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Design Considerations for Preventive Conservation in New Heritage Collection Facilities

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List of abbreviations

µW/lm	microwatt per lumen
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
CCI	Canadian Conservation Institute
CCTV	closed-circuit television
CRI	colour rendering index
HVAC	heating, ventilation and air conditioning
IPM	integrated pest management
kN/m^2	kilonewton per square metre
MERV	minimum efficiency reporting values
mW/m^2	milliwatt per square metre
NFPA	National Fire Protection Association
nm	nanometre
psf	pounds per square foot
RH	relative humidity
VOC	volatile organic compound

Introduction

Indigenous peoples in Canada have ancestral rights arising from their status as the original inhabitants of Canada. These rights are recognized and affirmed in the *Constitution Act, 1982* and the *United Nations Declaration on the Rights of Indigenous Peoples Act*. The Canadian Conservation Institute fully recognizes that Indigenous peoples have the right to define how they care for their belongings and ancestors. The preventive conservation requirements set out in this document should not be used as a pretext to limit the rights of Indigenous peoples to access their belongings and practise their traditions.

The requirements and advice outlined in this resource are intended to ensure the physical preservation of objects and collections. They represent a first step in making sure that basic preventive conservation features are included in the design of heritage collection facilities. However, they do not guarantee a successful application to federal (or other) heritage programs. After institutions have reviewed this document and the checklist, they are encouraged to contact the Canadian Conservation Institute (CCI) to discuss their specific project and to contact the Designation of Institutions and Public Authorities Program (hereinafter "Designation program") or the Canada Travelling Exhibitions Indemnification Program (hereinafter "Indemnification program") for further information about these programs.

In this document, we present various aspects to consider when designing a new facility aimed at the optimal preservation of heritage collections. The checklist provided in Appendix C will help project managers track progress during a capital project. This guidance focuses mainly on facility design features; it does not include recommendations for the policies, procedures and practices that are also required to protect collections from the agents of deterioration (with the exception of integrated pest management [IPM] and emergency response).

This document can also be used by existing institutions seeking an overview of the preventive conservation features recommended by CCI for heritage collection facilities. As each institution has a specific operational context and each collection has a specific vulnerability, please contact CCI to discuss your particular case.

For Canadian institutions wishing to participate in various programs of the Department of Canadian Heritage, namely, the Designation program or the Indemnification program, both administered by the Heritage Policy and Programs Directorate, additional considerations are provided under each section.

1. Building

1.1 Location

The building should not be located in areas that are prone to flooding, that have a high crime rate or that are in close proximity to industrial facilities, or anywhere that could significantly increase risks associated with fire, security, water, pollutants, pests or vibrations and shocks. If flood-prone areas cannot be avoided, any room that could contain collections should be situated above the anticipated flood level. Institutions that share facilities with other occupants must also manage the risks associated with the activities carried out by these occupants. A regularly updated emergency response plan must be in place.

Designation
Institutions located in flood-prone areas must demonstrate that the risks are well managed. As well, institutions located in shared facilities must demonstrate that any resulting fire, security, water, pollutant, pest or vibration and shock risks are well managed. Assessors will expect to see that an up-to-date emergency response plan is in place and that it includes specific considerations for collections salvage.

Indemnification
Institutions located in flood-prone areas must demonstrate that the risks are well managed. As well, institutions located in shared facilities must demonstrate that any resulting fire, security, water, pollutant, pest or vibration and shock risks are well managed. Assessors will expect to see that an up-to-date emergency response plan is in place and that it includes specific considerations for collections salvage.

1.2 Envelope

Ideally, all climate-controlled collection spaces would be located in interior rooms with sealed walls, where risks and climate can be more easily controlled. When this is not possible, any exterior wall within climate-controlled spaces will need sufficient insulation and continuous vapour barriers to permit acceptable control of temperature and relative humidity (RH) without damaging the building envelope. Avoiding exterior glass walls, skylights or large windows in collection spaces is highly recommended to maximize security, limit light exposure, reduce flooding risk and facilitate efficient climate control. Access doors into climate-controlled spaces must be well sealed to prevent air infiltration and exfiltration, which can compromise climate control. Unframed glass doors are always challenging from this point of view and are thus not recommended. Two sets of doors (that is, a vestibule) may be required to ensure that RH levels remain stable. The building envelope must also protect the collection from pests, water infiltration and external pollutants.

Designation
Assessors will look for recurring problems with the building (leaks, evidence of mould, pest infestations, flooding, structural damage, etc.) and will expect details on the causes of these issues and on the corrective measures implemented.

Indemnification
When determining qualification under the program, assessors will look for recurring issues with the building (leaks, evidence of mould, pest infestations, flooding, structural damage, etc.) and will expect details on the causes of these issues and on the corrective measures implemented.

1.3 Interior finishes

All exposed concrete surfaces must be sealed, as unsealed concrete generates a fine abrasive alkaline dust. Coatings that are acceptable for collection spaces are described in Appendix A. As a general rule, any acceptable interior finish must have a minimum drying time of four days before any object is introduced into the space. For airtight enclosures (such as display cases), the minimum drying time is four weeks. Carpet is not recommended in collection spaces. Because it is more difficult to keep clean, it tends to accumulate dust and may harbour pests (wool carpet in particular), and it may lead to mould issues in the event of a water leak or flood if not dried quickly. Floors, walls and ceilings should be light coloured to make it easier to detect insect infestations, condensation and water leaks.

Designation
This consideration generally has no direct impact on designation applications.

Indemnification
This consideration generally has no direct impact on applications to qualify for the program. However, when institutions apply for the indemnification of a specific exhibition, the requirements for display cases are reviewed.

1.4 Clearance: ceiling height, hallways, doorways and elevators

Clearance requirements for ceilings, hallways, doorways and elevators should be based on the maximum height or length of objects and on how they would be moved in and out of spaces. For ceiling height, the space occupied by building fixtures and fittings (such as fire sprinklers, heating, ventilation and air conditioning [HVAC] ductwork and lighting) and any clearance requirements related to these fixtures and fittings must be accounted for. As much ventilation ductwork as possible should be routed outside of storage rooms (for example, in hallways or other non-collection spaces) to maximize available room height.

Designation
Institutions collecting large objects may be asked to demonstrate that clearance is sufficient.

Indemnification
This consideration often has no direct impact on applications to qualify for the program. However, when applying for the indemnification of a specific exhibition that contains large objects, institutions may be asked to demonstrate that clearance is sufficient.

1.5 Structural

The building meets current seismic codes (*National Building Code* of Canada).

Designation
Seismic stabilization is required in high-risk seismic zones.

Indemnification
Seismic stabilization is required in high-risk seismic zones.

2. Collection storage rooms and support spaces

2.1 Location

Ideally, a storage room should not be located below grade. However, this situation must simply be avoided if the building is located in a flood-prone area. Several insurance companies do not cover flood-related collection damage sustained in basement or subterranean locations if the building is located in a flood-prone area. Storage rooms located in a basement (or at grade level in the case of slab-on-grade construction), and their sanitary drainage systems, must be designed in accordance with the *National Plumbing Code* of Canada and the *National Building Code* of Canada to allow water to be drained away (for example, using a sump pump or floor drains, as applicable). Storage rooms must also be designed to prevent water from flowing back into the room (for example, using a "backflow valve" or "backwater valve") and to provide for the detection of flooding (via floor-level water detectors, preferably wired into the building's alarm system). Whenever possible, water pipes or plumbing fixtures of any kind (overhead pipes in particular, except those for fire suppression) should be routed outside of storage rooms. Storage rooms must be located away from areas that could contain food or food waste, which may attract pests.

