone and methyl ethyl ketone (MEK). Solvents will also dilute graffiti paint, causing it to penetrate deeper into some corrosion. This is unavoidable. In time these stains tend to diminish. Thick applications of paint can be removed using any of the solvent-based commercial paint strippers. Peel-Away 1, available from Sherwin Williams paint dealers, is a nonsolvent paint remover that can be used and is very effective. It has a very high pH (alkaline) as it is made from sodium hydroxide. Follow the package directions. This is safe to use on the steel but do not follow with the recommended acid wash. Instead, rinse the steel thoroughly with a hose after completing the procedure.

**Drainage.** If weep holes for drainage exist at the lower parts of forms, clear them of clogging by inserting a wire or stick into the holes. Report any clogged weep holes that can not be cleared.

**Do not:**

- Do not wash with a pressure washer.
- Do not sand, brush, or abrade the protective corrosion on the steel unless directed to do so by a supervisor for a particular problem. Do not clean with any product other than the solvents and paint strippers mentioned or with plain water. Do not apply any coating whatsoever.
- Do not use Prosoco maintenance products (1) without clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application.

Assume that sculpture, because it is art, falls outside the range of application even though it may be made from the same materials the Prosoco product was meant to treat.

- Scratched graffiti should just be left alone to gradually form a new protective corrosion layer. Do not sand or abrade to blend in the scratches without permission from a supervisor.

**Watch for:**

Look for loose, flaky corrosion (called “pack-out”). This damaging corrosion is a sign of continued moisture. There may be a remedy for this condition. Report evidence of this to the supervisor.

[Refer to “Four maintenance principles for all cases,” section 2.2](#)

## **Weathering steel**

Indoors

**Understanding:**

(See *Weathering Steel—Outdoors* for more information).

The following advice applies when a sculpture is composed totally or partially of weathering steel. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Artists choose weathering steel for outdoor installations because of the stability of its surface corrosion. However, some of these sculptures have been moved to indoor exhibits after they have naturally developed the stable corrosion film that actually protects the steel from further corrosion. Great care must be taken to protect this stable corrosion as it can only form again in an outdoor environment. It cannot be artificially created except by imitation with colorants and these are not a good substitute for the real thing.

**Cyclic actions:**

**Soiling.** Dust with soft brushes only or a soft bristle vacuum attachment.

**Graffiti.** Graffiti removal from a sculpture indoors is not expected to be a part of cyclic maintenance as it can be with outdoor sculpture. However, procedures using solvents to remove marks described under *Weathering Steel—Outdoors* are safe to perform indoors if there is adequate ventilation. Use knit fabric cloth instead of woven or terry cloth as coarse corrosion will collect fibers. Solvents may leave stains when used locally on weathering steel kept indoors. It may be necessary to apply them overall for an even effect. The overall look of the sculpture may change (darkening is likely) due to residual effects of solvent penetration into the corrosion but the change, if even overall, would not be considered detrimental as the surface of a weathering steel object is natural.

**Do not:**

- Do not use water or paint removers that need water for rinsing. The use of water may activate the corrosion locally, leading to a visual deviation where applied that may take many years to diminish.

- Do not sand, brush, or abrade the protective corrosion on the steel unless directed to do so by a supervisor for a particular problem. Do not clean with any product other than the solvents mentioned. Do not apply any coating whatsoever.

**Watch for:**

There is not likely to be deterioration indoors to watch for.

Refer to “Four maintenance principles for all cases,” section 2.2

## 2.4

### Bare mild steel

Outdoors

**Understanding:**

The following advice applies when a sculpture is composed totally or partially of bare mild steel. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Some sculpture has been created with low carbon or “mild” steel—the common industrial grade of steel and often in the form of reused industrial objects. In nearly all cases, the artist purposely allows a rusted surface. However, there are cases where artists applied an oil coating after creating the sculpture in an attempt to stabilize the corrosion. In most of these cases, the oil is ineffectual but has left a degraded, darkened or peeling film. Whether there are the remains of a former coating does not alter the maintenance recommendations below.

**Cyclic actions:**

**Soiling.** Hose off accumulated dirt, bird droppings, salts from ice control, and other materials. Only if there is physical weakness—such as from broken welds—is it not safe to direct a stream of hose water on a steel sculpture. Forceful sprays of water are otherwise safe and desired. Use the force of the water to remove thick accumulations in pockets. This washing can be done every month if necessary but should be at least once a year. Frequency depends on rate of soiling accumulation. Washing more frequently than the frequency of rain storms in the area where the sculpture is located is not desirable. Observed soiling should solely drive the frequency of washing.

