GUIDELINES ON EXHIBITING ARCHIVAL MATERIALS

Compiled by the ICA Committee on Preservation of Archives in Temperate Climates (CPTE 2002 – 2006):
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CONTENTS

Exhibiting archival materials

Introduction

The principal aim of archives is not only to acquire, professionally process and make available archival documents for public or private purposes, but also to carry out preservation and conservation in order to keep valuable information and heritage for an indefinite period. Other institutions working in heritage also share these objectives and have similar issues in many areas. This document aims to provide some general and some more specific guidelines for those working in exhibitions connected to archives and heritage type institutions and also highlight problems found around transportation, storage, setting up and taking down exhibitions.

The exhibiting of heritage, artefacts, manuscripts, documents, the unique, the rare, and the wonderful, is a crucial part of the educational mission of many cultural institutions. It is also an effective way of attracting attention and support from the public. For heritage institutions, exhibiting their often fragile objects sometimes seems to conflict with their other primary goals, preservation and conservation. Exhibiting can complicate and sometimes compromise preservation goals this becomes especially problematic when it is impossible to avoid exhibiting original items. A complex of measures and precautions are therefore needed to minimize the risk of damage or increasing the rate of deterioration. These measures need to be considered at every step of the process, from the removal of the item from its storage to its eventual return.

Most archival documents and objects held in our heritage institutions, especially those made of organic materials like paper, wood, parchment, leather and similar materials, are in a continuous state of physical and chemical change. They expand and contract, change chemical composition, fade, gather dust or are damaged through either incorrect handling or even disaster. These valuable items are composed of more than one material, each having its own physical and chemical characteristics. Because of the differences in chemical and physical make up of fragile objects, respect and knowledge must not only be given and sought on how best to make items available to public and private bodies but also for preservation for future generations. Often the environment for storage and exhibition is unsuitable for items composed of paper and other sensitive materials. Such items need specific conditions and treatment, during transportation and exhibition.

Many countries have instigated regulations covering the exhibition of heritage objects. These vary from general recommendations to more specific and detailed standards of procedure. The majority of these directives include two aspects that are particularly relevant from a preservation perspective. Firstly, general procedures and administrative requirements, including such concerns as: permission to loan, the loan contract, insurance and transport. Secondly, judging the condition of documents, conservation and preservation, the technical requirements referring to the safety and possible risk to the item. Also the ambient conditions within any exhibition area, the levels and type of illumination generally and also specifically within micro climates such as display cases.

The duration of exposure to viewers within the exhibition context is of course an essential consideration in the life of many items and documents, however such an important factor is not always discussed in regulations. Some do not specify a maximum time at all, while others indicate a quite flexible time limit. The most exact requirements are given in regulations that define maximal exposure in lux* per year for very sensitive items, which generally refers to many archival documents and other paper and paper like objects.

When international and also national exhibitions are being organized, difficulties arise because the curators, archivists and conservators involved, use different regulations. This may complicate negotiations about loans and requests and create tensions between parties. This could be avoided if there were a shared standard to which everyone could refer. Unfortunately, such an official European (or international) standard that defines conditions and procedures does not exist.

The ISO 11799 (1) covers some aspects relating to exhibitions, such as exhibition room climate and security, but the specifications given are generally the same as those for (document) repositories. For exhibitions, however, standards should be stricter as items are put at increased risk while being exhibited. For instance, damage to a document caused by light is cumulative, and apart from a given norm for light intensity, the actual duration of light affecting the exhibited piece should be quantified. This is especially necessary for the most sensitive items such as modern writing inks, acidic groundwood paper, colour photographs, coloured prints and drawings. If these are exhibited repeatedly, the accumulation of light exposure may be damaging.

The British Standard 5454:2000(2) covers many preservation-related requirements for exhibiting documents. After a general introduction on short-term and long-term exhibitions, it leads on to lighting, display cases as well as conditions for the display of seals, lead bullae, bound volumes and photographs. It also includes several recommendations on light exposure, such as the level of incident light for inks, dyes and light-sensitive pigments should not exceed 50 lux. It states that daylight should be excluded and ultraviolet light omitted from electric sources minimised by using filters.

The American National Standard Institute standard ANSI/NISO Z39.79-2001(3) establishes criteria to minimize the effect of environmental factors on deterioration of library and archival materials on exhibition, the user is required to select specific limits for a particular exhibition situation. The Standard is intended as a guide for librarians, archivists, exhibition designers and others involved in preparing library and archival materials for exhibition (www.niso.org).

The most comprehensive document in the field is the 2002 French standard, "Preservation requirements for exhibiting graphic and photographic materials."(4) The administrative part covers general questions such as the suitable application of standards to exhibitions, loan procedures and insurance conditions. A section on document handling before and after the exhibition defines measures to be taken by the owner, packing (materials), transport conditions, and the responsibilities of the borrower. The chapter on exhibition conditions is very comprehensive and specifies conditions of rooms, placement, equipment, showcases and support materials for exhibited documents as well as principles of their installation, mounting and de-mounting.

These and other examples have been the basis for the present document, which has been produced by the ICA Committee for Preservation of Archives in Temperate Climates. By providing a general reference based on experience in different countries, it aims to facilitate informed management of exhibitions in an international and national context and provide help in all stages of exhibition. The Appendices offer detailed instructions and examples for transportation, display and mounting as well as sample forms for loans and condition reports.

