DOI Museum Property Directives

Title: Required Standards for Managing and Preserving Museum Property
Directive Number: 4
Originating Office: Office of Acquisition and Property Management, Department of the Interior (DOI)
Approved By: Debra E. Sonderman
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Expiration Date: This Directive will remain in effect until superseded.

1.1 Purpose. To identify the required standards pertaining to managing and preserving museum property (museum collections) presented in Part 411 of the Departmental Manual (DM), Chapter 1.10 and detailed in the DOI Museum Property Directives.

1.2 Scope. This policy applies to all bureaus and offices responsible for managing museum collections.

1.3 Definitions. See Section 1.16 of this Directive.

1.4 Responsibilities. The required standards described in Sections 1.5-1.15 of this Directive are the obligation of bureaus and offices responsible for managing museum collections as presented in 411 DM 1.6. Heads of Bureaus and Offices, the Assistant Secretary - Indian Affairs, and the bureau or office National/Chief Curator, as applicable, are responsible for ensuring these required standards are implemented in the bureau/office museum program. Curatorial staff, museum property management staff, Accountable Officers, Custodial Officers, and other designated authorities, as established in bureau/office policy, are responsible for implementing these required standards.

1.5 Standards to Manage and Preserve Museum Property. The standards for managing and preserving museum collections are based on DOI policy, including 411 DM, and professional museum and archival standards. The DOI-required standards must be applied to museum collections in bureau/office facilities and non-bureau facilities, particularly in storage and exhibit spaces. This Directive also includes standards to preserve and protect museum collections displayed in administrative offices. Other directives provide procedural details for the standards included in this Directive. Bureaus/offices may develop specific policy with regard to managing and preserving museum collections. When any of the required standards cannot be met, the bureau/office unit must:

A. Assess the risks and resources needed to meet the standards and develop an appropriate course of action.

B. Take temporary actions, pending permanent corrective actions, to reduce deterioration due to environmental factors and to limit damage, loss, and misuse of museum collections.

1.6 Environmental Control Standards. Museum collections must be housed in secure facilities with environmental controls appropriate to the predominant materials in a collection to reduce the rate of deterioration and prolong object life. Materials that are environmentally sensitive, such as textiles, paper, hides and hair, and some metals, must be housed in appropriate microclimates to the extent practicable. If significant fluctuations in temperature, relative humidity (RH), light, pests, and/or air pollution are detected, the designated authority must be notified to determine the appropriate mitigation strategies. The environmental standards for preservation purposes in storage and exhibit spaces are:

A. Temperature and RH:

(1) An appropriate number of locations must be identified to monitor temperature and RH to continually and accurately document environmental conditions. At least one year of continuous data collection is required to identify trends.

(2) The acceptable ranges of temperature and RH must be based on the local climate, the nature and condition of the materials constituting the collection, the RH levels to which the materials have been acclimatized, the structure housing museum collections, energy consumption, sustainability, and other relevant factors. These levels should be set to protect the predominant materials in the collection rather than the most sensitive, which must be housed in appropriate microclimates.

(3) The capabilities of the building envelope and any mechanical systems must be determined to minimize significant fluctuations of temperature and RH. In facilities with limited mechanical controls, use mitigation strategies, such as desiccants and buffered storage materials, to minimize significant fluctuations.

(4) Equipment used to monitor temperature and RH should be maintained and calibrated according to the manufacturer's recommendations. The heating, ventilation, and air conditioning (HVAC) system and filters must be cleaned and maintained.

(5) Temperatures must be maintained within the recommended range for the predominant materials in the collection. For most collections in exhibit spaces, this is in the range of human comfort, from 65 to 77°F. Maintain cooler temperatures (60 to 68°F) in storage spaces, particularly if they are not accessed frequently.

(6) RH levels must be maintained within the recommended range for the predominant materials in the collection. For most collections, this range should not exceed 65% or drop below 35% for a significant period of time based on long range environmental monitoring.

