



## Outdoor Storage and Display: Remedial Measures

### Introduction

After identifying the vulnerable parts of an industrial artifact and determining the causes of deterioration (see CCI Notes 15/8 *Outdoor Storage and Display: Basic Principles*), it is time to introduce interventive measures and regular maintenance.

### The Site

The location and orientation of an outdoor artifact can influence its rate of deterioration. If possible, position the artifact in a well-drained area away from overhanging trees. Try to limit the hours of exposure to direct sunlight by positioning the object so that it will be in the shadow of adjacent buildings or trees for at least part of the day. For the sake of security and public safety, locate the artifact so it can be seen by staff working in the museum buildings.

### Protection Against Water

In most outdoor display areas, protecting the artifact from water is the highest priority. The following operations are recommended:

1. Block entry points for water.
2. Remove absorbent debris, contaminants, and standing water.
3. Isolate materials from moisture with one of the following barriers:
  - coatings
  - supports
  - covers

#### 1. Block entry points for water

Weatherstripping, caulking, and rubber parts such as window gaskets have a limited service life. When they begin to deteriorate, they no longer serve their intended purpose of excluding moisture. Replace these parts with new material (see CCI Notes 15/7

*Rubber Components in Industrial Collections*) wherever possible, saving representative samples of the originals for future reference purposes.

Install non-absorbent covers over openings such as exhaust pipes, smokestacks, and vents. To block large areas (e.g. windows and doors), use exterior-grade plywood, painted on all sides and edges with exterior enamel paint. Seal all joints with exterior-grade caulking. Plug small openings with rubber or cork bungs.

Repair leaks in roofs and around windows and doors with exterior caulking and weatherstripping. Remember that all of these materials are effective for only a limited period of time. They will have to be removed and replaced on a regular basis, perhaps every 5 years, depending on ambient conditions and rates of deterioration.

#### 2. Remove absorbent materials, contaminants, and standing water

Keeping the artifact clean and dry will improve its appearance on display and help to ensure its long-term survival. Remove accumulations of dirt, bird droppings, road salt, and organic debris regularly. Pick up litter as part of a daily routine. Whenever practical, use a squeegee, rags, or sponge to remove puddles of water from horizontal surfaces, paying particular attention to recessed areas. The latter act as catch basins for water and debris (see “Coatings” below).

The cabs and passenger compartments of many vehicles contain fittings made of organic materials (e.g. canvas, leather, felt). If possible, these components should be removed from the artifact, labelled, and stored inside a museum building. Expendable replicas of these items can be installed for display. This will ensure the survival of vulnerable and rare parts for future study and reproduction work.



### 3. Isolate materials from moisture

#### Coatings

Coat bare metal surfaces with rust-preventive compounds (commercial products are constantly changing; contact the Canadian Conservation Institute for the latest recommendations), hot wax, or primer and paint. Coat moving parts with high viscosity oil or grease (see CCI Notes 15/5 *Lubrication for Industrial Collections*). Remove old coatings annually with mineral spirits and re-apply them, paying special attention to horizontal surfaces, edges, and recesses where water collects. Monitor the condition of the paint, and repaint bare or peeling areas as required.

#### Supports

Whenever possible, set an object with steel wheels or skids on a wooden support, coarse gravel, or a concrete pad so that it is not in direct contact with the ground. This helps to isolate it from rising damp and prevents it from sinking into the soil. Partially buried components rot or corrode very rapidly at the interface between the air and the soil.

Wooden supports can be as simple as recycled lengths of lumber or sections of railway ties. Pressure-treated or creosoted lumber will last longer than untreated wood. Plan to remove and relocate the supports every few years as the constant weight of the artifact may slowly sink the lumber into the soil.

A bed of coarse gravel or broken stone sheds water well and deters plant growth. However, loose gravel spreads as visitors walk on it and makes cutting the surrounding grass difficult. To solve these problems, install edging around the bed.

If sufficient funds are available, the best support for an artifact is a reinforced concrete pad. Hire an experienced contractor to carry out this work. Specify a design that will shed water, and request a vapour barrier and gravel underneath and a weatherproof sealant on all exposed surfaces. Ensure that the pad will be capable of supporting the weight of the machine on display.