In referring to exhibited materials as items, it is understood to mean artefacts in heritage. However when particularly referring to paper it is referred to as such.

1 ISO 11799: Information and Documentation – Document storage requirements for archive and library materials.

2 BS 5454:2000 Recommendations for the storage and exhibition of archival documents.

3ANSI/NISO Z39.79-2001. Environmental Conditions for Exhibiting Library and Archival Materials

4 Norme NF Z 40-010 Prescriptions de conservation des documents graphiques et photographiques dans le cadre d´une exposition. AFNOR Juin 2002.

PART ONE

Chapter I

Selection and Loans

Whether an archive is selecting for its own exhibition or is responding to a request from another institution, the condition of the item needs first to be established. As all items are composed of different materials they must be assessed according to their most vulnerable component.

There are several points that need to be considered. A qualified conservator has to determine the condition and conservation needs, if any, of each item and establish any necessary conservation criteria before display. On leaving any archive or storage, any item has to be considered to be in a stable condition Documentation appropriate to the item needs to be sent before through the ordinary post and copies should be included with the item when it is shipped. Today, with electronic communication any specific needs for exhibition can be known in good time before receiving any object, and due preparation made. The conservation issues that need to be addressed during mounting and display should be discussed between institutions when the exhibition is designed. It should also be decided before the exhibition whether there should be any restrictions on photography and how safe handling can be ensured throughout the entire exhibition process.

Due to the importance and sensitive condition of items chosen for exhibition, a written agreement between the interested parties must be prepared. Parties include institutions such as governmental departments, archives, museums, educational bodies and heritage departments, which all have archives and may be approached for loans. Not all however, have qualified personnel to decide on factors such as the technical and administrative requirements mentioned in the introduction. It is generally true to say that such professionals are found in national archives. Preservation professionals have knowledge of materials and the mechanisms of deterioration and are familiar with the latest scientific research. Criteria for the actual selection of items should be based on, firstly intellectual interest, that which may attract people of particular target groups to come to an exhibition, possibly pay and be interested. Secondly, an aesthetic message or attractive design that is relevant to any particular needs of the exhibiting institution. Lastly, and of concern to conservator, the material stability of the items as a whole and suitability to exhibit. For preliminary selection, the conservator takes into account the current physical condition of an item, its sensitivity to environmental conditions, and sensitivity during transport to the exhibition premises. Some items may need conservation treatment, others complex design protection. Before releasing an item, a material analysis must be made which has to conform to a scientific and technical level of expertise. Exhibition teams therefore have to include not only a curator, organiser, but also a conservator who should be consulted for their particular specialisation from the beginning of the exhibition process until its end.

Permitting enough time for selection and conservation is obviously needed, this means that the director has the task of putting curators, conservators into early contact.

In most cases, archival items require some sort of conservation treatment such as cleaning, stabilizing, making custom-designed supports, or some other intervention before they can be safely and properly exhibited. An appraisal or condition report of individual items requested for a specific exhibition gives instructions for any appropriate necessary conservation and a reappraisal report is made after the

exhibition. These reports become part of the permanent documentation of an item. (Appendices No 5.) These conservation criteria give the curators of an exhibition clear preservation goals to consider and a time frame in which to work. When conservation criteria for an item are very restrictive, members of the exhibition team need to collaborate on practical solutions to exhibit but also to safeguard collections.

Exhibition premises have a profound effect on the long-term preservation of exhibited items and as such should have the highest protection. Exhibitions should be held only in areas designed for that purpose taking into account the prerequisites of ISO 11799 mentioned in the introduction to this document. Temperature, humidity, light and duration of display are all parameters in which all concerned with loan and exhibition should concern themselves. Some items may require specific climatic conditions, case design, lighting, climate control and security.

Exhibitions should not exceed any time limit that is recommended by a preservation or conservation consultant. The team that approves the lending of items also determines an appropriate period for the exhibition display.

The use of copies is sometimes inevitable particularly if the original is unique, fragile or damaged. This is especially so in the case of two-dimensional items such as unstable photographs and documents written with sensitive inks and dyes. High quality copying technology allows us to make excellent facsimiles, which can be almost indistinguishable from originals, without damaging the original during copying. When reproductions or copies are used, it should of course be stated on the display plate. Exhibitions are enlivened when an item demonstrates a function, a working model is attractive to visitors and when this is the case reproductions should be used if possible.

Since travelling exhibitions can cause more mechanical damage than single exhibitions, the decision-making institution should consider avoiding sending the same items to each location when similar items would suffice.

The ultimate decision whether to lend a document is made by the director of the institution that holds the item. The director takes into account not only the criteria for loan but also the appropriateness of loaning an original as opposed to a facsimile.

Once a preliminary loan request is made, a formal request must be sent by the borrower to the lender with as much time for appraisal and preparation that can be envisaged. Many institutions require notice of at least six months or more and, in order to reduce risks, adhere to the rule that items cannot be loaned for more than three months and that the same item should not be on loan for several years in a row. Upon receiving a written request for loan the lender has the right to inspect the borrower's premises in person and also receive details concerning the exhibition itself (Appendix No 5/A: Loan Form, part 1) Furthermore the exact reason why the loan of a particular item is requested should also be given (Appendix No 5/A: Loan Form, part 2).