**Graffiti.** Paint and pen graffiti are difficult to remove completely from rusted steel because these media often penetrate into the corrosion layer. It is important, however, to try to remove as much as possible as some graffiti seems to attract more. Restrict your removal method to cloths and solvents. Use knit fabric cloth instead of woven or terry cloth as corrosion will collect fibers. Solvents available from hardware stores that would be effective include acetone and methyl ethyl ketone (MEK). Solvents will also dilute the paint, causing it to penetrate deeper into some corrosion. This is unavoidable. In time these stains tend to diminish. Thick applications of paint can be removed using commercial paint strippers. Peel-Away 1, available from Sherwin Williams paint dealers, is a nonsolvent paint remover that is very effective. It has a very high pH (alkaline) as it is made from sodium hydroxide. Follow the package directions. This is safe to use on the

steel but do not follow with the recommended acid wash. Instead, rinse the steel thoroughly with a hose after completing the procedure. It is expected that rubbing with a solvent-soaked cloth will remove loose corrosion and this is acceptable in the higher priority of removing graffiti.

**Drainage.** If weep holes exist at the lower parts of forms, clear them of clogging by inserting a wire or stick into the holes. Report any clogged weep holes that cannot be cleared.

**Do not:**

- Do not wash with a pressure washer.
- Do not sand, brush, or abrade the protective corrosion on the steel unless directed to do so by a supervisor for a particular problem. Do not clean with any product other than the solvents and paint strippers mentioned or with water.
- Scratched graffiti should just be left alone to gradually form new corrosion. Do not sand or abrade to blend in the scratches without permission from a supervisor.
- Do not use Prosoco maintenance products (1) without clearing their use with a supervisor, (2) without testing, and (3) without significant experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application. Assume that art falls outside the range of application even though it may be made from the same materials the Prosoco product was meant to treat.

**Watch for:**

Look for loose, flaky corrosion (called “pack-out”), especially at the joins between pieces of steel. This damaging corrosion is a sign of continued moisture, and there may be a remedy for it. Report evidence of this to the supervisor.

[Refer to “Four maintenance principles for all cases,” section 2.2](#)

## **Bare mild steel**

Indoors

**Understanding:**

The following advice applies when a sculpture is composed totally or partially of bare mild steel. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Some sculpture has been created with low carbon or “mild” steel—the common industrial grade of steel and often in the form of reused industrial objects. Such sculpture is normally exhibited outdoors but some are indoors. In nearly all cases, the artist purposely allows a rusted surface. However, there are cases where artists applied an oil coating after creating the sculpture in an attempt to stabilize the corrosion. In most of these cases, the oil is ineffectual but has left a degraded, darkened or peeling film. Whether there are the remains of a former coating or not does not alter the maintenance recommendations below.

**Soiling.** Dust with soft brushes only or a soft bristle vacuum attachment.

**Graffiti.** Graffiti removal from a sculpture indoors is not expected to be a part of cyclic maintenance as it can be with outdoor sculpture. However, procedures using solvents, not water, to remove marks described under *Bare mild steel—outdoors* are safe to perform indoors allowing for the need for ventilation. Use knit fabric cloth instead of woven or terry cloth as coarse corrosion will collect fibers. Solvents may leave stains when used locally on corroded steel kept indoors. It may be necessary to apply them overall for an even effect. The overall look of the sculpture may change (darkening is likely) due to residual effects of solvent penetration into the corrosion but the change, if even overall, would not be considered detrimental as the surface of a corroded steel object is natural.

**Do not:**

- Do not use water or paint removers that need water for rinsing. The use of water may activate the corrosion locally leading to a visual deviation where applied that may take many years to diminish.
- Do not sand, brush, or abrade the corrosion on the steel unless directed to do so by a supervisor for a particular problem. Do not clean with any product other than the solvents mentioned. Do not apply any coating whatsoever.

**Watch for:**

There is not likely to be deterioration indoors to watch for.

Refer to “[Four maintenance principles for all cases,](#)” section 2.2

## 2.5

### Bare aluminum

Outdoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of bare aluminum. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Aluminum forms a stable white or light gray corrosion outdoors, which is usually a thin powdery film. The thin, powdery white corrosion should be left untouched. A different type of corrosion forms small pits in aluminum. Both are normal, and the pitting corrosion is usually not problematic. However, damaging corrosion can, in rare instances, corrode aluminum into a weak, expanded and flaky sheet, especially near ground contact or in salt environments.