B. Light (visible)

(1) Levels of visible and artificial light must be monitored and recorded on a regular schedule.

(2) The level and duration of exposure to visible light must be controlled when light-sensitive objects are present.

(3) The illuminance levels for light-sensitive materials must be maintained below the following levels to the extent practicable:

(a) 50 lux (5 footcandles) for especially light-sensitive materials. Examples include: textiles; watercolors; tapestries; prints and drawings; manuscripts; dyed leather; wallpapers, original photographs, including negatives, transparencies, and prints; natural history specimens such as taxidermy mounts, horns, feathers, and ivory; and other specimens with light-sensitive pigments, such as butterflies.

(b) 200 lux (20 footcandles) for oil and tempera paintings, and for finished wooden surfaces.

(c) 300 lux (30 footcandles) for other materials that are less sensitive to light and may be exposed to higher levels. When these materials are housed with light-sensitive materials, the light must be controlled at levels appropriate for the most sensitive materials.

(4) Lighting in storage spaces must be kept to a minimum level that is safe for staff to access collections. Lighting must be turned off when it is not required for access.

C. Ultraviolet (UV) Radiation. The level of UV radiation from all sources must be monitored and recorded. If the UV radiation level exceeds 75 micro watts per lumen, UV-filtering material must be installed to control the radiation, and the radiation must be monitored to ensure the filtering material is effective.

D. Pests. An Integrated Pest Management (IPM) Program, including monitoring protocols to document the presence of insects and other pests, must be implemented in all spaces housing museum collections. This will limit pest damage and reduce the amount of pesticides that need to be used. Refer to 517 DM, *Pesticides*.

E. Air Pollution. The level of particulates and air pollutants must be monitored and recorded as appropriate and controlled to the lowest practical limits through filtration or collection microclimates.

1.7 Security Standards. Storage spaces must be secured and access limited to curatorial staff and other authorized individuals. Exhibit spaces must be secured at all times. When exhibits are not open to the public, access must be limited to curatorial staff and other authorized individuals. General requirements are to:

A. Written policies and procedures for access to museum collections and museum records must be developed and implemented, including:

(1) Controlling access to keys and other entry methods.

(2) Opening and closing storage and exhibit spaces.

(3) Recording visitor and researcher access to storage spaces using a consistent system that is retained as a museum record (e.g., a sign-in log).

(4) Recording and tracking the movement of objects.

(5) Informing security staff of procedures for access and use.

B. Use an appropriate combination of security measures that include staffing, mechanical devices, and electronic security systems to protect museum collections.

C. Address any special needs for the museum collections in an emergency management plan.

1.8 Fire Protection Standards. Equipment and/or systems must be installed to detect and suppress fire in storage and exhibit spaces that house museum collections. General requirements are to:

A. Address in a fire plan the needs of museum collections, including objects and archives, when fire is being prevented, detected, and/or suppressed.

B. Select systems appropriate to the nature of the museum collections in the space and for the structure in which the objects are housed.

C. Make spaces that house museum collections fire-resistant to the extent possible.

D. Store museum records, including records in electronic format, in appropriate fire-resistant containers, vaults, or secure off-site facilities, and keep the containers secured when not in use.

E. Prohibit flammable liquids in any area that houses museum collections, except where flammable liquid is a component of the museum object such as natural history specimens stored in jars containing alcohol.

1.9 **Housekeeping Standards.** A clean environment in storage and exhibit spaces must be maintained on a regular schedule to minimize or prevent the deterioration of museum collections. General requirements are to:

A. A written housekeeping plan must be developed and implemented with clear direction for handling museum objects along with scheduled housekeeping tasks and equipment/supplies to be used.

B. Write and enforce rules that prohibit smoking, drinking, and eating in collection storage spaces, and strictly regulate these activities in other spaces housing museum collections.