Whenever possible the documentation for the loan should include the names and contact details of the curator who accepts responsibly for the item. If the lender accepts the request for loan, they must inform the borrower about the conditions of the loan (Appendix No 5/A: Loan Form, part 3). Once the borrower agrees upon the conditions, a loan contract (Appendix B) is signed between both parties and a condition report is filled out for each lent item. As mentioned above, the condition report is compiled at predetermined periods of the loan, firstly before the item leaves the lending institution, on arrival at the exhibition site and on return to the lending institution. Should an incident occur during transportation

or exhibition or back to the lender, a subsequent condition report should be written at the appropriate time. Borrowers are obliged to minimize and control the movement and handling of items during all activities.

In the event where an institution is exhibiting part of its own collection, in-house procedures come into force. Heads of departments should be prepared to work with conservators on condition reports and take their recommendations into account.

Table of Procedures.

Stages	**Forms**
Planning of the exhibition Identification of items to be exhibited and of potential lenders. ➔	Loan form (supplied by lender) to be filled in by borrower and returned to lender Parts 1 and 2 - information on exhibition (one form by exhibition) - information on requested document (one form by document)
Lender examines the loan request If agreement. ➔	Loan form sent by borrower to lender Part 3: - specific information on the lent document - specific requirements
If agreement from both parties on the documents and the conditions of loan. ➔ ➔	Establishment of a loan contract between both parties (one contract/exhibition/lender) Establishment of an insurance contract by the borrower (copy sent to lender)
Before packing at the lender's	Condition report, n°1
On opening the crate at the borrower's	Condition report, n°2
Before closing the crate at the borrower's	Condition report, n°3
On arriving back at the lender's	Condition report, n°4 + archiving of data in the form of the state of preservation document.

Chapter II

Transportation and packaging

Because items are submitted to high risks during transportation, good transportation strategy must ensure security and safety of the items. From the lender's point of view the transport strategy should give considerable priority to conservation, security, and the quality of packing and unpacking, handling, and transport. Information concerning transportation and insurance are also important factors in organizing exhibitions. Physical damage is most likely to occur during the transfer of items, thus suitable enclosures or packing materials can protect or decrease the extent of damage and help to avoid soiling.

Archival records in particular can become soiled while being packed and unpacked if they are handled with dirty hands, and eating, drinking or smoking therefore all constitute threats. As potential soiling sources, liquids (water, drinks, oils) are very dangerous because they can soak through protective paper and contaminate records inside so items should be kept away from potential risk while waiting for transportation. During transport of archival records either inside or outside the institutions, climatic conditions have to be considered. Experience has shown that long constantly high or low values of temperature and relative humidity are less dangerous than quick and frequent changes. Efforts have to be made to avoid dramatic changes of environmental parameters during any movement. If there are differences between the environmental conditions inside the storage location and in the place where records will be transported to for use or new storage, they should be moved gradually to allow enough time for acclimatization. In addition, inappropriate packaging itself can cause damage and the wrong kind of protection can have a long-term effect on the condition of individual items.

Arrangements for travel and transport should be carefully considered in advance. Couriers should be members of staff or professional and trusted movers who clearly understand their responsibility for the safety of the transported items. Many institutions require couriers to hand carry smaller items when travelling by air. The courier must be met upon arrival and escorted to the exhibition site by a representative of the borrowing institution, as well as the appropriate custom broker representative for foreign transit.

Transportation door to door in climate-controlled trucks is preferred when the volume of the exhibit is too costly to send by air or if the city is not well served by an airline. For very significant items, staff couriers may also be required for transportation by truck. Loans should never be opened for customs or security purposes in the absence of a courier, but passed through in bond to the exhibition site for appropriate inspection. All expenses of such transit should be borne by the borrower. If dissatisfied on arrival with the conditions at the place of exhibition the courier escorting the loan has absolute discretion and the final decision as to whether to release any objects into the custody of the borrower.

The borrower, who should also arrange insurance for the objects, should meet all expenses associated with the exhibition. Special insurance may not in fact be necessary for transport, as many institutions have fine art insurance that covers most objects travelling to and from, as well as on site. This coverage can include transport by many common carriers but limitations and responsibilities have to be clear at all stages of the process. The lender determines the insurance value required in all cases and the value of each item should remain confidential. Additional insurance may be necessary when full cover is not available, which is often the case when items are requested from foreign borrowers. Proof of the insurance or a certificate of such insurance is required before the loan. A copy of the certificate of insurance should be included with the completed loan form.

The borrower is held responsible for any loss or damage caused by improper handling, negligence, or lack of due diligence. Within many contracts an agreement as to which court or court of arbitration the parties are to use is included should one party seek legal action.

Travelling exhibitions

Travel almost invariably increases the range of relative humidity and temperatures to which items are exposed, because most crates and packages 'breathe' as weather and air pressure change. Travel is potentially dangerous itself. Forklift trucks have been known to damage wooden crates thus absolute security becomes difficult to assure. In addition, with a travelling exhibition, problems can occur with greater frequency and damage is more difficult to control because it happens at a distance and in unfamiliar circumstances and in institutions that may have differing criteria for exhibition and storage; full knowledge of the lender is therefore most important.