#### **Cyclic actions:**

**Soiling.** Hose off accumulated dirt, bird droppings, salts from ice control, and other materials. Only if there is physical weakness, such as broken welds, is it not safe to direct a stream of hose water on an aluminum sculpture. Forceful sprays of water are otherwise safe and desired. Use the force of the water to remove thick accumulations of dirt in pockets. This washing can be every month if necessary but should be done at least once a year. Frequency depends on rate of soiling accumulation.

**Graffiti.** Paint and pen graffiti are difficult to remove completely from aluminum because even mild rubbing with a cloth will remove the stable white aluminum oxide and can polish the metal. It is important, however, to try to remove as much as possible as some graffiti seems to attract more. Restrict your removal method to cloths and solvents, using a very gentle touch. Stop if the aluminum begins to discolor or gloss. Allow the solvents, strippers, and the rinse solvents or water to perform nearly all the work. Solvents available from hardware stores that would be effective include acetone and methyl ethyl ketone (MEK).

**Drainage.** If weep holes for drainage exist at the lower parts of forms, clear them of clogging by carefully inserting a wire or stick into the holes. Report any clogged weep holes that can not be cleared.

#### **Do not:**

- Do not wash with a pressure washer.
- Do not use commercial aluminum cleaners.
- Do not use nonsolvent paint strippers.

Refer to “Four maintenance principles for all cases,” section 2.2

## Bare aluminum

Indoors

### Understanding:

The following advice applies when a sculpture is composed totally or partially of bare aluminum. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Aluminum forms a stable white or light gray corrosion outdoors which is usually a thin powdery film. The thin, powdery white corrosion should be left untouched. A different type of corrosion forms pits in aluminum. Both are normal, and the pitting corrosion is usually not problematic. Aluminum indoors usually develops no condition problems; however, dust accumulations and graffiti may require cyclic maintenance attention.

### Cyclic actions:

**Soiling.** Dust with soft brushes only or a soft-bristle vacuum attachment. For greasy marks, follow solvent treatments described under “Graffiti” below.

**Graffiti.** Paint and pen graffiti are difficult to remove completely from aluminum because even mild rubbing with a cloth will remove the stable white aluminum oxide and can polish the metal. It is important, however, to try to remove as much as possible, as some graffiti seems to attract more. Restrict your removal method to cloths and solvents, using a very gentle touch. Stop if the aluminum begins to discolor or gloss. Allow the solvents, strippers and the rinse solvents or water to perform nearly all the work. Solvents available from hardware stores that would be effective include acetone and methyl ethyl ketone (MEK).

### Do not:

- Do not use commercial aluminum cleaners.
- Do not use nonsolvent paint strippers.

Refer to “Four maintenance principles for all cases,” section 2.2

*Majesty of Justice* by Carl Paul Jennewein  
U.S. Department of Justice  
Washington, DC  
Norton Art Conservation, Inc.

**Left and Right:** During conservation: showing details of cleaning with a cotton swab.



## 2.6

### Stainless steel

#### Outdoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of stainless steel. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Stainless steel is generally problem-free outdoors, but art made from stainless steel will accumulate dirt and marks, and sometimes graffiti, which call for cyclic attention. Be aware that small rust like spots or general orange stains of corrosion do form on stainless steel. Do not attempt to remove this corrosion as it is not a problem. There are various finishes to stainless steel that call for some specialized, periodic attention such as polishing and mild abrasive cleaning. Report concerns about deteriorated original finishes but do not attempt to restore a finish without instructions specific to the sculpture.

#### **Cyclic actions:**

**Soiling.** Hose off accumulated dust, bird droppings, salts from ice control, and other materials. Rain alone does not do this effectively. Only if there is physical weakness, such as broken welds, is it not safe to direct a stream of hose water on a steel sculpture. Forceful sprays of water using a jet nozzle are otherwise safe and desired. Use the force of the water to remove thick accumulations in pockets where rain does not reach. Rinse thoroughly from top to bottom. This washing can be performed weekly if necessary but should be done at least once a year. Frequency depends on rate of soiling accumulation, but washing cannot be overdone. A general rule calls for rinsing sculpture whenever the plaza is washed down with a hose.

