Section 1
Building Site

1.1 - RATIONALE

Careful site selection and development are critical to avoid hazards that threaten archival facilities. In addition to the customary criteria of location, cost, and availability, other factors that impact the safety and preservation of collections include flood risks, proximity to hazardous materials, soil contamination, and air quality.

1.2 - SITE SELECTION

Site selection is a crucial decision that must balance the initial cost of the property with the overall cost of implementing the project and the cost of operating the facility and must also recognize the impact to the community and environment. While control of the initial development cost is always important, all factors of the project's life cycle must be considered to make the most responsible decision.

1.2.1 - Location - Avoidance of Hazards

The site for an archival facility should avoid the following risks and locations:

- Subsidence and flooding from natural or anthropogenic causes.
    - Example: caused by a natural source such as an underground river or land erosion.
    - Example: caused from a manufactured source such as water mains.
- Natural disasters such as earthquakes, tsunamis, landslides, or wildfires.
- Fire and explosions.
    - Example: within the flight path of an airport or near facilities that handle hazardous materials or cargo.
- Terrorism.
    - Example: near a strategic installation or symbolic site which could be a target in an armed conflict.
- Hazardous materials.
    - Example: location near an industrial or agricultural facility, or other installation emitting harmful chemicals or improper disposal of waste.
- Ground pollution.
    - Contaminated soil, including landfill sites.
- Air pollution.
    - Example: significant gases, smoke and other airborne particles from industrial facilities or densely populated urban centers with high traffic-related air pollution.
- Sources of electromagnetic radiation.
    - Example: high-voltage electrical power transmission lines
- Vibrations.
- Areas or buildings that attract rodents or insects.

1.2.2 - Location - Emergency Access

Assess the following criteria in selecting the facility's location:

- Is the site within the coverage area of emergency services having staff levels and response times that meet the minimum requirements of NFPA 1720
- Does the site allow for quick response to disasters that includes swift evacuation of staff, visitors, and collections?
- Is the site large enough to allow for easy access to the entire building perimeter?

    - In cases where the archival facility is within a larger building or cannot stand alone on the site, the facility should be protected from dangers posed by any neighboring spaces and buildings.
- Ingress and egress from the site.
    - Is the site accessible by main roads and from public transportation routes for emergency services, staff, and visitors?
    - Is the site accessible to related departments and other cultural and educational institutions?

1.2.3 - Size

The specific amount of land area required for an archival facility varies based upon a number of factors. Size the site to be large enough to accommodate:

- The building footprint, including future expansion.
    - The site or, in the case of a conversion, the building, should be large enough to accommodate current and projected storage requirements for 15 to 20 years from the date of occupancy.
    - Reserve additional space on the site or within the building for subsequent expansion.
- Site access and service roads.
    - Design roads, fire lanes and parking areas to permit unrestricted access for emergency vehicles.
- Required stormwater management areas.
- Sufficient parking to support program needs.
- Sufficient tour bus or mass transit loading areas.
- Turning radii and maneuvering space for large delivery and trash vehicles.
    - Recommended: provisions for a 53-foot delivery truck.
- Circulation for trash pickup from designated dumpster areas.
- Separation between drop off areas, parking, loading, and the building if recommended as part of a comprehensive security plan.

1.2.4 - Floodplain

The entire site should be a minimum of 5 feet [1.5 meters] above and 100 feet [30.5 meters] away from any 100-year flood plain area.

If any portion of the site is within the zone described above, the archival facility should be protected by an appropriate flood wall that conforms to local or regional building codes.

Ancillary structures on the site supporting the operation of the archival facility should adhere to the same floodplain guidelines. Examples include:

- Cooling/heating plant.

- Parking garage.
- Storage facility.
- Emergency generator, support building or similar structures.

Surface Parking:

- Up to 50% of the surface parking area may be located within these proximity restrictions, including the floodplain itself, if there are no suitable site alternatives and if the impact of construction in a floodplain or wetland is fully evaluated.

Access Roads to the facility:

- Should not be located on a floodplain.
- Should allow for complete access (360 degrees) to the building perimeter.
- See Section 1.4.7 for Emergency Vehicle Access.

1.2.5 - Sites with Existing Facilities

In some cases, sites being considered will already be developed and contain existing buildings or other structures. These sites present other factors for consideration:

- Added cost and time associated with demolishing one or more structures.
- Developing procedures for the removal or management of hazardous materials during demolition.

1.2.6 - Adaptive Reuse

Adaptive reuse of an existing building should include evaluations to ensure:

- The building meets size and program requirements.
- It can be modified to meet the standards for an archival facility.

Studies can include:

- Detailed facility condition assessment.
- Feasibility study.
- Test fit drawings/layouts for operations and collections.

When evaluating the reuse of an existing building consider:

- Site condition.
- Flood plain borders - water and flood threats.
- Building services.
- Roof age and structure.
- Existing building materials.
- Floor load and stiffness (especially if using mobile shelving).
- Ceiling heights.

- Spaces for mechanical and fire protection equipment.
- Future expansion capabilities.