Some institutions only lend items that are already sealed behind glass, with the understanding that the sealed package is not to be opened or altered in any way. The sealed item may be either completely framed with glazing or enclosed between sheets of Plexiglas. The borrowing institution can then simply place the piece into a frame of its choice for exhibition. Another alternative is lending an acceptable but less vulnerable item and similar materials in better condition within exhibition encapsulations, again with the understanding that the sealed encapsulations are not to be opened. Very popular items can be made available in this way with little risk to mechanical damage through handling. Sealed packages act to moderate fluctuations in temperature and relative humidity and limit the inflow of gaseous pollutants.

Although encapsulation has a number of advantages, there are items for which other mounting and protective approaches are desirable: original artwork, paper with a rough surface texture or undulating topography, deeply embossed letter-press printing and velvety silk-screen textures all require an alternative approach. In addition, polyester film can develop a strong static charge, which poses the risk of lifting very friable media, such as pastel, flaking gouache and powdery paints. Flat two-dimensional items of standard size are usually not exposed to significant risk. However, we may meet specific problems in exhibiting larger items, particularly those consisting of organic hygroscopic materials such as parchment. Such cases call for special ways of mounting and framing.

Packing and unpacking

The type of packing materials to be used depends on the location to where the item will be moved. Before choosing the most suitable packing, the type of transport has to be taken into consideration. Obviously, packing will be different for items that are to be hand carried by someone or sent by a special transit company having trucks equipped with an environmental control system. However, all the different kinds of packaging should have in common qualities for the protection against climatic fluctuation, shock, and vibration during transit. To be effective, preservation packaging must be well designed and well made, easy to use when packing and unpacking and of a reasonable price. Usually the lender is responsible for packing items going out on loan and the borrower for repacking loan items to return to the lender after the loan ends.

Quality of packing materials

Although a wide variety of packing materials is available, not all of them are appropriate for protecting archival items. Friable objects (for example, charcoal, pastel and conte crayon drawings) are susceptible to mechanical damage from even minor abrasion so nothing must come into contact with the surface during the whole process of moving. Similarly, objects that are acid sensitive should not come into contact with acidic tissue while in transport and never during storage, other parts of the package can include cheaper acidic materials provided that the item does not come into direct contact with the item. However, for enclosures designed for photographic material it is important that no buffering agent is used since photographs can be damaged by alkaline as well as acids. Any materials that do come in direct contact with the item must not stain, be abrasive or acidic, or emit damaging chemicals. Some bubble wrap materials and foams may leave imprints on smooth-surfaced objects like polished metals, varnished woods or oriental lacquer.

Reusing packing materials to pack other objects is not desirable as residue and dirt can be transferred. Since new packing products are continually appearing on the market, should a new product be chosen, be sure it has been tested and generally approved in the field of archives and libraries.

Table of packing materials

Packing materials	
Cards and boards	widely used material to make boxes for archival documents, although the majority of the boxes used in archives are made of acidic paper, different kinds of boxes of archival quality are available. The damaging effect of acidic boxes can be reduced when covering the document inside by buffered paper or plastic foil, which is free of, plasticizes.
Light weight papers	can be used for both covering documents inside box and as space filler. It must be noted that printed papers should never be used for even for very short term as they are not only acidic but the printing ink can transfer the objects and soil them.
Corrugated boards	with multiple layers are suitable for custom made boxes and spacers. Acid free ones are also available.
Rigid foam plastics	made of polystyrene and polyethylene can give items both thermal and shock protection during transit. They are supplied in board form with a wide variety of measurements. Their solidity makes it possible to cut out even very fine and complicated forms from them. There are less rigid plastic foams as well; those can entirely follow the shape of the items to be protected.
Plastic foils	containing some elements that can be damaging through direct contact with the archival documents. Polyethylene and polyester are widely used as safe packing materials. Polyethylene sheet having air bubbles provides especially good protection. Transparent sheeting used to enclose single sheets should always be pure polyester, free from dyes, coatings, and plasticizers and impregnates. The weight of polyester should be selected to provide an appropriate degree of support.

Textiles	- the surface should be smooth without naps (naps may cause damages) - it should not contain finishing substances (e.g. starch helps growth of moulds) - it should not be coloured (excess moisture or abrasion can discolour the item) Since it is usual for most textiles commercially available to have some finishing it is advised to wash and repeatedly rinse them before use.
Cotton and synthetic wool	can be used as padding material but should not be in direct contact with archival document because their fine fibres may be harmful.
Wood	Crates and cases can be made of wood and plastics. Not all kinds of wood are suitable for packing archival records. Wooden boards can off-gas damaging contaminants.
Cords and ties	used in packaging should be durable and safe, such as linen or unbleached cotton, and all metal fittings should be non-corroding.

Cushioning

Cushioning materials are designed to absorb shock, keep objects from shifting, buffer the humidity and provide thermal insulation. These materials are usually foam products that can be used in a variety of cushioning techniques. The institutions should use each type of foam correctly to achieve adequate shock and vibration protection. Because each foam product offers different cushioning qualities, a combination of foams may be used. Cushioning materials are recommended especially for fragile objects or those with insecure media, and they are essential for objects that must sent under glass.