Designation
For buildings with basement storage, assessors will expect to see a sump pump, a system with a backflow valve, a floor drain and water detectors. Institutions may be asked to describe the protective measures in place should storage rooms be adjacent to food preparation areas, catering stations, dining areas, kitchens or garbage rooms. Below-grade collection storage in flood-prone areas is not acceptable.

Indemnification
For basement storage rooms to qualify for the program, assessors will expect to see a sump pump, a system with a backflow valve, a floor drain and water detectors. Below-grade collection storage in flood-prone areas is not acceptable. Institutions may be asked to describe the protective measures in place should storage rooms be adjacent to food preparation areas, catering stations, dining areas, kitchens or garbage rooms. In certain cases, assessors may recommend that indemnified exhibitions be stored in the exhibition areas.

2.2 Structural

The floor in a storage room should be able to support the types of objects the institution collects and the furniture that it uses for storage. Compact storage is the most space-efficient system. Even if the installation of such a system is not possible in the short term, having a floor loading capacity that can withstand this load is an important feature to allow for a possible future upgrade. The required floor loading capacity will depend on the type of objects stored and the number of tiers of shelving. Appendix B lists examples of floor loading capacities by object type. Moreover, institutions located in high-risk seismic zones must ensure that collections are protected against seismic shock (for example, by bolting down storage units, by installing connecting bars between storage units or by installing a protective barrier to prevent objects from falling off shelves during extreme vibrations).

Designation
For institutions located in high-risk seismic zones, assessors will expect to see evidence that they have taken measures to protect their collections from the effects of earthquakes.

Indemnification
To qualify for the program, institutions located in high-risk seismic zones will be required to provide evidence that they have taken measures to protect their collections from the effects of earthquakes.

2.3 Lighting

It should be possible to turn lights off when storage rooms are unoccupied. When rooms are occupied, light levels should be sufficient to allow safe movement through the space. Institutions can either use motion sensors or they can selectively illuminate areas where staff is present and to provide light levels customized to the activity carried out in each zone. In general, light fixtures are best oriented perpendicular to the storage aisles to ensure good visibility of the collection in all aisles. Light sources should emit no or very little ultraviolet (UV) radiation (no more than 10 µW/lm), which can be ensured by using no- or low-UV-emitting sources (such as LEDs or low-UV fluorescent tubes) or anti-UV filters that exclude up to 400 nm. The amount of absolute UV received by the objects should be below 10 mW/m^2. There should be no windows in storage rooms.

Designation
Assessors will expect to see that lights are kept off in storage when the space is unoccupied and that any windows in storage are blocked. If the illumination of emergency exits is required, assessors will expect to see that sensitive materials are protected from light by storage furniture (such as drawers and cabinets) or by being stored in boxes.

Indemnification
As indemnified works are generally crated when they are put in storage, this consideration normally has no direct impact on applications to qualify for the program. However, it may become an issue when applications for indemnification are assessed for specific exhibitions.

2.4 Support spaces

Any function other than collection storage (for example, documentation, research, packing and exhibition preparation) should be conducted outside of storage rooms but should be well connected to collection spaces to ensure functionality. Storage should be reserved for accessioned collection objects. Non-collection items (for example, exhibition panels, display cases, packing materials and non-accessioned objects) should not be stored there. Reducing traffic in storage rooms minimizes many risks related to security, climate and pollution, among others. It is also highly recommended to have a quarantine space to inspect incoming objects for signs of pests, dampness or mould, especially for collections that contain textiles, furs, hair, skins or insect specimens (that is, objects at high risk of pest infestation). Quarantine spaces should provide good visibility (that is, well-lit, light-coloured walls and floors) and have well-sealed doors. These are transitory areas, not permanent storage rooms.

Designation
Assessors will expect to see that the storage rooms are primarily used for collection storage, that sufficient storage space is available to house proposed or future acquisitions and that storage equipment is sufficient and appropriate. Furthermore, incoming objects must be systematically inspected before being introduced into the storage rooms. An IPM program and adequate procedures to deal with mould or pest infestations must also be in place.

Indemnification
For qualification under the program, assessors will expect confirmation that access to storage rooms is restricted during the indemnification period if storage rooms are used for the temporary storage of indemnified works at any point. Furthermore, assessors will expect to see that an IPM program is in place and that adequate procedures have been established to deal with mould or pest infestations.

3. Exhibition areas

3.1 Lighting

It should be possible to provide light levels as low as 50 lux in all exhibition areas, especially in areas where light-sensitive objects could be displayed. This will give the institution considerable flexibility for the display of its own light-sensitive objects and will ensure that the institution is able to fulfill the loan requirements of most lenders. Light sources should emit no or very little UV (no more than 10 µW/lm). This can be ensured by using no- or low-UV sources (such as LEDs or low-UV fluorescent tubes) or anti-UV filters that exclude up to 400 nm. The amount of absolute UV received by the objects should be below 10 mW/m^2. Light fixtures should have a colour rendering index (CRI) above 90 and an R9 (colour-rendering of the 9th colour sample, red) of at least 50 for a good quality light and at least 90 for an excellent quality light.

Designation
Assessors will expect the institution to be measuring light and UV levels for new exhibitions and to be using filters on UV-emitting light sources.

Indemnification
For qualification under the program, assessors will expect the institution to be measuring light and UV levels for new exhibitions and to be using filters on UV-emitting light sources. When applying for the indemnification of a specific exhibition, institutions will be required to specify the lighting conditions for the exhibition (visible and UV levels).

3.2 Windows and skylights

It is best to avoid windows and skylights in exhibition areas. The institution should carefully consider how to manage the risks related to windows and skylights, as these can cause increased visible light and UV levels, extra solar loads on the HVAC system and higher security risks, particularly if windows are on the ground floor. Be aware that these factors may impact an institution's ability to meet the loan requirements of other institutions or to provide adequate preventive conservation conditions for their own collection. Skylights can also be a source of water leaks if not maintained adequately. This may not manifest itself immediately, but perhaps 10 to 15 years after construction. Therefore, institutions who choose to accept these risks must be prepared to bear the costs of ongoing maintenance that comes with their mitigation over time. It should also be noted that skylights will not eliminate the need for artificial lighting and may not save on electricity, as daylight may not light objects sufficiently and may not be available during some business hours. UV must be filtered on all glazing in rooms where UV-sensitive objects are displayed.

Designation
Assessors will expect to see that climate conditions are maintained reliably over time (consult section 6) and that there are no recurring issues with water leaks or condensation on windows or skylights. The institution must have an intrusion alarm system that detects unauthorized entry via windows and skylights. Assessors may require applicants to demonstrate how the following risks are managed: visible light and UV exposure, security and potential leaks.

Indemnification
For qualification under the program, assessors will expect to see that climate conditions are maintained reliably over time (consult section 6), that there are no recurring issues with water leaks or condensation on windows or skylights, that ground-level windows are equipped with glass break detection and that skylights are protected by an alarm system. Assessors may require applicants to demonstrate how the following risks are managed: visible light and UV exposure, security and potential leaks.

3.3 Structural

The way in which objects will be hung on walls, or from the ceiling in some cases, should be carefully planned. For art galleries especially, wall sections that include 3/4 in. (19 mm) plywood behind the drywall can be particularly useful for hanging objects and providing a hollow space behind the wall that makes it possible to conceal electrical cords. Some institutions also require anchor points on the ceiling, which can be embedded into the structural fabric of the building during construction. The type, load rating and location of these anchor points will depend on the types of objects the institution is most likely to display. Finally, institutions that regularly display large and heavy objects (machinery, vehicles, etc.) may require reinforced floors to accommodate the extra load.

Designation
This consideration often has no direct impact on applications for Category A designation. When applying for a Category B designation for objects that are large or heavy and require hanging, the institution may be asked to demonstrate that it has the adequate mechanisms and structural features to guarantee the safety of the objects.