**Graffiti.** Paint and pen graffiti, oil stains, and tar deposits can be removed from stainless steel, but aggressive rubbing during the removal process must be avoided so as not to burnish the metal. It is important, however, to try to remove as much as possible as some graffiti seems to attract more. Restrict your removal method to cloths and solvents. Solvents available from hardware stores that would be effective include acetone and methyl ethyl ketone (MEK). Thick applications of paint can be removed using any of the solvent-based commercial paint strippers. Peel-Away 1 available from Sherwin Williams paint dealers is a nonsolvent paint remover that can be used and is very effective. It has a very high pH (alkaline) as it is made from sodium hydroxide. Follow the package directions. This is safe to use on the steel but do not follow with the recommended acid wash. Instead, rinse the steel very thoroughly with a hose after completing the procedure.

**Drainage.** If weep holes for drainage exist at the lower parts of forms, clear them of clogging by carefully inserting a wire or stick into the holes. Report any clogged weep holes that cannot be cleared.

#### **Do not:**

- Do not wash with a pressure washer.
- Do not clean with any product other than the solvents and paint strippers mentioned or with

plain water. Do not apply any coating whatsoever.

- Do not use Prosoco maintenance products (1) without clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application. Assume that art falls outside the range of application even though it may be made from the same materials the Prosoco product was meant to treat.
- Scratched graffiti requires the attention of a sculpture conservator. Do not sand or abrade to blend in the scratches without permission from a supervisor.

[Refer to “Four maintenance principles for all cases,” section 2.2](#)

## Stainless steel

Indoors

### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of stainless steel. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Stainless steel is generally problem-free outdoors and should have no problems at all indoors, but art made from stainless steel will accumulate dirt and marks, and sometimes graffiti, which call for cyclic attention. Be aware that small rust like spots or general orange stains of corrosion do form on stainless steel. Do not attempt to remove this corrosion as it is not a problem. There are various finishes to stainless steel that call for some specialized, periodic attention such as polishing and mild abrasive cleaning. Report concerns about deteriorated original finishes but do not attempt to restore a finish without instructions specific to the sculpture.

### **Cyclic actions:**

**Soiling.** Periodically vacuum or wet-wipe away accumulated dust. It is safe to use detergents, even all-purpose household cleaners, to remove grime. Always use cleaning agents sparingly and apply to the cloth or paper towel. Do not spray directly on the sculpture.

**Graffiti.** Paint and pen graffiti, oil stains, and tar deposits can be removed from stainless steel, but aggressive rubbing during removal process must be avoided so as not to burnish the metal. It is important, however, to try to remove as much as possible since some graffiti seems to attract more. Restrict your removal method to cloths and solvents. Solvents available from hardware stores that would be effective include acetone and methyl ethyl ketone (MEK). Thick applications of paint can be removed using any of the solvent-based commercial paint strippers.

### **Do not:**

- Do not clean with any product other than the solvents mentioned or with plain water. Do not apply any coating whatsoever.

- Do not use Prosoco maintenance products without (1) clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application. Assume that art falls outside the range of application even though made from the same materials the Prosoco product was meant to treat.
- Scratched graffiti requires the attention of a sculpture conservator. Do not sand or abrade to blend in the scratches without permission from a supervisor.

Refer to “Four maintenance principles for all cases,” section 2.2

## 2.7

### Painted metals

Outdoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of painted metals. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Most painted sculpture meant for outdoors is made from steel, aluminum, or sometimes weathering steel. Although there are several possible types of coatings used, general cyclic maintenance procedures can be offered for all. Differences in coatings are significant when solvents are needed to remove graffiti. Only a very few coatings can withstand solvents. Thus, only trained conservation personnel should attempt to remove graffiti.

#### **Cyclic actions:**

**Soiling.** Hose off accumulated dust, bird droppings, salts from ice control, and other materials. Rain alone does not do this effectively. Only if there is physical weakness, such as broken welds, is it not safe to direct a stream of hose water on a painted metal sculpture. Forceful sprays of water using a jet nozzle are otherwise safe and desired. Use the force of the water to remove thick accumulations in pockets where rain does not reach. Rinse thoroughly from top to bottom. This washing can be performed weekly if necessary but should be done at least once a year. Frequency depends on rate of soiling accumulation, but washing cannot be overdone. A general rule calls for rinsing sculpture whenever the plaza is washed down with a hose.

**Graffiti.** Paint and pen graffiti, oil stains, and tar deposits can only sometimes be removed from painted metal as the necessary solvents usually dull the paint coatings. Do not attempt to remove graffiti. Report graffiti so that trained conservation personnel can perform this work. It is almost always safe to use mineral spirits and naphtha to remove some materials. Test these solvents in an inconspicuous place first.