There are a few good cushioning materials such as:

1 Polyethylene or polypropylene foams which are especially popular with museums for packing. Some polyethylene or polypropylene foam products are even suitable for long-term storage. They come in sheets of various thickness or in blocks that can be cut to cradle and support three-dimensional objects.

2 Polyurethane foam is another cushioning material. However, it is very unstable and only suitable for short-term transport packing.

3 Polystyrene foams (plastic "peanuts") can also be used for good cushioning but are also not chemically stable enough for long-term storage.

4 Plastic sheet with trapped air bubbles or 'bubble wrap' is recommended. However bubbles can leave impressions on an object’s surface so this product should be used with the bubble side facing away from the object’s surface. Do not use it with sharp objects that can break the bubbles and use several layers to maximize the padding effect. Because bubble wrap is a sheet that does not breathe, it should not be sealed around the object. In addition, bubble wrap can stain and should never be used in direct contact with a sheet of paper or a book cover. Always wrap the object first with acid free tissue or muslin to protect the surface and to buffer relative humidity.

Containers and crates

Crates give necessary physical protection for books and other three-dimensional or heavy objects for large numbers of artefacts, or for objects that need extra cushioning. Containers are made from metal, wood, cardboard, fibreglass and high-density plastics and the best ones are puncture proof, watertight, protects against shock or vibration, and act as a good protection against damage. While being packed, objects should be selected according to their weight, height and density and on completion of packing the outside should carry clear identification labels that can be read easily and which are resistant to environmental influences. The name and address of the recipient should be clearly visible on the outside of the package and inside the completed package there ought to be a list stuck to the inside lid of all objects enclosed, as well as the name of the lending institution, address, phone number and any other special instructions.

Design and construction for packing different archival items

Even when made of good, strong, stable materials an enclosure that has been badly designed and made can damage its contents. A good design will take into account the cause of any existing or likely future damage to an item and include features specifically designed to deal with them. Card and board should be of the correct weight.

The fit of an enclosure is very important. A well-fitting enclosure will make economic use of storage space and provide for maximum protection. However, since suppliers' size ranges are limited, it will often be necessary to use a package that is too large for its contents. On such occasions, an inert padding material should be used to secure the fit of the item (above).

Transport cases must be strong and assembled properly so that the bottoms will not give way under the weight of their contents and so that boxes will not collapse when they are stacked on top of one another. Boxes should not be filled to capacity with extremely heavy items. When dealing with series of files and folders they should be packed so that they remain upright with no leeway for moving or items becoming separated. Both over filling and under filling cases will result in damage, especially to weak, brittle records.

Handling / recommendations

Handling objects requires common sense and following some basic rules prevents damage to objects. One should not hurry when handling materials and avoid wearing anything that might damage objects by scratching or snagging the surface (for example: rings and other jewellery, watches, belt buckles, name tags, service badges). Use pencils, not pens, when working near objects. Pressure-sensitive tapes and irreversible adhesives should not come in direct contact with an item. Hands must be clean, even when wearing the appropriate gloves. Generally white cotton gloves should be worn when handling most objects however, plastic gloves (latex or nitrile gloves) should be worn when handling the following types of objects: slick objects, objects with oily or tacky surfaces that can attract cotton fibres, fragile or damaged paper or other organic materials that may catch on cotton fibres.

Recommendations - Paper

Physical supports used in exhibiting archival materials should be constructed and attached to items in ways that minimize potential damage and prevent slipping, sagging, and distortion.

Paper sheet materials should be attached securely to the mounts. Sheets may be mounted in window mats or onto rag board backings. They can be hinged or attached with corner supports. Edge strips may be used if a mat covers the edges of the object. Strips and corner supports are becoming popular because adhesive need not be applied to the object. For non-adhesive mounting, commercially available archival paper or plastic (polyester) photo corners will work on small documents or photographs.

Most items, however, require a more substantial support of corner strips. These can be made of polyester film or woven polyester. Finely woven polyester is both transparent and matt and therefore less conspicuous than polyester film. Some flat objects may also be encapsulated in polyester film, which will protect and support the object during and after the exhibit. However, a potential problem with encapsulation is slippage. If positioned vertically, large or heavy objects encapsulated in enclosures with double-sided tape may slip. When possible, encapsulation should be done with ultrasonic or heat seals, which are also more attractive.

If unframed items are displayed vertically, a safe and visually acceptable method of securing them must be found. Some institutions use hot-melt adhesives to attach rag board mounts to vertical surfaces. These adhesives can be used in small amounts, and they hold well. Like other materials, however, they must be chosen with care and applied only to the back of the mount. Investigations indicate that ethylene vinyl acetate-based type of hot-melt adhesives that are clear or whitish are the least problematic. Documents should be completely supported by mats and museum-quality framing using hinging techniques, or by polyester slings, bands, or cover sheets. Metal fasteners such as, pins, screws and thumb tacks must not pierce or come into direct contact with items on display. Non-reactive cushioning or isolating layers should be placed around mounting pins used as edge supports**.**

During exhibition, sheets of different sizes should not be stacked or otherwise overlapped while on display. If items of identical size are stacked, they should be stacked evenly to avoid differential light exposure and prevent physical distortion. Also, exhibit labels should not be laid on top of or overlap items on display causing differing light intensity. Furthermore paper sheets should not be displayed at an angle that results in the distortion of the item.