Indemnification
This consideration often has no direct impact on applications to qualify for the program. However, when applying for the indemnification of a specific exhibition, institutions will be asked to provide detailed specifications for mounts, anchors or other mechanisms used to guarantee the safety of especially large or heavy objects.

4. Collection reading rooms

4.1 Lighting

As light exposure in reading rooms is intermittent, higher light levels that facilitate reading are acceptable. However, light sources should emit no or very little UV (no more than 10 µW/lm), which can be ensured by using no- or low-UV sources (such as LEDs or low-UV fluorescent tubes) or anti-UV filters that exclude up to 400 nm.

Designation
Assessors will expect the institution to be measuring light and UV levels and to be using filters on UV-emitting light sources.

Indemnification
Not applicable (consult section 3).

4.2 Windows and skylights

It is best to avoid windows and skylights in reading rooms. Careful consideration is needed to determine how to manage the risks related to windows and skylights, as these can cause visible light and UV levels to increase, extra solar loads on the HVAC system and higher security risks, particularly if windows are on the ground floor. Be aware that these factors may impact an institution's ability to provide adequate preventive conservation conditions for their own collection. Skylights can also be a source of water leaks or condensation if not maintained adequately. This may not manifest itself immediately, but perhaps 10 to 15 years after construction. Therefore, institutions who choose to accept these risks must be prepared to bear the costs of ongoing maintenance that comes with their mitigation over time. It should also be noted that skylights will not eliminate the need for artificial lighting and may not save on electricity, as daylight may not light objects sufficiently and may not be available during some business hours. UV must be filtered on all glazing in rooms where UV-sensitive objects are displayed.

Designation
Assessors will expect to see that climate conditions are maintained reliably over time (consult section 6) and that there are no recurring issues with water leaks or condensation on windows or skylights. The institution must have an intrusion alarm system that detects unauthorized entry via windows and skylights. Assessors may require applicants to demonstrate how the following risks are managed: visible light and UV exposure, security and potential leaks.

Indemnification
Not applicable (consult section 3).

5. Loading dock

Ideally, the largest of the transport trucks used by the institution should be able to back up fully into the loading dock, leaving room for the external door to be closed. This is an excellent feature for security and protection of objects from inclement weather during loading and unloading operations. At minimum, an external loading dock with a shelter should be provided. Preferably, the dock should have a dock leveller or scissor lift. There should be no garbage bins or dumpsters in the loading dock, and all exterior doors should be pest proof. The design of the loading dock apron and access routes should facilitate access by the largest transport trucks the institution uses and match the size of the objects they may contain.

Designation
Assessors will expect to see that objects can be loaded and unloaded safely while protected from the elements. If garbage bins or dumpsters are present in the loading dock, the institution will have to demonstrate how it manages this pest risk.

Indemnification
For qualification under the program, assessors will expect to see a loading dock where objects can be loaded and unloaded safely while fully protected from the elements. If garbage bins or dumpsters are present in the loading dock, the institution will have to demonstrate how it manages this pest risk. Given the high value of indemnified exhibitions, in situations where security may be an issue (for example, a loading dock that is not fully enclosed), assessors may recommend the presence of a security guard during loading and unloading.

6. Heating, ventilation and air conditioning

6.1 Climate control

All areas of the building where objects are displayed, used or stored (for example, exhibition areas, storage rooms, reading rooms, workshops or preparation areas and quarantine rooms) should provide climate conditions that eliminate all major risks to the collection (incorrect temperature and RH leading to mould, active corrosion, internal chemical degradation, fractures, delamination and deformation). What are considered to be "ideal climate-controlled conditions" will vary from institution to institution, as these depend on the vulnerability of a collection and on the specific operational context of an institution. In general, from a preventive conservation standpoint, it is better to provide conditions that are less tightly controlled but controlled reliably over time than very tightly controlled conditions only some of the time. For a more detailed discussion on this topic, including a description of the damage caused by incorrect temperature and RH, of the vulnerability of different objects or collections, of the ASHRAE types of control for temperature and RH and of requirements for various special situations (for example, temporary display or unpacking spaces, cold, cool or frozen storage, metal storage), consult CCI's *Climate Guidelines*.

Designation
As part of a designation application, assessors will expect to see evidence, in the form of data covering at least 12 consecutive months (including data captured at intervals between 20 and 60 minutes), that climate control corresponds to certain specifications, depending on the classes of cultural property, in all areas where objects could be displayed, made accessible to the public (archives or library reading rooms) or stored. Note that for Category B designation, application requirements may differ depending on the vulnerability of the acquisition for which the designation is sought. To ensure that data is formatted properly, refer to the document "Guidelines for the Submission of Relative Humidity (RH) and Temperature Graphs to Canadian Heritage's Designation and Indemnification Programs" (available from CCI, the Designation program or the Indemnification Program). • For classes 1, 2, 3, 4, 5, 6 and 8 (Natural History and Archeology, Objects of Material Ethnographic Culture, Military Objects, Objects of Applied and Decorative Arts, Objects of Fine Arts, Scientific or Technological Objects, and Musical Instruments), at a minimum, provide ASHRAE B type of control (that is, limited control with seasonal changes in RH and large seasonal changes in temperature) (Table 1).

Table 1: the four parameters of ASHRAE B (Michalski 2025)

Long-term outer limits	Annual averages (baseline)	Seasonal adjustments from annual average (baseline)	Short-term fluctuations plus space gradients
Less than or equal to 30°C	• For permanent collections: historic annual average of temperature	• Increase by 10°C • Decrease by 20°C	±5°C
30% to 70% RH	• For permanent collections: historic annual average of RH	• Increase by 10% • Decrease by 10%	±10% RH

Note

The climate in rooms intended for loan exhibitions must correspond to what is specified in the loan agreement, which may vary by institution.

- For Class 7 objects (archival material), ensure that at least the ASHRAE B specification or at least one of the ASHRAE specifications for chemically unstable organic materials is met (cool, cold or frozen storage; Table 2). ASHRAE B or better should be provided in reading rooms, where applicable.

Table 2: ASHRAE specifications for chemically unstable organic materials (Michalski 2025)

Storage conditions	RH	Temperature setting
Cool	Between 30% and 50%	Between 8°C and 16°C
Cold	Between 30% and 50%	Between 0°C and 8°C
Frozen	Between 30% and 50%	Between −20°C and 0°C

- For Class 9 objects (audiovisual collections), ensure that at least one of the ASHRAE specifications for chemically unstable organic materials is met (cool, cold or frozen storage; Table 2). The institution should monitor low-temperature storage rooms using an alarm to detect any equipment failures. Assessors also expect a collection retrieval procedure to be put in place to reduce the risk of condensation due to abrupt temperature changes.

Indemnification

To qualify for the program, institutions must provide evidence, in the form of data covering at least 12 consecutive months (including data captured at 20 to 60 minute intervals), that climate can be controlled to meet at least ASHRAE control type A1 or A2 in all areas where indemnified objects could be displayed or stored (tables 3 and 4). To ensure that the data is formatted properly, refer to the document "Guidelines for the Submission of Relative Humidity (RH) and Temperature Graphs to Canadian Heritage's Designation and Indemnification Programs" (available from CCI, the Designation program or the Indemnification Program).