**Coating damages.** It is very important to inspect for coating loss that exposes steel. Losses over aluminum may be ignored or treated as if for steel, but do not use rust converters on aluminum. For other metals, if the area of coating loss is small, apply a rust converter to any rust that has

*On High* by Alexander Liberman  
Robert Giamo Federal Building &  
U.S. Courthouse New Haven, CT  
Wilson Conservation, Inc.

**Left:** During conservation: Note  
“watch for unusual situations,”  
such as the inappropriate use of  
the sculpture as trash receptacle  
by construction contractors.  
Insure that weep holes for drainage  
are clear.

**Right:** After conservation.



formed (many brands available in auto supply stores). After the rust converter is dry, apply alkyd paint in a similar color, keeping the new paint confined to the area of loss as much as possible. Rustoleum is a good choice as long as there is no risk of the public touching the repair, as this coating takes a long time to dry. This long drying time relates to its effectiveness in corrosion control. When these simple mends accumulate to the point of unsightly appearance, then recoating or overcoating is needed and a sculpture conservator must be consulted.

**Drainage.** If weep holes for drainage exist at the lower parts of forms, clear them of clogging by carefully inserting a wire or stick into the holes. Report any clogged weep holes that can not be cleared.

**Do not:**

- Do not wash with a pressure washer.
- Do not use graffiti-removal products.
- Do not use all-purpose household cleaners.
- Do not use Naval Jelly on corrosion.
- Do not use cleaning solvents other than mineral spirits or naphtha.
- Do not use Prosoco maintenance products (1) without clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application. Assume that art falls outside the range of application even though it may be made from the same materials the Prosoco product was meant to treat.

**Watch for:**

Corrosion that creeps under the coating and builds into a thick, flaky mass or forms between joints of metal. This type of corrosion quickly becomes severely damaging and requires professional attention. Watch also for blistering of the paint.

Refer to “Four maintenance principles for all cases,” section 2.2

**Painted metals /  
woods, etc.**

Indoors

**Understanding:**

The following advice applies when a sculpture is composed totally or partially of painted metals/woods, etc. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Painted sculpture of different material meant for indoor display can have almost any kind of coating. Often, these coatings (usually paints) were chosen specifically by an artist for a certain appearance. Other times, any coating at hand was used, even if durability was not optimal. Some are sensitive to water, others to certain solvents; some can be easily burnished by rubbing; others are fragile and can flake off by touch. Complicating things further, minor appearances of age and deterioration are at times tolerated because remedying these conditions would require too drastic a change in materials or appearance. Hence, one must take great care not to do anything that may risk altering an unknown coating. For this reason, maintenance procedures for coated surfaces must be severely limited.

**Cyclic actions:**

**Soiling.** Remove dust with soft brushes only.

**Graffiti.** Contact a supervisor who will contact a conservator.

**Coating damages.** Contact a supervisor who will contact a conservator

**Do not:**

- Do not use a vacuum.
- Do not wash with water.
- Do not use graffiti removal products.
- Do not use all-purpose household cleaners.
- Do not use solvents.

**Watch for:**

Paint losses and report to supervisor.

Refer to “Four maintenance principles for all cases,” section 2.2

## 2.8

### Bronze and copper

Outdoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of bronze or copper. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Sculpture made from bronze or copper may or may not have an original surface. Some artists desire a specific color of patina; others want the metal to corrode as it will. These matters do not always affect maintenance, which should strive to maintain the current appearance as long as possible or until the surface is corrected by a conservator. Wax is often used as a protective layer and this, once applied, must receive maintenance reapplications, usually each year. A simple training session should be undertaken before attempting to renew a wax coating. If this is not possible, an attempt can be made without training by following the instructions given below. However, if a bronze or copper sculpture shows no signs of having been given a previous application of wax, if the metal appears to be free of any old coating, then no maintenance coating should be applied until a conservator evaluates the sculpture and determines the intent of the artist. If there is no wax, then maintain that condition without wax. Some sculpture has been coated with a clear resin (Incralac). This coating may or may not have a wax coating on top. Whether there is wax or not, it is safe to apply wax for the first time over Incralac or to reapply wax to Incralac. If there appears to be a deteriorated coating in place, it is still safe to apply wax over this. Deteriorated Incralac is white or somewhat hazy and may be flaking or peeling from the bronze. Other previous coatings may be yellowish and peeling.