Research shows that acidic papers deteriorate more rapidly within polyester envelopes and other closed systems. Since almost all old, untreated papers are acidic to some extent, they should be professionally de-acidified or at least washed in a suitable solution prior to encapsulation. If such treatment is not possible, an alkaline sheet inserted behind the object will slow the acidic degradation.

After documents have been mounted for exhibition, they must be left undisturbed until the exhibition is dismantled. Wherever possible they ought to travel ready-mounted; if this is not possible, the display may perhaps be arranged under supervision and in accordance with a previously agreed design. None of the mounts or cradles are to be removed or changed in any way during the exhibition.

All objects should be removed from the exhibit by experienced object handlers before any major dismantling begins. During dismantling some or all of the frames or housing can be retained when it is appropriate for storage, for instance, very oversized drawings framed for exhibition; some items, which

were displayed in so-called sink mats with special deep recess to accommodate thick or fragile paper boards, undulating or cockled sheets, pendant seals, or other three-dimensional components. Such sink mats can be converted into protective storage housing by adding a top cover or lid. Special sealed custom-made housings for relative humidity control can be saved and reused for future exhibition of humidity-sensitive materials such as parchment if in suitable condition after transportation and unpacking.

Measures to limit the production of dust in an area in or near to the exhibition space can include such practices as altering construction techniques for example, by damp-finishing drywall and using collection bags on saws. Using plastic sheeting or temporary walls to block off construction areas and cleaning up with a high-efficiency particulate vacuum unit that does not exhaust fine particulates back into the space. On completion of setting up, sealed and ventilated cases should be examined to evaluate their performance and the area cleaned thoroughly.

During the exhibition, responsibility for the preservation of items does not end when the exhibit opens. Carefully established and implemented maintenance and monitoring procedures are essential. A manual giving details such as lighting, cleaning procedures, safe rotation of items and disaster preparedness are necessary.

In any maintenance manual, the qualifications and responsibilities of staff and other people (security e.g.) who are involved in the exhibition, directly or indirectly should be highlighted, this is very relevant should cleaning and maintenance of units that control air and light quality be necessary. Protocols for opening and cleaning display cabinets need to be established along with a programme for maintenance and replacement for all audiovisual equipment in the exhibition room. Levels of security by day and night in the exhibition are must also be clear.

A daily directive is established for cleaning the floor and the outside of the display cases in the exhibition room(s). Naturally selection of cleaning materials is relevant and no oxidative liquids are allowed. When executing a change of objects a full cleaning protocol can be administered minimising the amount of intervention that takes place. The professionalism of cleaning services should be known.

Monitoring of the conditions should take into account on a daily basis the temperature, humidity, light exposure, number of visitors together with the outdoor air conditions all affecting the indoor conditions. Monitoring can be realised by automated systems linked to the building management system, or can be measured with hand-held equipment. All data should be recorded in a log book and kept for future reference.

Safe movement and rotation of the objects

Schedules need to be in created for the movement of items and should dictate the replacing, moving or rotating of items when the exhibition is closed to the public. Logistics demand that somebody should be appointed to shut down the alarm system on the display cases and during moving or cleaning somebody should be appointed to open the display cases. All actions in the exhibition room; transport to other rooms of originals, the staff involved, should all be noted in the logbook. During the opening of the display cases and transportation of the originals, the security service should be physically present.

Disaster preparedness plan

Just as in archives, libraries or museums, disaster preparedness planning for the exhibition rooms and exhibited originals is obligatory. If a disaster occurs, the plan should be activated upon and implemented

Chapter III

Environmental recommendations

Lighting and paper

Light is a common cause of damage to archival and library collections. Paper, bindings, and certain media (inks, photographic emulsions, dyes, and pigments, and other materials used to create words and images) are particularly sensitive to light.

Light damage manifests itself in many ways, it can cause paper to bleach, yellow, or darken, and it can weaken and embrittle the cellulose fibres that make up paper. It can cause media and dyes used in documents, photographs, and art works to fade or discolour. Most of us recognize fading as a form of light damage, but this is only a visual indication of deterioration that extends to the physical and chemical structure of collections. Light provides energy to fuel the chemical reactions that produce deterioration. While most people know that ultraviolet radiation is destructive, it is important to remember that all visible light can cause damage. See Appendix 3 for artificial light and qualifying light.

Classification of materials accordingly to their sensitivity to light.

It is difficult to predict the light sensitivity of items. Classification of materials accordingly to their sensitivity to light in individual categories based on the British Blue Wool Standard BS1006 or Standard ISO 105 is given below. These categories will be regularly extended to include new materials.

The Blue Wool Standards cards have been used as a reference scale for light sensitivity. These cards provide a standard against which subsequent fading can be judged, and therefore can be used to convince sceptics that light really is a problem. Each blue wool standard contains eight samples of blue-dyed wool with increasing light sensitivity. The stripe with the sensitivity level ISO 1 is least stable and ISO 8 is the most stable. It is used by cutting the card in half putting half in an envelope and attaching it to the back of the frame. The second half is attached to the wall near the item on exhibition. If when comparing the two halves after some time and the fading on the exposed dye patches exceeds recommended levels the item should be taken off exhibition and stored awaiting transportation. New methods which are even more sensitive to light are being developed that colour codes danger levels.