Table 3: the four parameters of ASHRAE A1 (Michalski 2025)

Long-term outer limits	Annual averages (baseline)	Seasonal adjustments from annual average (baseline)	Short-term fluctuations plus space gradients
10°C to 25°C	• For permanent collections: historic annual average of temperature • In public display areas: human comfort temperatures can apply	• Increase by 5°C • Decrease by 10°C	±2°C
35% to 65% RH	• For permanent collections: historic annual average of RH	• Increase by 10% • Decrease by 10%	±5% RH

Table 4: the four parameters of ASHRAE A2 (Michalski 2025)

Long-term outer limits	Annual averages (baseline)	Seasonal adjustments from annual average (baseline)	Short-term fluctuations plus space gradients
10°C to 25°C	• For permanent collections: historic annual average of temperature • In public display areas: human comfort temperatures can apply	• Increase by 5°C • Decrease by 10°C	±2°C
35% to 65% RH	• For permanent collections: historic annual average of RH	• No change to RH	±10% RH

6.2 Sensors

RH and temperature sensors should be located within the spaces and not only in the return air ducts to ensure that the conditions measured reflect those in which objects are kept. Sensors should be placed in a location where there is no interference (that is, far from windows or open doors, not in front of vents, not on exterior walls and not in full sun). It should be possible to take readings at 20-minute intervals and to download the data and archive it for later interpretation.

Designation
Institutions will be asked to identify on the temperature and RH charts the specific room, and in some cases, the specific location in the room where the sensors or data-loggers are located.

Indemnification
To qualify for the program, institutions will be asked to identify on the temperature and RH charts the specific room, and in some cases, the specific location in the room where the sensors or data-loggers are located.

6.3 Filtration and ventilation

In all areas of the building where objects are displayed, used, stored or moved throughout the facility, the air filtration device should meet at least minimum efficiency reporting values (MERV) of 12 (ASHRAE Standard 52.2 2017). However, if higher than normal pollutant concentrations are expected, whether generated internally (for example, an actively deteriorating collection of cellulose acetate negatives or cellulose nitrate film) or externally (for example, an urban area with high diesel traffic or likely to be affected by significant amounts of smoke associated with industrial activity or wildland fires), higher classes of specification, sometimes including gas filtration, may be required. Consult "Control strategies for airborne pollutants" in *Agent of Deterioration: Pollutants* for further information. It is important to ensure that areas that generate dust (for example, workshops and collection preparation spaces), smoke or other cooking by-products (for example, kitchens) are well sealed (for example, by using double doors) and are equipped with an adequate extraction or filtration system for health reasons and to protect collections. The overall building pressure relative to the outdoors should be appropriate for the local climate. In the event of a fire, the HVAC dampers should shut down automatically to limit intrusion and spread of fire and smoke within the building.

Designation
Assessors will expect to see evidence of reasonable control of dust and pollutants in all collection spaces. In some cases where objects are boxed and the presence of staff in storage rooms is kept to a minimum, filtration to a lower specification may be adequate. MERV 12 filter system performance is only slightly better than minimum conditions for office spaces; therefore, it is not an unrealistic goal for most institutions that have mechanical ventilation.

Indemnification
Even though the pollutant risk for many indemnified objects may be low given the short-term nature of exhibitions, assessors expect to see filter system performance of at least MERV 12 in institutions that are applying to the Indemnification Program. On occasion, some types of objects (such as unglazed paintings or drawings, other porous surfaces and polished metals) will require added protection (such as stanchions, other physical barriers, glazing and display cases) from pollutants generated by contact (for example, oils from visitors touching the surface). Similarly, objects with very high sensitivity to gaseous pollutants (such as lead and silver) may require added protection within display cases.

7. Security

The building should provide for clear sightlines to all entrances and have vandal-proof external lighting. The roof should not be easily accessible from the exterior. Walls, roof, doors, windows, security grilles and locks should be robust in order to delay intruders, allowing time for security or police to respond. An intrusion alarm system must be installed and monitored 24/7. This system should include multiple controls that work together to detect unauthorized entry into the building from the exterior and into storage rooms, exhibition areas and the loading dock. Access points (doors and openable windows, roof hatches, loading dock garage door) require contact sensors, as do the doors leading into storage rooms and exhibition areas. The institution should have devices that can detect movement in rooms adjacent to exterior walls and in collection spaces. Any windows or glass walls on the ground floor should have a glass break detector. All skylights should be equipped with an alarm system. Ideally, it should be possible to activate the alarms on storage room doors even during business hours. Storage room doors should be solid, preferably made of steel, with at least a deadbolt lock that is keyed separately so that access can be limited to collection staff who need it. An access control system or equivalent (for example, an electronic card system) throughout the building is highly recommended. CCTV camera coverage is also highly recommended (with footage retained for at least 30 days), particularly at key entry points, in exhibition areas and in the loading dock. During public hours, a staff member or security guard should be stationed near the main entrance at all times, and some level of physical presence should be provided in the exhibition areas. Potential thieves should not be able to exit the building directly from exhibition areas. The building should be equipped with a backup power supply to allow the security system to function in the event of a power outage.

Designation
Assessors will expect to see all elements listed above, but they recognize that CCTV camera coverage is more useful for reviewing incidents after they occur than for prevention; therefore, more importance is placed on detection mechanisms. As a minimum requirement, the following must be present: an intrusion alarm system that detects unauthorized entry via exterior doors and windows; and devices that can detect movement at all of the building's entry and exit points, and in storage rooms, collection reading rooms and exhibition areas. Furthermore, having a staff member or security guard stationed near the entrance during public hours is required.

Indemnification
For qualification under the program, assessors will expect to see all elements listed above and will additionally require complete camera coverage of all rooms where indemnified objects are displayed. When applying for the indemnification of a specific exhibition, applicants will be required to submit a detailed security layout that includes the location of security guards and of all detection devices (CCTV cameras, devices that can detect movement, contact sensors). In most cases, licensed security guards must be permanently stationed in exhibition areas where indemnified objects are displayed during public hours and at the building's public entrances and exits. Furthermore, a dedicated guard to monitor the exhibition's CCTV camera feed during public hours and 24/7 guard presence on premises during the indemnification period is usually required. The sightlines of cameras and of security guards in relation to indemnified objects will be examined in detail.

8. Fire protection

A regularly inspected fire alarm system (including smoke or heat detectors), as well as an automatic fire suppression system installed in compliance with applicable standards (for example, NFPA [National Fire Protection Association] 13), should cover the entire building, including exhibition areas and storage rooms. CCI recommends wet pipe sprinklers because they are simpler, more reliable systems that are less costly to install and to maintain over time compared to other options. However, for collection spaces, some institutions prefer systems that reduce the risk of water damage due to accidental discharge (such as pre-action sprinkler systems) or that minimize the amount of water released during fire suppression (such as water mist or gaseous systems). Smoke detectors connected to the fire alarm system must be installed in collection spaces, including storage rooms. The building should be non-combustible or fire resistive. Exhibition areas, storage rooms, collection reading rooms and workspaces should be contained in a compartment that can provide 60 minutes of fire resistance. There should be fire walls, barriers, stops and separations, and any penetrations in fire-rated walls and ceilings should be sealed with fire-rated materials. Furthermore, it is highly recommended to have a separate fire zone for storage rooms as part of the alarm system to enable a timely response. Fire extinguishers are expected in or close to all collection spaces (exhibition areas, storage rooms, reading rooms, support spaces). Other requirements may apply, but these are generally part of the *Fire Code*. The building should be equipped with a backup power supply to allow the fire alarm system to function in the event of a power outage.

Designation
Assessors will expect to see good overall fire prevention measures in place. They will insist that smoke detectors connected to the fire alarm system be provided and that storage rooms where certified cultural property is kept, and exhibition areas where this property is displayed, be contained in a compartment that can provide at least 60 minutes of fire resistance. Although fires are more likely to start outside collection spaces, CCI will always recommend that an automatic fire suppression system be installed throughout the building, including in collection spaces. Fire, which consistently ranks among the highest risks to collections in buildings lacking fire suppression, can potentially lead to the total loss of a collection and building.