1.10 **Physical Examination Standards.** Museum collections must be examined regularly, based on bureau/office policy, to detect evidence of deterioration. Standard occasions for physical examination are during an inventory or return of a loan. The examination and findings must be documented.

1.11 **Conservation Treatment Standards.** Treatment of museum collections in an unstable condition must be performed by a trained conservator following professional conservation standards and practices. All treatments must be documented, and a copy of the report detailing the procedures and chemical(s) used must be filed appropriately for future use.

1.12 **Storage Standards**. Units that manage museum collections must use dedicated space that meets the environmental control standards in Section 1.6 of this Directive and provides secure storage of and access to all museum collections to minimize risk to objects. General requirements are to:

A. Provide storage space(s) large enough for existing museum collections.

B. Plan space to accommodate anticipated collection growth.

C. Organize storage space to ensure the safe movement of staff and objects and to facilitate safe access to all objects through the efficient use of storage systems.

D. House museum collections in appropriate containers and use appropriate museum-quality materials that provide a protected and stable environment.

E. Use materials and methods that protect museum collections from damage while the objects are being stored, especially in high-risk areas such as earthquake zones and flood plains.

1.13 Exhibit Standards. Objects on exhibit are more prone to deterioration, theft, or vandalism than objects in storage. Exhibit museum objects in ways that minimize risk. When developing exhibits, general requirements are to:

A. Work with conservators, exhibit specialists, and discipline specialists to determine the best methods to preserve, protect, and maintain museum collections.

B. Design and fabricate exhibit cases that provide security, housekeeping access, and proper environmental controls for the preservation of the museum objects to be exhibited.

C. Protect freestanding museum objects by using an appropriate combination of methods, including physical, electronic, and staffing.

D. Rotate the display of objects on a schedule that will minimize deterioration.

E. Use mounts that are structurally sound and constructed of museum-quality materials to support objects.

F. Avoid exhibiting original archival documents whenever possible.

1.14 Museum Collections in Administrative Office Space. Museum objects displayed in administrative offices are the most vulnerable to theft or damage. Specific measures must be taken to control the environment and minimize threats to museum objects while considering the primary use of the space and adhering to bureau/office policy. General requirements are:

A. Environmental Controls:

(1) Temperature and RH must be monitored, recorded, evaluated, and controlled to the extent possible. Significant fluctuations of temperature and RH must be avoided whenever possible. If such fluctuations persist, relocate the museum objects to museum storage space.

(2). Visible light and UV radiation must be minimized and controlled to the extent possible following the standards in Paragraphs 1.6B and 1.6C of this Directive.

(3) Written procedures must be developed and implemented to monitor, detect, and control pest infestations.

B. Security and Fire Protection:

(1) Written security procedures must be developed and implemented, including prevention of unauthorized access to office space housing museum collections, key control to office space and display cases, and

recording access to and movement of museum objects in and out of office space.

(2) Written procedures must be developed and implemented for safely evacuating museum collections that may be at risk due to an impending disaster, giving priority to human health and safety.

(3) Written procedures must be developed and implemented to prevent, detect, and suppress fire.

C. Displaying Museum Collections:

(1) Written procedures must be developed and implemented for handling, housekeeping, security, and emergency management.

(2) Museum objects must be displayed in areas that provide protection from accidental damage (for example, away from entryways, heating and cooling sources, and direct visible light.)

(3) Museum objects must not be used for secondary functions (for example, using an ethnographic basket as a wastebasket or planter).

(4) Two-dimensional objects must be secured using appropriate framing, matting, glazing, and security hanging hardware.

(5) Three-dimensional objects must be secured and protected using appropriate mounts, pedestals, vitrines, and cases.

(6) Textiles must be hung to distribute weight evenly and to avoid contact with metals and untreated wood.