In some situations, particularly where wooden carriage wheels or pneumatic rubber tires are concerned, it is necessary to raise a vehicle and position it on blocks. This takes the weight off the wheels and tires, and prevents the machine from rolling out of position. Use wooden pilings, built-up cribs of four-by-six lumber, or concrete (cinder) blocks. Place cushioning material such as ½-in. (12.7-mm) thick sheet rubber between the concrete blocks and the artifact to prevent damage. Choose load bearing points that will evenly distribute

the weight of the object on the supports. With most vehicles, these will be under the axles or the lifting points of the chassis.

Trim surrounding grass and weeds at least once a week during the growing season and remove all loose clippings from the vicinity of the artifacts. Vegetation and organic debris are a source of potentially harmful moisture.

#### Covers

One way to protect an artifact from water and contaminants is to cover it with a tarpaulin. The major disadvantage of tarps is that they interfere with the display of the objects. They also make it difficult to monitor the condition of the artifacts underneath.

The best kind of cover is woven *poly tarp* (polyethylene tarpaulin) made of heavy-duty tearproof material (“rip stop”) that is resistant to mildew and ultraviolet radiation. They are available with an opaque silver finish that keeps the object cool by blocking and reflecting sunlight. Choose tarps with reinforced edges and corners, heat-welded seams, and aluminum or brass grommets. Whenever possible, buy tarps with full-length pockets sewn along the edges. Lengths of angle iron can be inserted in these pockets to weight the tarp and keep it from moving in high winds.

Tarps can trap moisture in the form of high humidity or damp rising from the ground. The impervious plastic material prevents moisture from evaporating, so it condenses inside the enclosed area, either on the interior surface of the plastic or on the artifact itself. For this reason, it is important to isolate the object from the ground it sits upon and to provide some degree of air circulation.

It is advisable to erect a framework of wood or metal over the artifact to support the tarp cover. This will prevent direct contact between the object and the tarp, and also allow air to circulate inside the enclosure. Design the framework with a pitched roof to shed water and snow. If the tarp does not extend to the ground on all sides, allow at least 6 ft. (approx. 2 m) of overhang as protection from rainfall.

In all cases, secure the tarp tightly in place with polypropylene rope and weights to prevent it from flapping in windy conditions.

Keep in mind that tarps are intended mainly for short-term seasonal storage. Because direct sunlight weakens the synthetic materials, they may need to be replaced after 8–12 months outdoors — so budget accordingly.

## Protection Against Direct Sunlight

The best protection from sunlight is shade from an adjacent building, a tarpaulin (see above), or some kind of opaque barrier, either in or on the artifact.

The canopies of airplanes and the windows of automobiles and other vehicles with enclosed areas can be blocked with a number of materials: aluminum-coated polyester shades (available at automotive parts stores); aluminum foil with a cardboard backing; or plain corrugated cardboard. If the barriers cannot be installed on a permanent basis, they should at least be present on days when the site is closed to visitors.

Blinds or curtains will prevent light from entering vehicles such as railway cars and they are historically appropriate. Replica material is highly recommended. If original blinds or curtains must be used, protect them from fading by securing a lining of new fabric to their exterior faces.

As with tarpaulins, the major disadvantage of blocking materials is that they interfere with the display and monitoring of the objects.

## Protection Against Insects, Birds, and Rodents

As mentioned previously, artifacts with enclosed areas for operators and passengers are often furnished with organic materials. These are attractive nesting places for insects, birds, and rodents. The best strategy is to block all possible entry points.

Many of the measures used to block the entry of water are also effective against pests, e.g. plugging small openings, ensuring that rubber gaskets around exterior fittings are sound, and weatherproofing the edges of all doors, windows, and access panels.

## Conclusion

Outdoor storage and display of industrial collections requires pro-active intervention with materials that can detract from the appearance of the artifacts. The demands of regular maintenance and monitoring also tie up staff and tax the resources of the museum or interpretive site. Much labour, expense, and permanent damage can be avoided by bringing the artifacts indoors. This should be the ultimate goal.

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