1.3 - SITE EVALUATION

Sites and potential sites require thorough evaluation to identify pertinent development issues. This is necessary for sites that have already been selected to adequately inform the site design process. It is equally necessary for potential sites under consideration to gather the information needed to effectively compare the sites and to facilitate the selection process.

1.3.1 - Site Evaluation and Comparison

Site evaluation for archival facility sites must include a review of the land's location, size, security, and access. In addition, consider the local environment and potential impacts to wetlands and other natural resources. When requirements for avoiding hazards to archival facilities cannot be met, a risk assessment and targeted mitigation provisions can help protect the facility against such hazards.

1.3.2 - Survey

Perform a complete site survey that meets the requirements adopted by US and Canadian survey requirements. A site survey includes:

- Boundary/property lines.
- Location of existing improvements (i.e. pavement, buildings, and other structures).
- Identification of all easements and encumbrances.
- Utilities.
- Trees.
- Topography.
- Legal title search.

1.3.3 - Adjacent Land

Consider the adequacy of adjacent land that may be needed for a future expansion of the facility.

1.3.4 - Geotechnical Investigation

Complete a geotechnical investigation for any site selected for an archival facility that addresses:

- Depth to bedrock and groundwater.
- Soil strata.
- Percolations rates.
- Infiltration rates.
- Pavement and drainage recommendations.

- Geothermal conductivity (for projects contemplating geothermal cooling systems).

1.3.5 - Security Risk Assessment

Conduct an external security risk assessment to determine if there are site-related circumstances that might jeopardize the security of the building, such as:

- A multi-lane highway.
- A railroad line (active or dormant).
- Stream or lake.
- Upstream dam.
- Close proximity of buildings.
- Other possible threats.
- See Section 5 for external security guidelines.

1.3.6 - Archeological Assessment

Governmental regulations may require an archeological assessment.

- In most cases, when a site is not likely to contain significant archeological resources, or when there is little likelihood that such resources will be encountered during planned construction activity, only the first phase of assessment to determine archaeological sensitivity is required.
- If the archaeological sensitivity is determined to be moderate or high, additional and more intensive phases of investigation will be required.
- If there is a choice between sites having a greater or lesser likelihood of containing archeological artifacts, preference should be given to sites with the least likelihood of encountering archeological resources.

1.4 - SITE DESIGN

1.4.1 - Zoning

State, provincial, municipal, and local regulations must be followed for all zoning requirements. Consult the local Authority having Jurisdiction (AHJ) to confirm zoning requirements. A process for public review of the project should be developed if such a process has not already been established by the AHJ. Zoning requirements include:

- Setbacks.
- Height.
- Lot coverage.
- Traffic requirements.
- Open space.
- Green area.
- Floor area ratios.

Contact the appropriate authorities that will provide services to the facility to determine other potential site development requirements. Pertinent development authorities include:

- Utility companies.
- Police and Fire departments.
- Communication providers.
- Transportation providers.
- Other public works agencies.

1.4.2 - Public Engagement and Community Consultation

It is important to identify community stakeholders early in the planning process.

- Different localities have different approval processes. Some require public outreach and consultation with community stakeholders. Others do not.
- Consultation with interested community organizations during design can help protect a project from controversy or opposition later in the process when redesign will delay the project or may no longer be feasible.
- For jurisdictions without an organized process for public engagement, it is still advisable to seek and obtain their input during the early design phases to understand their concerns and enable designers to adjust plans in response.

1.4.3 - Historic Preservation/Heritage Conservation

The United States and Canada have regulations regarding historic structures and historic districts that are located on land owned or funded by the federal government. States, provinces, territories and local entities often have their own laws regarding historic preservation/heritage conservation.

- Consult the appropriate government office to determine the requirements applicable to a new archival facility project.

1.4.4 - Sustainability and Energy

Increasingly, jurisdictions are encouraging, and in some cases requiring, projects to obtain sustainable resource certifications from programs, including:

- US and Canada: Leadership in Energy and Environmental Design (LEED) Green Building Rating System of the U. S. Green Building Council and the Canada Green Building Council.
- Canada: Building Owners and Managers Association's Building Environmental Standards (BOMA BEST)
- US: Sustainable Sites Initiative (SITES).
- International: Living Building Challenge

Analyze the sustainable design strategies promoted by these rating systems for compatibility with the provisions of these Guidelines.

- Develop an implementation plan that identifies the sustainability measures for the project.
- Prioritize archival design standards if there are sustainability goals that run contrary to these Guidelines.
- Identify alternative approaches that achieve sustainable goals without negatively impacting the archival functions of the facility.

1.4.5 - Security

Conduct a security risk assessment early in the design process.

- See Section 5 for security guidelines.

1.4.6 - Landscaping

Design landscaping for water control, integrated pest management, and low maintenance.