#### **Cyclic actions:**

**Soiling.** Hose off accumulated dust, bird droppings, salts from ice control, and other materials. Rain alone does not do this effectively and causes uneven streaking. Only if there is physical weakness, such as broken joints or if the sculpture is made from sheet copper, is it not safe to direct a stream of hose water on a bronze/copper sculpture. Forceful sprays of water using a jet nozzle are otherwise safe and desired. Use the force of the water to remove thick accumulations in pockets where rain does not reach. Wet cloths or sponges may be used to wash off stubborn bird droppings but take care not to rub through a coating or remove green or black patina. Rinse thoroughly from top to bottom. This washing can be performed weekly if necessary but should be done at least once a year. Frequency depends on rate of soiling accumulation, but washing can not be overdone. A general rule calls for rinsing sculpture whenever the plaza is washed down with a hose. Always perform such a thorough washing before a wax maintenance renewal.

**Coating maintenance.** It is very important to thoroughly wash a bronze/copper sculpture as described above before renewing a wax coating. Renew a wax coating at least once a year with additional paste wax. In some situations, a sculpture can go for two or more years without waxing, but this cannot be predicted beforehand. Hence, once a year is a schedule that suits all bronze/copper sculpture. However, if a bronze or copper sculpture shows no signs of having been

given a previous application of wax or if the metal appears to be free of any old coating, then no wax coating should be applied until a conservator evaluates the sculpture and determines the intent of the artist. For previously coated or waxed bronze/copper sculpture, apply Butchers White Diamond clear paste wax in a manner similar to waxing a car. Order White Diamond Clear paste wax by telephone from Shields Packaging (509-949-0900). They will fax to you a mail-order form with current prices. It may also be available at hardware stores. Apply sparingly from the can to the bronze using natural bristle brushes with the metal ferrule taped over to prevent banging the bronze, working the wax into the surface, spreading out excess, and allowing it to dry. Heavily textured surfaces will require extra diligence to thin out wax deposits in crevices. A traditional, soft shoe-shine brush is an excellent tool for buffing the surface and is still easy to find. Otherwise, buff-up lightly with soft cotton cloths.

**Graffiti.** Only in cases where it is known for certain that no clear resin Incralac coatings are present can a safe attempt at removing graffiti be regularly attempted. If Incralac is present, solvents will greatly alter the appearance of the sculpture through dissolving this material. Wax coatings, on the other hand, can withstand careful and limited removal with solvents in an attempt at removing graffiti and then the wax can be easily replaced following the procedures for wax maintenance renewal as described above. Solvents such as mineral spirits and naphtha will affect the wax more than acetone and methyl ethyl ketone (MEK). Attempt the removal of paint graffiti with acetone and methyl ethyl ketone first using solvent soaked cloths. If a residue remains, use naphtha or mineral spirits to slightly dissolve the wax coating that is under the graffiti. Restore the wax coating after graffiti removal following the procedures for wax maintenance renewal described above.

**Do not:**

- Do not use Brasso, Ajax, or any other commercial cleaning product.
- Do not use graffiti-removal products.
- Do not use solvents to remove graffiti if a clear coating such as Incralac is known to exist on the bronze/copper sculpture.
- Do not apply any protective coatings other than renewal applications of the specified wax.

Refer to “Four maintenance principles for all cases,” section 2.2

## Bronze and copper

### Indoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of bronze or copper. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Unlike bronze/copper sculpture outdoors, sculptures made of bronze, brass, or copper protected in an indoor environment usually retain a desirable or original finish that must not be altered or damaged in any way. In contrast, outdoor sculpture made from bronze or copper may or may not have an original surface. Some artists desire a specific color of patina that would be likely to change with exposure outdoors; others want the metal to corrode as it will. Indoor sculpture usually retains the desired patina. Because the patina or finish on indoor bronze, brass, or copper sculpture is likely not protected with a clear coating or wax and is the desired appearance, no cyclical cleaning or mark-removal work should be done except by sculpture conservators.

#### **Cyclic actions:**

**Soiling.** Periodic removal of dust can be done by careful brushing with a soft brush as needed—not likely to be more often than once a year.