Indemnification
For qualification under the program, assessors will expect to see good overall fire prevention measures in place. They will insist that smoke detectors connected to the fire alarm system be provided in exhibition areas and storage rooms, along with automatic fire suppression in storage rooms. They will also expect that exhibition areas where indemnified objects are displayed, and storage rooms where these objects might be temporarily stored, be contained in a compartment that can provide at least 60 minutes of fire resistance. Although fires are more likely to start outside collection spaces, CCI will always recommend that an automatic fire suppression system be installed throughout the building, including in collection spaces. Fire, which requires ongoing vigilance even in well-protected buildings, can lead to the total loss of a collection and building. When applying for indemnification of a specific exhibition, note that certain lenders may have specific fire protection requirements (such as using a specific type of automatic fire suppression or fire extinguisher) that will need to be negotiated by the borrower.

9. Additional reminders

- Ensure that flat roofs over collection spaces are well designed (that is, slightly sloped with a membrane and proper drainage) to minimize the risk of leaks.

- Avoid locating washrooms, kitchens, air handlers or mechanical rooms above collection spaces (storage rooms, exhibition areas) and ensure that no water pipes (except for fire suppression) run through or above collection spaces.

- Favour rectangular storage floor plans (without rounded or polygonal walls) because they make it easier to optimize the use of space when designing the storage furniture layout.

- Design the paths by which food and food waste are transported throughout the facility so as to avoid areas where collection objects may be present.

- Ensure that all doors that lead into conditioned spaces are tightly sealed. This point is often overlooked and makes good climate control difficult (if not impossible). Glass doors present challenges when it comes to creating tight seals; this should be kept in mind at the design phase.

- Keep a close eye on the clear height of collection rooms throughout the various phases of the project, , as space will be required below the ceiling for building system components (for example, ductwork), for certain structural elements (such as beams) or to meet certain requirements of the *National Building Code* of Canada, or other codes, (for example, clearance below fire sprinkler heads). These may impact the usable room height.

- Locate mechanical rooms and panels outside of restricted collection spaces.

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Appendix A: Coatings

This appendix is adapted from Tétreault 2011.

Table 5: suitability of different wet coatings for enclosures and rooms

Type of wet coating	Enclosures[1]	Rooms (includes walls, floors, exterior of cases)[2]	Comments
Common emulsion (latex or waterborne) coating or recycled emulsion coating; (excludes alkyd emulsions)	• Suitable	• Suitable • For floors, use a harder resin such as acrylic-urethane resin	• Medium-to-good vapour barrier. • Acetic acid emissions level off after four weeks during the drying process. • The resin and a good part of the solvents are from petroleum resources (as are many synthetic coating resins). • Brushes and rollers, while still wet, are cleaned easily with water. • No petroleum-based solvent is required for cleaning.
Zero- or low-VOC emulsion	• Suitable	• Suitable	• Darker colours have increased VOC content. • A very dark paint film will remain sticky for a long time. • Emission of acetic acid and ammonia during the drying process.
Two-part epoxy or two-part urethane (including low-VOC formulation)	• Suitable, provided the mixing is done carefully	• Suitable	• More expensive, less common to find on the market and less environmentally friendly than emulsion coatings. • Well adapted for public or industrial floors.

Type of wet coating	Enclosures[1]	Rooms (includes walls, floors, exterior of cases)[2]	Comments
			• The film is formed by catalyzed polymerization and solvent evaporation. • These coatings should be safe to use after the recommended drying time. • A solvent is needed to clean brushes and rollers.
Shellac or any film formed by solvent evaporation	• Suitable in enclosures • Avoid direct contact with objects in a humid environment (surface becomes sticky)	• Safe for most types of collections • See comments for its limitations	• Tends to be a poor vapour barrier unless varnish is built up in many layers. • The dry film becomes sticky in moist environments and can get stained easily by moist fingers. • Denatured alcohol is the main VOC.
Casein and soy protein (non-alkyd based)	• Suitable for most objects • Use with caution for sulfur-sensitive objects	• Suitable	• Be sure there is no drying oil in the formula. • The long-term risk to objects from contact with casein is unknown. • Brushes and rollers, while still wet, should clean easily with water.
Cellulose-based	• Insufficient data: probably suitable	• Suitable	• Be sure there is no drying oil or alkyd resins in the formula. • Casein or soy protein may be present.
Mineral (potassium silicate and whitewash)	• Suitable	• Suitable	• Appropriate for concrete, stucco, brick, plaster or any adobe-type of surfaces.

Type of wet coating	Enclosures[1]	Rooms (includes walls, floors, exterior of cases)[2]	Comments
			• Brushes and rollers, while still wet, should clean easily with water.
Natural drying oil, (unbaked) alkyd solvent-based, alkyd emulsion, oil modified urethane, epoxy ester (1-part), melamine, recycled alkyd, soy-based alkyd as well as soy protein and casein paints having drying oil in them	• Not recommended	• Not recommended for large surfaces • Acceptable for small surfaces when applied in a ventilated room	• Known to release peroxides for the first few days and carboxylic acids for many weeks or months. • A solvent is needed to clean brushes and rollers.
Moisture-cured urethane, marine coating	• Insufficient data: caution required	• Caution is recommended for large surfaces • Acceptable for small surfaces when applied in a ventilated room	• Cures in the presence of humidity in the air. • Needs at least 35% RH; otherwise, the film does not cure fully and remains sticky. • VOCs have a very unpleasant smell.

Notes

1) Default drying time is four weeks. The four-week drying period also helps to minimize the risk of an object sticking to the painted surface. Use of an interleaf such as a sheet of Melinex or Mylar is recommended to avoid potential damage due to direct contact.
2) Default drying time is four days. Excludes contact of coating with objects.

Table 6: suitability of alternatives to wet coatings for enclosures and rooms

Type of coating	Enclosures	Rooms (includes walls, floors, exterior of cases)	Comments
Powder coating (all resins)	• Suitable • Can be used immediately (no airing out required)	• Suitable • Can be used immediately (no airing out required)	• Usually used on metal structures. • Some can be applied on medium-density fibreboard. • No solvent involved in the film forming process.

Type of coating	Enclosures	Rooms (includes walls, floors, exterior of cases)	Comments
			• Emissions from the coating after baking is assumed to be safe for collections (an odour can be detected).
Baked (alkyd) enamel coating	• Suitable if properly baked • Preferable to ventilate the area or enclosure for a few weeks before using	• Suitable • Can be used immediately (no airing out required)	• For metal structures. • If the coating is underbaked, it may release some harmful vapours, just as unbaked alkyd does.
Radiation-cured coating	• Suitable • Can be used immediately (no airing out required)	• Suitable • Can be used immediately (no airing out required)	• Mainly for varnished wood panels or boards. • After curing, the amount of VOCs emitted is expected to be negligible.
Laminate of phenol or melamine formaldehyde for wood panels	• Suitable as long as no unsealed surfaces of wood are exposed inside the enclosure (for example, end grain) • Can be used immediately	• Suitable • Can be used immediately (no airing out required, except if airing out emissions from the glue is needed)	• Very good vapour barrier properties. • The amount of pollutants emitted by the laminate itself is negligible. • Contact cement (made of neoprene or synthetic rubber) is the most recommended adhesive. • It could contain sulfur compounds, but according to the literature, this is unlikely. • Poly(vinyl acetate) (PVAC or “white glue”) may also be used to glue the laminate, although acetic acid will be emitted from the edges.

Type of coating	Enclosures	Rooms (includes walls, floors, exterior of cases)	Comments
Laminated aluminum foil, heat-sealed onto wood surfaces	• Suitable as long as no unsealed surfaces of wood are exposed inside the enclosure • Can be used immediately	• Suitable • Can be used immediately (no airing out required)	• Excellent vapour barrier as long as the aluminum foil is not damaged. • In North America, Marvelseal 360 is commonly used. • Examples of application are found in the literature. • The use of metal foils may not be an environmentally friendly option compared to paint.

Appendix B: Examples of floor loading capacities

This appendix is adapted from Maximea 2012.