1.15 Use of Museum Collections. Collections or individual museum objects may be available for scientific, cultural, or educational use subject to such terms and conditions as are necessary for their protection and preservation. General requirements are to:

A. Develop written procedures for commercial use of museum collections, if applicable.

B. Develop written procedures for reproductions of museum collections, such as film photography, video recording, digital imaging, web-based media, publications, and two- and three-dimensional reproductions, if applicable.

C. Develop written procedures that describe restrictions for using museum collections, such as copyright, trademark, and privacy issues, and for cultural items subject to the Native American Graves Protection and Repatriation Act, if applicable.

D. Develop written procedures for consumptive use of museum collections, such as destructive analysis during research.

E. Develop written procedures for other relevant uses of museum collections, such as handling museum objects during educational programming.

1.16 Definitions. Many of the following definitions are taken directly from 411 DM and therefore refer to museum property. Museum property and museum collections are synonymous in these definitions.

Buffer – Any material that results in or minimizes a change in RH of the air surrounding it. For example, cotton dust covers can buffer against changes in RH and temperature.

Consumptive use – The act or process of using a museum object, or a portion thereof, in a way that causes damage or deterioration to it. Destructive analysis is a legitimate use of a museum object, or a portion thereof, for approved scientific research purposes.

Desiccant – A soluble or insoluble chemical drying agent that withdraws water from other materials. An example of a soluble desiccant is glycerol and an example of an insoluble desiccant is silica gel.

Environmentally sensitive – Impacted by aspects of an environment, such as temperature, RH, light, or air pollution.

Footcandle – A measure of the intensity of light on a surface equal to one lumen per square foot.

Glazing – For picture framing, the act of covering an object with a protective glass or other appropriate material.

Illuminance level – Measurement, in lux, of visible radiation.

Lux – The international unit of measurement of the intensity of light or luminous flux incident, which is one lumen per square meter (10.76 lux = 1 footcandle).

Materials – The substance(s) of which a museum object is composed, such as stone, ceramic, cotton, silk, metal, and/or organic tissue.

Mechanical controls – Systems of heating, cooling, and humidity control that are used to regulate the internal environment of a building.

Microclimate – The environmental conditions within a small area such as a storage cabinet or exhibit case.

Museum collection / Museum property - A subset of personal property, including objects, works of art, and/or archives, that is retained for long-term preservation, study, and interpretation consistent with statutory requirements, its relationship to the mission of

the respective bureau/office, or other appropriate factors. A museum collection / museum property is acquired according to a rational plan, such as a Scope of Collection Statement. It consists of all accessioned, unaccessioned, cataloged, and/or uncataloged objects; and all museum objects under the control of a facility, unit, or bureau/office. Museum property is synonymous with and referred to as "museum collection(s)" in the DOI Museum Property Directives, as a standardized term that is used by museum professionals.

Object - A physical item of museum property. It includes art and history objects, archeological artifacts, ethnographic objects, archival items, and natural history specimens.

Relative humidity or RH - The ratio, expressed as a percentage, of the actual vapor pressure of air to its saturation vapor pressure at that temperature. RH is temperature dependent. If no additional moisture is added to the air, the RH decreases as the temperature increases.

Significant fluctuations – Variations in temperature, relative humidity, light, pests, and air pollution that are considerable enough to potentially cause deterioration of objects. The range of variation will depend upon the material composition of the object.

Ultraviolet radiation or UV – Energy in wavelengths shorter than 400 nanometers (nm). UV radiation from the sun, sky, and most artificial light sources is in the range of 300-400 nm. It is invisible and may cause significant damage to many museum objects over time.

Visible light – The portion of the electromagnetic spectrum that is perceptible to the human eye, approximately in the range of 400-700 nm.

Vitrine – A glass or plastic transparent cover that encloses and protects objects on exhibit or display.

Web-based media - Internet-based technologies that allow for the creation and exchange of user-generated content. Such media include digital images, text, video, audio, animation, and interactive features. They also include social media, which enables people to interact online.

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