**Graffiti.** Graffiti and marks must be attended to by a sculpture conservator.

Refer to “[Four maintenance principles for all cases](#),” section 2.2

## 2.9

### Stone sculpture and bases

#### Outdoors

#### **Understanding:**

The following advice applies when a sculpture or base is composed totally or partially of stone. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Stone used in sculpture outdoors is usually limestone, granite, and sometimes marble. Stone sculpture accumulates dirt, bird droppings, sometimes lichens or other biological growths, and can harbor nests. Repeated washings help to keep stone clean and prevent stains from becoming permanent. Rain is not a substitute for washing as it repeatedly washes only some areas leaving others dry; this results in an uneven appearance over time. Rain is also usually acidic so freshwater rinsing is beneficial to help neutralize the stone surface. Stone sculptures sometimes have mortar joints near or on their bases. These joints are damaged by biological growths such as lichen, so joints must also be kept clean.

#### **Cyclic actions:**

**Soiling.** Hose off accumulated dust, bird droppings, nests, salts from ice control, and other accumulated materials. Rain alone does not do this effectively. Soils and invisible contaminants can be damaging. Forceful sprays of water using a jet nozzle are safe and desired. Use the force of the water to remove thick accumulations in pockets where rain does not reach. Rinse thoroughly from top to bottom. This washing can be done every month if necessary but should be performed at least once a year. Frequency depends on rate of soiling accumulation. A general rule calls for rinsing sculpture whenever the plaza is washed down with a hose.

**Joints.** Some joints between stone may be mortared or may be caulked. Whenever mortar or caulk loosens, remove the loose material. When there is a loss of mortar or caulk, do not refill without getting the advice of a sculpture conservator. In some situations, it is better to leave the joint open rather than improperly fill the loss.

**Graffiti.** Paint and pen graffiti, oil stains, and tar deposits are difficult or impossible to remove completely from stone. Attempting to dissolve paint and other materials with solvents dilutes the material and allows it to soak into the stone. Therefore, do not attempt to remove graffiti from stone without first consulting with a sculpture conservator.

#### **Do not:**

- Do not wash stone with a pressure washer.
- Do not scrub stone.
- Do not use any coatings on stone.
- Do not use Prosoco maintenance products without (1) clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application. Assume that sculpture, because it is art, falls outside the range of application even though made

from the same materials the Prosoco product was meant to treat.

- Scratched graffiti should have the attention of a sculpture conservator. Do not sand or abrade to blend in the scratches without permission from a supervisor.

**Watch for:**

Loose parts of stone sculpture.

[Refer to “Four maintenance principles for all cases,” section 2.2](#)

**Stone**

Indoors

**Understanding:**

The following advice applies when a sculpture is composed totally or partially of stone. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Stone indoors is generally subject to dust accumulations, small graffiti, and stains from hands or spilled liquids. Only dust removal can safely be performed on a cyclical basis by nonconservators.

**Cyclic actions:**

**Soiling.** Dust only with a soft brush as often as needed. The frequency is likely to be once a year.

**Graffiti.** Paint and pen graffiti, liquid stains, oil stains, and tar deposits are extremely difficult to remove from stone. Consult a sculpture conservator.

**Do not:**

- Do not wash stone with water or any other liquid.
- Do not scrub stone.
- Do not use any coatings on stone.
- Do not use Prosoco maintenance products without (1) clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application. Assume that sculpture, because it is art, falls outside the range of application even though made from the same materials the Prosoco product was meant to treat.
- Scratched graffiti should just be left alone to gradually form a new protective corrosion layer. Do not sand or abrade to blend in the scratches without permission from a supervisor.

[Refer to “Four maintenance principles for all cases,” section 2.2](#)

## 2.10

### Wood

#### Outdoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of wood. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Because wood used in sculpture for outdoor exposure may or may not be coated, and if coated (including paint) the coating materials may vary, it is not possible to recommend protective coating maintenance for all sculptures. However, wood that has been coated should have that coating maintained, often annually, and therefore, maintenance for wood outdoors will differ for each case.

#### **Cyclic actions:**

Remove trash, dirt, leaves, and other accumulations from wood by brushing or use of a vacuum, especially where these materials accumulate out of sight as they trap and hold moisture.

#### **Do not:**

- Do not wash wood with water or solvents unless directed to do so by a sculpture conservator.
- Do not apply any coatings unless directed to do so by a sculpture conservator or conservation-directed maintenance instruction.

#### **Watch for:**

Biological deterioration of wood and report any instances promptly.  
Boring by insects and report any instances promptly.

Refer to “Four maintenance principles for all cases,” section 2.2

### Wood

#### Indoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of wood. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. Because wood used in sculpture for indoor exposure may or may not be coated, and if coated (including paint) the coating materials may vary, it is not possible to recommend protective coating maintenance for all sculptures.