- Uncompacted racking, shelving or cabinets: minimum of 7.2 kN/m^2 (150 psf)
- Picture or paint racking: 7.2 kN/m^2 (150 psf)
- Books and archives stacks, uncompacted: 13.2 kN/m^2 (200 psf)
- High-density mobile storage: up to 21.5 kN/m^2 (250 psf)
- Temporary and crate storage: up to 13.2 kN/m^2 (200 psf)
- Large and heavy objects: 21.5 kN/m^2 (250 psf)

Appendix C: Design features checklist for new heritage collection facilities

This checklist includes all the preventive conservation features that are highly recommended by CCI, as well as those that are specifically required by the Designation and Indemnification programs.

●	Features that are highly recommended by CCI.
♦	Features that are required by the Designation of Institutions and Public Authorities Program (Designation) or the Canada Travelling Exhibitions Indemnification Program (Indemnification).
▲	If these features are not present, assessors for the Designation or Indemnification programs are likely to require further clarification. Please contact CCI to discuss your specific case.
(blank)	Features not directly assessed by facility evaluation forms or specific to the Designation or Indemnification programs; assessors may require further clarification.

Date modified: March 19, 2025. This version supersedes any previously published or circulated versions. To ensure you are consulting the latest version, please visit the CCI website.

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
1. Building						
Architectural						
A1.01	The building is not located in a flood-prone area.	●	▲	▲	☐	
A1.02	The building is located in a flood-prone area, but all rooms that could contain collections are situated above the anticipated flood level.	●	▲	▲	☐	
A1.03	The building is not located in an industrial area or near other activities exposing the collection to fire, theft, water, pollutants, pests or vibrations and shocks.	●	▲	▲	☐	
A1.04	The site is graded to provide drainage away from the building.	●	▲	▲	☐	
A1.05	The institution does not share its building with occupants that are unprotected against fire.	●	▲	▲	☐	
A1.06	There are clear sightlines to all entrances.	●	▲	▲	☐	
A1.07	Non-emergency exterior doors have deadbolt locks.	●	▲	▲	☐	
A1.08	Hinges for exterior doors are designed so that pins cannot be removed.	●	▲	♦	☐	
A1.09	Exterior doors have high performance, pest-proof seals.	●			☐	
A1.10	The building is fire resistive or non-combustible.	●	▲	♦	☐	
A1.11	Clearance is sufficient to manoeuvre objects safely throughout the building (ceiling heights, door widths, elevator size, turning radius).	●			☐	
A1.12	The roof is not easily accessible from the exterior.	●	▲	▲	☐	
A1.13	Ducts or vents are larger than 25 cm × 25 cm (10 in. × 10 in.), are protected by an alarm system and have security screens or bars.	●	♦	♦	☐	
A1.14	The building has fire walls, barriers, stops and separations.	●	♦	♦	☐	
A1.15	Penetrations in fire-rated walls and ceilings are sealed with fire-rated materials.	●	♦	♦	☐	
A1.16	Combustible and flammable liquids are properly stored (for example, in an approved cabinet).	●	▲	▲	☐	
A1.17	The freight elevator is restricted to staff (that is, it cannot be used by the public or caterers).	●	▲	▲	☐	
A1.18	Emergency staircases in multi-level buildings are enclosed.	●	♦	♦	☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
Electrical						
E1.01	Main entrances are lit from the outside.	●	▲	▲	☐	
E1.02	Exterior lighting systems are vandal-proof.	●	▲	▲	☐	
E1.03	The intrusion alarm system is monitored 24/7.	●	♦	♦	☐	
E1.04	Ground-floor windows are protected from intrusion (for example, glass break detection, functioning locks and security bars).	●	▲	♦	☐	
E1.05	Skylights are equipped with an alarm system or security bars.	●	▲	▲	☐	
E1.06	There is CCTV camera coverage of the building's main entrances and exits.	●	▲	♦	☐	
E1.07	There is CCTV camera coverage of areas where collections are present.	●	▲	▲	☐	
E1.08	There are door contact sensors on all exterior doors.	●	♦	♦	☐	
E1.09	There is an uninterrupted power supply for the security alarm system.	●	♦	♦	☐	
E1.10	A fire alarm system (including smoke or heat detectors) is installed throughout the building. The system must be listed with Underwriters Laboratories of Canada and installed in accordance with approved standards.	●	♦	♦	☐	
E1.11	The fire alarm system has a dedicated phone line that is supervised to detect breaks, grounds and other faults.	●	▲	▲	☐	
E1.12	The fire alarm system is monitored 24/7.	●	♦	♦	☐	
E1.13	The fire alarm system operates on standby power during a power failure.	●	♦	♦	☐	
E1.14	There is a fire zone annunciator panel.	●	♦	♦	☐	
E1.15	Any fire doors kept open are equipped with automatic closing devices.	●	♦	♦	☐	
Mechanical						
M1.01	An automatic fire suppression system is installed throughout the building.	●	▲	▲	☐	
M1.02	The automatic fire suppression system is designed and installed in accordance with applicable standards (for example, NFPA 13).	●	♦	♦	☐	
M1.03	In the event of a fire, the air circulation system shuts down automatically.	●	▲	♦	☐	
M1.04	The HVAC system has built-in redundancy.	●			☐	
M1.05	Overall building pressure relative to the outdoors is appropriate to the local climate.	●			☐	
M1.06	Final stage air filtration is a minimum MERV 12.	●	▲	▲	☐	
M1.07	Facilities located in areas with higher pollutant concentrations have corresponding filtration.	●	▲	▲	☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
2a. Collection storage rooms						
Architectural						
A2a.01	Storage rooms are not located in the basement, particularly if the building is in a flood-prone area.	●	▲	▲	☐	
A2a.02	Climate-controlled areas do not have exterior walls. If this is unavoidable, these walls are insulated and have continuous vapour barriers.	●	▲	▲	☐	
A2a.03	There are no windows.	●	▲	▲	☐	
A2a.04	The storage room area has a rectangular floor plan (without rounded or polygonal walls).	●			☐	
A2a.05	Access doors to climate-controlled areas have high-performance seals.	●			☐	
A2a.06	There are two sets of doors (vestibule) to separate areas that are climate controlled from those that are not.	●			☐	
A2a.07	Clearance height is sufficient.	●			☐	
A2a.08	Selected finishes and coatings for storage rooms are safe for objects. The minimum four days of drying time is respected.	●			☐	
A2a.09	There is no carpet.	●	▲	▲	☐	
A2a.10	Exposed concrete surfaces are sealed or painted.	●			☐	
A2a.11	Walls, ceiling, doors and hardware are fire-rated for at least 60 minutes.	●	♦	♦	☐	
A2a.12	Fire extinguishers are nearby.	●	♦	♦	☐	
A2a.13	Any cellulose nitrate film has proper storage.	●	♦	▲	☐	
A2a.14	A minimum of 10% of the space is available for collection growth.	●	▲	▲	☐	
A2a.15	Storage rooms do not have overhead flat roofs.	●			☐	
A2a.16	Storage rooms do not have overhead pipes, washrooms, kitchens, air handlers and mechanical rooms.	●	▲	▲	☐	
A2a.17	Storage rooms are separated from areas that could contain food or food waste (preparation areas, catering stations, kitchens, garbage rooms).	●	♦	♦	☐	
A2a.18	Collection objects are stored 10 cm to 15 cm above floor level.	●	▲	▲	☐	
A2a.19	Solid doors, preferably steel doors, with non-removable hinge pins and deadbolt lock are keyed separately.	●	▲	▲	☐	
Electrical						
E2a.01	Lights can be switched off when the space is unoccupied.	●	▲	▲	☐	
E2a.02	Light sources emit no or very little UV (no more than 10 µW/lm), which is ensured by using no- or low-UV sources (for example, LEDs or low-UV fluorescent tubes) or anti-UV filters that exclude up to 400 nm.	●	▲	▲	☐	
E2a.03	Devices that can detect movement (for security purposes) are installed.	●	♦	♦	☐	
E2a.04	CCTV cameras capture who enters and exits the space.	●		▲	☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
E2a.05	There are door contact sensors.	●	♦	♦	☐	
E2a.06	Storage rooms are equipped with an alarm system that can be activated during public hours.	●			☐	
E2a.07	There is an electronic card access system (or equivalent).	●			☐	
E2a.08	Ground-level water detectors are connected to the alarm system for storage rooms that are below grade or exposed to water pipes.	●	▲	▲	☐	
E2a.09	Ground-level water detectors are connected to the alarm system for storage rooms that are at grade level in the case of slab-on-grade construction.	●			☐	
E2a.10	There is a separate fire zone on the annunciator panel for storage rooms.	●			☐	
E2a.11	There are smoke detectors connected to the fire alarm system.	●	♦	♦	☐	
Mechanical						
M2a.01	Climate conditions (temperature and RH) eliminate all major risks to the collection.	●	♦	♦	☐	
M2a.02	The institution maintains at least ASHRAE B for cultural property classes 1, 2, 3, 4, 5, 6 and 8.		♦	n/a	☐	
M2a.03	The institution maintains at least ASHRAE B or uses cool, cold or frozen storage for cultural property Class 7 (archival material).		♦	n/a	☐	
M2a.04	Cultural property Class 9 objects (audiovisual collections) can be placed in cool, cold or frozen storage.		♦	n/a	☐	
M2a.05	At the very least, the institution meets lenders' climate control requirements.	●			☐	
M2a.06	The institution maintains at least ASHRAE A1 or A2.			♦	☐	
M2a.07	Final stage air filtration is a minimum MERV 12.	●	▲	▲	☐	
M2a.08	Facilities located in areas with higher pollutant concentrations have corresponding filtration.	●	▲	▲	☐	
M2a.09	Ductwork is minimized inside storage rooms.	●			☐	
M2a.10	RH and temperature sensors are located in all spaces and not only in the return air ducts.	●	▲	▲	☐	
M2a.11	RH and temperature sensors are not located near open doors, in front of vents, on exterior walls or in full sun.	●			☐	
M2a.12	Climate readings can be taken at frequent (for example, 20-minute) intervals, and data can be downloaded and archived for later interpretation.	●	♦	♦	☐	
M2a.13	Floor drains and a sump pump are installed in storage rooms that are below grade or that are exposed to water pipes. The system is also equipped with backflow preventors.	●	♦	▲	☐	
M2a.14	Floor drains are installed in storage rooms located at grade level for slab-on-grade construction. The system is also equipped with backflow preventers.	●			☐	
M2a.15	There is automatic fire suppression.	●	▲	▲	☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
Structural						
S2a.01	Floors can withstand the weight of collection and storage furniture.	●			☐	
S2a.02	The building is equipped with adequate mechanisms and structural features to guarantee the safety of stored objects.	●			☐	
S2a.03	Collections are protected against seismic shock in high-risk seismic zones.	●	♦	♦	☐	