Blue Wool Category 1: works with colours, binders and supports with light stability classified accordingly to the ISO blue wool standard as 3 or less.
The following materials and techniques have been classified in **C1**: pastels, watercolours, gouaches, tempera, coloured printing inks, most tinted papers, colour photographs, Polaroid pictures, most historic natural dyes on textiles, felt tip pen drawings, bistres, sepias, complex black inks, unknown yellows and reds in Japanese prints, unknown yellows and reds in European manuscripts, feathers (in collages for instance).

Specific pigments: gumigutta, complex black, madder and indigo on cotton, indigo in watercolours, thin tints and washes of intermediate pigments, e.g. most carmine lake pigments (quercitron, carmine in water colour washes on white paper), safflower, curcuma, commelina communis.

Some of the most sensitive items in archives consist of archival materials with records and stamps from the 2nd half of the XIXth and the XXth centuries, which were written using inks usually based on aryl methane dyes. For these archival materials, the lowest light levels recommended for materials in **C1** are too high and thus they should rarely or never be exhibited.

Blue Wool Category 2: all works with colours, binders and supports with light stability classified accordingly to the ISO blue wool standard as 4, 5 or 6**.**
Examples of materials classified as **C2**: wood pulp and other low-grade paper or card supports, silver dye bleach processed prints, colour slides known to be Kodachrome, Ektachrome, Fujichrome etc., Cibachromes, new colour photographs. Specific pigments include some traditional dyes on textile, Vermilion, India yellow, basic brilliant red: carmine, madder and alizarine lake.

Blue Wool Category 3: all works with colours, binders and supports with light stability classified accordingly to the ISO blue wool standard as 7, 8 or more
The following materials and techniques have been classified in **C3:** good quality rag paper, carbon based inks, graphite, natural chalks, sanguine, brown, black white (conté crayons), black-and-white silver-gelatine photographs, gold toned, selenium toned and other permanently processed photographs, plastics, polyethylene, synthetic resins. Specific pigments: highest quality modern colours, including water colours, colours for gouache, coloured pencils, modern cadmium red, ultramarine, most blues, aureoline (cobalt yellow), indigo and dye madder for wool.

It is recommended that institutions should establish their own standards for exhibiting based on how long the body wishes to preserve the life span of the items. If a target is to keep a highly sensitive object for 100 years exposure should not exceed 25 days per year at a lux of 50. See Appendix 3 for recommendations, monitoring devices and filters.

Annotations
It cannot be stressed enough that total lighting exposure must always be kept as low as possible if longevity is a target. Good lighting designers know how to light exhibits effectively with low to moderate levels of light. If light levels within the exhibit room are even lower than the level on exhibited objects, the eyes of the viewer will adjust, allowing them to view the objects clearly. If lighting is diffused rather than direct, less light is needed. Visual interest can be created without subjecting a collection to intense spotlights. Lights should be turned off when visitors are not in the room. Some museums have lights that do it automatically. Other institutions put cloth covers on cases containing especially valuable or light-sensitive objects.

As the effect of light is cumulative, and particularly attractive archival items are exhibited more often, it is necessary to know the amount of light energy that the material has absorbed in the past. This information should be employed in making decisions on future exhibiting.

Records of the exhibit history of each item ought to include information about each exhibition in which the item has been included. For multi page documents or volumes, the individual pages displayed should be noted. Exhibited items should be inspected regularly for evidence of light-induced change.

Exhibitions lit at 50 lux may seem very dim, especially to an exhibition visitor who comes inside on a bright day lighting. A sign explaining the reason for the low levels usually mollifies the public.

Light levels should be measured as intensity of incident light falling on the object. Light levels should be measured when the lighting for an exhibit is established and whenever a change in lighting conditions occurs, including replacing bulbs or lamps on an ongoing exhibit.

Materials should never be displayed in direct sunlight, even if for only a short time and even if the windows are covered with an ultraviolet-filtering plastic.

Items that combine media of varying stabilities or where the light sensitivity is not known should be assumed to fall in the category of very sensitive media.

Temperature and relative humidity

Temperature is the degree or intensity of heat of a body (thing) in relation to others. Rate of a chemical reaction is increased with rising temperature. Likewise, cooling the environment by a few degrees is sufficient to increase the longevity of unstable materials. It has been approximated that decreasing the temperature by 10ºC doubles the longevity of a material, but this is just approximation.

Relative Humidity is the level of water vapour saturation of the air. It is a percentage; for example, 50% RH means that the air is half saturated with water vapour. The amount of moisture in a given amount of air changes as the temperature changes. Dew point - temperature at which the air moisture begins to condense. Condensation may occur on an item's surface when it is removed from cold storage because its temperature is lower than the dew point.

Keeping within the set climatic parameters must be observed in the exhibition areas, e.g. without fluctuations for the entire duration of the exhibition. It is often difficult to maintain a constant relative humidity in exhibition areas, especially when it is raining and when there are large numbers of visitors. It is necessary then to limit the number of visitors in the exhibition rooms and to ensure that they leave wet or damp clothing in the cloakrooms.