#### **Cyclic actions:**

**Soiling.** Dust only with a soft brush as often as needed. The frequency is likely to be once a year.

**Graffiti.** Paint and pen graffiti, liquid stains, oil stains, and tar deposits are extremely difficult to remove from wood. Consult a sculpture conservator.

**Do not:**

- Do not wash wood with water or solvents unless directed to do so by a sculpture conservator.
- Do not apply any coatings unless directed to do so by a sculpture conservator or conservation-directed maintenance instruction.

Refer to “Four maintenance principles for all cases,” section 2.2

## 2.11

### Ceramics and glass

#### Outdoors

#### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of ceramics or glass. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. This class of sculpture materials includes glass in any form and glazed ceramics or tiles. These materials are usually durable to water and solvents and cleaning periodically is likely to be the extent of necessary cyclic maintenance. Be mindful of nonceramic or nonglass materials used nearby or on the ceramic or glass.

#### **Cyclic actions:**

**Soiling.** Hose off accumulated dust, bird droppings, salts from ice control, and other materials. Rain alone does not do this effectively. Only if there is physical weakness such as loose tiles or cracked or broken glass is it not safe to direct a stream of hose water on a sculpture. Forceful sprays of water using a jet nozzle are otherwise safe and desired. Use the force of the water to remove thick accumulations in pockets where rain does not reach. Rinse thoroughly from top to bottom. This washing can be performed every week if necessary but should be done at least once a year. Frequency depends on rate of soiling accumulation, but washing can not be overdone. A general rule calls for rinsing sculpture whenever the plaza is washed down with a hose. Sponges and cloths may be used to loosen soils. A detergent may safely be used and commercial glass cleaners may be used. Do not use tile or tub cleaners meant for household films as these do not occur on sculpture outdoors and these cleaners sometimes contain abrasives. Use only water unless absolutely necessary. Biological growths on tile grouts can be killed and discolored with household chlorine bleach diluted one cup per gallon of water and applied repeatedly, then rinsed with clear water.

**Graffiti.** Paint and pen graffiti, oil stains, and tar deposits can often be removed from glass and ceramics as the solvents needed for this in most situations do not affect these materials. It is almost always safe to use mineral spirits and naphtha to remove some materials and acetone or methyl ethyl ketone (MEK) for removing paints. Commercial paint strippers may also be safely used. Test these solvents in an inconspicuous place first.

**Grouts.** Loose grout should be reported and promptly repaired by a skilled tile contractor or sculpture conservator.

#### **Do not:**

- Do not wash with a pressure washer.
- Do not use Prosoco maintenance products without (1) clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are

often very effective but can damage materials not specifically within their range of application. Assume that sculpture, because it is art, falls outside the range of application even though made from the same materials the Prosoco product was meant to treat.

Refer to “Four maintenance principles for all cases,” section 2.2

## Ceramics and glass

Indoors

### **Understanding:**

The following advice applies when a sculpture is composed totally or partially of ceramics or glass. When it is a part of a sculpture, the particular restrictions and advice for adjacent or nearby materials must be considered as well. This class of sculpture materials includes glass in any form and glazed ceramics or tiles. These materials are usually durable to water and solvents. In an indoor environment maintenance cleaning is not likely to be needed often. Be mindful of nonceramic or nonglass materials used nearby or on the ceramic or glass. Glass and ceramic materials intended for indoor exhibit may be complex and contain sensitive components such as paints, dyes, and other materials.

### **Cyclic actions:**

**Soiling.** Remove dust periodically by soft brush or dry wiping with a soft cloth. Stubborn dirt or marks such as finger marks may safely be removed with a glass cleaner. Never spray a cleaner or water directly on the object. Spray onto a soft cleaning cloth.

**Graffiti.** Sculpture made from glass and ceramics for indoor exhibit may have sensitivities and material complications that make the use of solvents unsafe. Always consult a sculpture conservator for the removal of marks that do not respond to water and glass cleaners.

**Grouts.** Loose grout should be reported and promptly repaired by a skilled tile contractor or sculpture conservator.

### **Do not:**

- Do not wash with a pressure washer.
- Do not use Prosoco maintenance products without (1) clearing their use with a supervisor, (2) without testing, and (3) without prior experience in the use of the product. Prosoco products are often very effective but can damage materials not specifically within their range of application. Assume that sculpture, because it is art, falls outside the range of application even though made from the same materials the Prosoco product was meant to treat.

Refer to “Four maintenance principles for all cases,” section 2.2