2b. Collection support spaces

(workshops, collections preparation, quarantine rooms, etc.)

Architectural						
A2b.01	Climate-controlled areas do not have exterior walls. If this is unavoidable, these walls are insulated and have continuous vapour barriers.	●			☐	
A2b.02	Access doors to climate-controlled areas have high-performance seals.	●			☐	
A2b.03	There are two sets of doors (vestibule) to separate areas that are climate controlled from those that are not.	●			☐	
A2b.04	Clearance height is sufficient.	●			☐	
A2b.05	Selected finishes and coatings for rooms are safe for objects. The minimum four days of drying time is respected.	●			☐	
A2b.06	There is no carpet.	●			☐	
A2b.07	Exposed concrete surfaces are sealed or painted.	●			☐	
A2b.08	Fire extinguishers are located nearby.	●	♦		☐	
A2b.09	Collection support spaces do not have overhead pipes, washrooms, kitchens, air handlers and mechanical rooms.	●			☐	
A2b.10	Workshops where dust is produced are well sealed and equipped with local extraction or filtration.	●			☐	
A2b.11	All spaces where collection objects could be present are separated from areas that could contain food or food waste (preparation areas, catering stations, kitchens, garbage rooms).	●	♦	♦	☐	
Electrical						
E2b.01	Lights can be switched off when the space is unoccupied.	●			☐	
E2b.02	Light sources emit no or very little UV (no more than 10 µW/lm), which is ensured by using no- or low-UV sources (for example, LEDs or low-UV fluorescent tubes) or anti-UV filters that exclude up to 400 nm.	●			☐	
E2b.04	Devices that can detect movement (for security purposes) are installed.	●			☐	
E2b.05	CCTV cameras are installed.	●			☐	
E2b.06	There are contact sensors on doors and operable windows.	●			☐	
E2b.07	Rooms that are below grade or that are exposed to water pipes are equipped with ground-level water detectors that are connected to the alarm system.	●			☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
E2b.08	The facility has smoke detectors connected to the fire alarm system.	●			☐	
Mechanical						
M2b.01	Final stage air filtration is a minimum MERV 12.	●			☐	
M2b.02	Facilities located in areas with higher pollutant concentrations have corresponding filtration.	●			☐	
M2b.03	If dealing with large quantities of mouldy materials, there are special features to contain the spread of spores throughout the facility (special filtration, negative pressure, vestibules).	●			☐	
M2b.04	Workshops operate with negative pressure.	●			☐	
M2b.05	Conservation laboratories, collection preparation rooms, quarantine rooms or other spaces where staff work with the collection are climate controlled to the same level as storage rooms and exhibition areas.	●	▲		☐	
M2b.06	Spaces such as hallways that connect spaces where collection objects could be present are climate controlled to the same level as storage rooms and exhibition areas.	●	▲		☐	
M2b.07	RH and temperature sensors are located in all spaces and not only in the return air ducts.	●			☐	
M2b.08	RH and temperature sensors are not located near windows, open doors, in front of vents, on exterior walls or in full sun.	●			☐	
M2b.09	Climate readings can be taken at frequent (for example, 20-minute) intervals, and data can be downloaded and archived for later interpretation.	●			☐	
M2b.10	Floor drains and a sump pump are installed in spaces where collection objects could be present and that are below grade or are exposed to water pipes. The system is also equipped with backflow preventors.	●			☐	
Structural						
S2b.01	Floors can withstand the weight of objects.	●			☐	
S2b.02	Collections are protected against seismic shock in high-risk seismic zones.	●			☐	