- Omit vegetation within 18 inches [.5 meters] of the exterior wall.
    - Provide for hardscaping around the perimeter of the building to reduce potential for pests and insects into the building and to facilitate visual inspection.
    - Slope the vegetation-free zone away from the foundation.
        - Should consist of a durable paving material.
        - Use of gravel or decorative aggregate should be avoided as these treatments can be difficult to maintain without using chemical herbicides and pesticides.
- Do not obstruct pedestrian lighting with trees and shrubs.
    - Include under story plants no higher than three feet [1 meter] tall at maturity.
    - Include a tree canopy with limbs at least seven feet above the ground at maturity to allow light from fixtures to fall on the pedestrian route.

- Maintain a minimum of 15 feet [4.5 meters] between the building and the drip-line of trees at full maturity.
- Ensure that both canopies and root systems are pruned away from the structure so that they do not overhang the roof, touch the face of the building, or affect the foundation.
- In exceptionally dry and/or windy climates that are prone to wildfires, keep vegetation further away from the facility to mitigate the risk of fire.

1.4.7 - Pools and Fountains

Avoid pools, fountains, and their related equipment.

- Water features are not necessary for the operation of an archival facility and pose risks and liability concerns. If included, additional protection must be taken.
    - Locate water features a minimum of 75 feet [23 meters] from the archival facility and at least 10 feet [3 meters] below the lowest level where archival collections are stored or processed.

1.4.8 - Site Utilities

1.4.8.1 - Underground Mains - General

- New ductile iron underground mains should be cement lined.
- Locate mains at least 5 feet from any building foundation footings.
- Bury mains a minimum of 4 ½ feet below the surface.
- Mains should be at least 6-inches deeper than municipal water distribution pipes.
- Provide appropriately sized concrete thrust blocks at all bends, tees, hydrants, caps, and plugs.

1.4.8.2 - Water Supply

- Supply the water from a dependable public or private water distribution system.
- Verify the adequacy of the existing water supply at the point of connection or provide acceptable alternatives such as water tanks or towers.
- Locate hydrants to provide the required firefighting coverage.
- Verify adequate pressures early in design to determine if any upsizing or booster pump systems will be needed to serve the new facility.
- Confirm metering, backflow prevention, and Post Indicator Valve requirements with the local water authority.

1.4.8.3 - Sanitary Sewer

- Avoid sites without public sewer service.
- Cleanouts must be provided on all sanitary sewer and storm drainage lines at approximately 5 feet [1.5 meters] away from the building and at all line bends where manholes are not used.

- Maintain required horizontal and vertical separations throughout the site.
- Maintain minimum pipe cover and slope requirements.
- Lines longer than 150 feet [45.5 meters] must have manholes.
- Design Sanitary sewerage to flow by gravity.
    - Avoid using sewage ejection systems (unless no other option available).

1.4.8.4 - Storm Drainage System

The storm drainage system conveys storm water collected on site to an acceptable point of discharge. A storm drainage system may consist of an open system of ditches, channels, swales and culverts or of a piped system with inlets and manholes.

- Design for a 25-year storm frequency unless local criteria are more stringent.
- Separate storm drains from sanitary sewers within the property limits, even in cities where separate public systems are not yet available.
- Roof drainage, in most cases, must be collected by the plumbing system and discharged into the storm drains.
- Address local requirements with regards to water quality and quantity regulations in storm water design.
- In jurisdictions where the public storm drainage system is easily or frequently overwhelmed, projects will be required to detain (temporarily delay the release of) or retain (prevent the release of) storm water runoff.
- Conduct an early site analysis to understand local stormwater management regulations and to confirm that the site includes adequate area for implementing the required stormwater management measures.
- Conduct an early analysis of the topography of the site to ensure that the terrain and corresponding placement of the building do not adversely affect the ability to accommodate stormwater management requirements.

1.4.8.5 - Electric Power

- Run the primary power from the network to the building underground in concrete-encased pipe from the property line.
- All conduits for the primary electrical service must have at least 50% spare (empty) capacity to allow the utility company to pull new power feeds in the event a conductor or power feed fails and must be abandoned in place.
- Consider providing a redundant primary feeder.

1.4.8.6 - Telecommunication Systems

- Run the primary telephone line to the building underground in conduit from the property line.

- Coordinate other telecommunication systems, including those for network wireless access and cellular voice coverage, with the local providers and information technology (IT) experts.

1.4.9 - Circulation and Emergency Vehicle Access

Design roads, fire lanes, and parking areas to permit unrestricted access for emergency vehicles.

- Design the entire length of roads, fire lanes, and turn-around for the weight and turning radius of fire trucks.
- Provide sufficient width and clearance for emergency vehicle access.
    - Review access by fire equipment with the local fire department.
    - At a minimum, one of the long sides of every building must be accessible to fire department equipment.
- The public entrance must be readily accessible to emergency vehicles.

1.4.10 - Parking/Public Access

Parking and vehicular access areas include:

- Handicap Accessibility: parking for visitors and staff with disabilities shall be provided according to the current applicable regulatory criteria (ADA-ABA Accessibility Guidelines), or according to the local Authority Having Jurisdiction, whichever is higher.
    - Parking, bus drop offs, and parking spaces for persons with disabilities should be designed to accommodate sustained peak visitation periods.
- Visitor parking.
- Tour and school buses: in addition to planning drop off zones for the loading and unloading of buses, consider providing bus parking.