3. Exhibition areas

Architectural						
A3.01	Exhibition areas are not located below the anticipated flood level if the building is located in a flood-prone area.	●		▲	☐	
A3.02	Climate-controlled areas do not have exterior walls. If this is unavoidable, these walls are insulated and have continuous vapour barriers.	●	▲	▲	☐	
A3.03	There are no glass walls, large windows or skylights.	●	▲	▲	☐	
A3.04	Individual exhibition areas or groups of exhibition areas are separated from other spaces by means of doors.	●	♦	♦	☐	
A3.05	Access doors to climate-controlled areas have high-performance seals.	●			☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
A3.06	There are two sets of doors (vestibule) to separate areas that are climate controlled from those that are not.	●			☐	
A3.07	Clearance height is sufficient.	●			☐	
A3.08	Rooms: selected finishes and coatings are safe for objects. The minimum four days of drying time is respected.	●		♦	☐	
A3.09	Display cases: selected finishes and coatings are safe for objects. The minimum drying time of four weeks is respected.	●		♦	☐	
A3.10	There is no carpet.	●	▲	▲	☐	
A3.11	Exposed concrete surfaces are sealed or painted.	●			☐	
A3.12	Individual exhibition areas or groups of exhibition areas are contained in a compartment that can provide at least 60 minutes of fire resistance.	●	▲	▲	☐	
A3.13	Fire extinguishers are located nearby.	●	♦	♦	☐	
A3.14	Exhibition areas are separated from areas that could contain food or food waste (preparation areas, catering stations, kitchens, garbage rooms).	●	♦	♦	☐	
A3.15	Exhibition areas do not have overhead pipes, washrooms, kitchens, air handlers and mechanical rooms.	●			☐	
A3.16	There is no direct egress from exhibition areas to the outdoors.	●	▲	▲	☐	
Electrical						
E3.01	Light levels as low as 50 lux can be achieved (some lenders require even lower levels for highly light-sensitive objects).	●			☐	
E3.02	Light sources emit no or very little UV (no more than 10 µW/lm), which is ensured by using no- or low-UV sources (for example, LEDs or low-UV fluorescent tubes) or anti-UV filters that exclude up to 400 nm.	●			☐	
E3.03	Light sources have a CRI above 90 and an R9 of at least 50 for a good quality light and at least 90 for an excellent quality light.	●			☐	
E3.04	Devices that can detect movement (for security purposes) are installed.	●	♦	♦	☐	
E3.05	CCTV cameras are installed.	●	▲	♦	☐	
E3.06	There are door contact sensors.	●	▲	▲	☐	
E3.07	There is an electronic card access system (or equivalent).	●			☐	
E3.08	Emergency exits are protected by an alarm system 24/7, and where direct egress from exhibition areas to the outdoors is unavoidable, delayed egress is provided where permissible under the *National Building Code* of Canada or other codes.	●		♦	☐	
E3.09	Smoke detectors are connected to the fire alarm system.	●	♦	♦	☐	
Mechanical						
M3.01	Climate conditions eliminate all major risks to most of the collection.	●	♦	♦	☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
M3.02	The institution maintains at least ASHRAE B for cultural property classes 1, 2, 3, 4, 5, 6, 7 and 8.		♦	n/a	☐	
M3.03	At the very least, the institution meets lenders' climate control requirements.			♦	☐	
M3.04	Final stage air filtration is a minimum MERV 12.	●	▲	▲	☐	
M3.05	Facilities located in areas with higher pollutant concentrations have corresponding filtration.	●	▲	▲	☐	
M3.06	HR and temperature sensors are located in all spaces, not only in the return air ducts.	●			☐	
M3.07	HR and temperature sensors are not located near windows, open doors, in front of vents, on exterior walls or in full sun.	●			☐	
M3.08	Climate readings can be taken at frequent (for example, 20-minute) intervals, and data can be downloaded and archived for later interpretation.	●	♦	♦	☐	
M3.09	Each space has independent controls, which can be adjusted based on occupancy loads or lender requirements.	●			☐	
M3.10	There is automatic fire suppression.	●	▲	▲	☐	
Structural						
S3.01	Floors can withstand the weight of objects on display.	●			☐	
S3.02	Adequate structural features permit the safe installation of objects on display.	●			☐	
S3.03	Collections are protected against seismic shock in high-risk seismic zones.	●	♦	♦	☐	

4. Collection reading rooms

Architectural						
A4.01	Climate-controlled areas do not have exterior walls. If this is unavoidable, these walls are insulated and have continuous vapour barriers.	●	▲	n/a	☐	
A4.02	There are no glass walls, large windows or skylights.	●	▲	n/a	☐	
A4.03	Access doors to climate-controlled areas have high-performance seals.	●		n/a	☐	
A4.04	There are two sets of doors (vestibule) to separate areas that are climate controlled from those that are not.	●		n/a	☐	
A4.05	Rooms: selected finishes and coatings are safe for objects. The minimum four days of drying time is respected.	●		n/a	☐	
A4.06	There is no carpet.	●	▲	n/a	☐	
A4.07	Exposed concrete surfaces are sealed or painted.	●		n/a	☐	
A4.08	Reading rooms are contained in a compartment that can provide at least 60 minutes of fire resistance.	●	♦	n/a	☐	
A4.09	Fire extinguishers are located nearby.	●	♦	n/a	☐	
A4.10	Reading room areas are separated from areas that could contain food or food waste (preparation areas, catering stations, kitchens, garbage rooms).	●	♦	n/a	☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
A4.11	Reading room areas do not have overhead pipes, washrooms, kitchens, air handlers and mechanical rooms.	●		n/a	☐	
A4.12	There is no direct egress from collection reading rooms to the outdoors.	●	▲	n/a	☐	
Electrical						
E4.01	Light sources emit no or very little UV (no more than 10 µW/lm), which is ensured by using no- or low-UV sources (for example, LEDs or low-UV fluorescent tubes) or anti-UV filters that exclude up to 400 nm.	●		n/a	☐	
E4.02	Devices that can detect movement (for security purposes) are installed.	●	♦	n/a	☐	
E4.03	CCTV cameras are installed.	●	▲	n/a	☐	
E4.04	There are door contact sensors.	●	▲	n/a	☐	
E4.05	There is an electronic card access system (or equivalent).	●		n/a	☐	
E4.06	Emergency exits are protected by an alarm system 24/7, and where direct egress from exhibition areas to the outdoors is unavoidable, delayed egress is provided where permissible under the *National Building Code* of Canada or other codes.	●		n/a	☐	
E4.07	Smoke detectors are connected to the fire alarm system.	●	♦	n/a	☐	
Mechanical						
M4.01	Climate conditions eliminate all major risks to most of the collection.	●	♦	n/a	☐	
M4.02	The institution maintains at least ASHRAE B for cultural property Class 7.		▲	n/a	☐	
M4.03	Final stage air filtration is a minimum MERV 12.	●	▲	n/a	☐	
M4.04	Facilities located in areas with higher pollutant concentrations have corresponding filtration.	●	▲	n/a	☐	
M4.05	Temperature and RH sensors are located in all spaces, not only in the return air ducts.	●		n/a	☐	
M4.06	Temperature and RH sensors are not located near windows, open doors, in front of vents, on exterior walls or in full sun.	●		n/a	☐	
M4.07	Climate readings can be taken at frequent (for example, 20-minute) intervals, and data can be downloaded and archived for later interpretation.	●	▲	n/a	☐	
M4.08	Each space has independent controls, which can be adjusted based on occupancy loads or lender requirements.	●		n/a	☐	
M4.09	There is automatic fire suppression.	●	▲	n/a	☐	
Structural						
S4.01	Collections are protected against seismic shock in high-risk seismic zones.	●	♦	n/a	☐	

No.	Features	Recommended by CCI	Required		Design feature is included	Comments
			Category A Designation	Indemnification		
5. Loading dock						
Architectural						
A5.01	The loading dock is designed for access by the largest trucks used by the institution.	●	▲	▲	☐	
A5.02	The loading dock is fully enclosed and can fit the largest trucks used by the institution.	●	▲	▲	☐	
A5.03	The dock is sheltered if the loading dock is not fully enclosed.	●	▲	▲	☐	
A5.04	There is a dock leveller or scissor lift.	●	▲	▲	☐	
A5.05	Exterior doors have high-performance, pest-proof seals.	●			☐	
A5.06	There are no garbage bins or dumpsters inside the loading dock.	●	▲	▲	☐	
Electrical						
E5.01	Devices that can detect movement (for security purposes) are installed in receiving areas.	●	♦	♦	☐	
E5.02	CCTV cameras are installed.	●	▲	♦	☐	
E5.03	There are door contact sensors on exterior and garage doors.		▲	▲	☐	
E5.04	Smoke or heat detectors are connected to the fire alarm system.	●	♦	♦	☐	
Mechanical						
M5.01	The interior space is heated in winter.	●			☐	

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