There are many well-known devices to measure the temperature and the relative humidity. A thermometer is a device which measures temperature. Hygrometers are instruments used for measuring humidity. Thermohygrometers measure both factors. Data loggers track temperature and humidity over time. Some have the capability to report readings over many months. All of them require periodic calibration.

Most frequently temperatures ranges of 16-20°C and 45-55% relative humidity are recommended, as well as a limited light exposure. (See Appendix No 4)

Airborne Pollutants

Air quality has become a major concern in large urban centres. The general feeling that an environment is polluted is based primarily on the presence of dust and odours. However, a number of pollutants are odourless and just as much a threat to the preservation of organic and inorganic materials.

Many airborne pollutants cause adverse effects on collections in an indoor environment. Pollutants originate both from outside and inside a building. Indoors, pollutants are typically from products,

indoor activities (such as cleaning), visitors, and even objects in the collection. Outdoors, pollutants are mainly related to human activities such as industrial processes and vehicular traffic.

Different items are susceptible to different airborne pollutants and deteriorate at varying rates depending on the parameters involved. In some cases, damage is caused by more than one pollutant.

To reduce the number of pollutants is to use the 80-20 Rule (Pareto's principle) whereby 80% of pollutants can be controlled in the museums, libraries and archives by controlling the 20% of pollutants known to be the most significant. The seven key airborne pollutants are: acetic acid, hydrogen sulphide, nitrogen dioxide, ozone, fine particles, sulphur dioxide and water vapour.

Acetic acid (CH_3COOH) can be released by various products: paints, varnishes, poly(vinyl acetate) adhesives, flooring adhesives, acid-cured silicone, wood products (especially oak and cedar), human metabolism and some cleaning products.

Many lead objects such as seals on historic documents have been damaged when displayed or stored in an enclosure in the presence of products emitting acetic acid, like wood products and paints.

Hydrogen sulphide (H_2S), a reduced sulphur gas with a characteristic "rotten egg" odour, is a key pollutant to tarnish silver and copper within a year. It is also known to darken lead white pigments on paintings, discoloured silver photographic images, and corrode bronze, copper and silver. Inside buildings, elevated levels of H_2S can be found when many people are present. Silver objects can tarnish quickly when displayed with waterlogged archaeological objects contaminated by sulphate-reducing bacteria.

Nitrogen dioxide (NO_2), is the most common compound of the nitrogen oxides group (NO_X) in the atmosphere. Since the beginning of the industrial age, the emission of NO_X has seriously increased. Knowing the levels and trends of outdoor pollutants is important because these pollutants infiltrate museums, libraries and archives at a fraction of the outdoor levels. In the atmosphere, a small amount of NO_2 can be further oxidized to its acid form: nitric acid (HNO_3).
Both of them cause artists' colourants to fade and can contribute to the degradation of paper and vegetable-tanned leather and corrosion of copper-rich silver. A well-known effect of NO_2, as an internal pollutant, is the degradation of cellulose nitrate-based films (negatives or soundtrack movies) or three-dimensional objects (e.g. combs, barrettes).

Ozone (O_3) is a strong oxidant that is normally present in the stratosphere and protects us against intense, harmful ultraviolet radiation. At ground level it is formed during photochemical smog. The level of ozone increases after the morning traffic rush. With stronger sunlight the ozone level reaches a peak in the afternoon. During the photochemical process, other harmful pollutants such as acids and fine particles are formed. Inside buildings, the main sources of ozone are: electrostatic precipitators in the heating, ventilating and air-conditioning (HVAC) system, electronic air cleaners (ozone generators) and photocopiers.

In theory ozone can attack materials by breaking apart any double bonds between carbon atoms. The degradation of vulcanised natural rubbers under stress and the fading of artists' ants and pigments are the most studied phenomena. Even though organic objects have a high potential for deterioration, little

quantitative data exist to support the widespread assumption that they are significantly altered by ozone under normal conditions.

Fine particles. It is common to characterize particulate matter (dust) in term of diameter. This property is important because it determines behaviour and control. For the control of pollutants, the fine particle ($PM_{2.5}$: suspended particle matter having an aerodynamic diameter equal or less that 2.5 μm/micrometer) and the coarse particle (PM_{10}: aerodynamic diameter between 2.5 and 10 μm) are commonly used as indicators.
Sulphate and nitrate compounds, organic carbon, crustal materials and salts are the major harmful compounds from fine particulate matter ($PM_{2.5}$) from outdoors.

Because smaller particles can lodge in the smaller interstices on an object's surface, $PM_{2.5}$ is the most harmful particle size, and its control will also reduce significantly the levels of gaseous pollutants which tend to be grouped by nucleation or be absorbed by the particle. Fine particles are particularly damaging, because they discolour or soil surfaces. Soiling changes the visual perception of objects. The more fragile, porous or altered the surfaces, the more difficult they are to clean.

Most indoor-generated particles are composed of soil, dust and carpet and cloth fibres. Fibres are not generally considered to have direct adverse effects on a collection, with the exception of magnetic media such as audio and video tapes where abrasive dust is an issue during handling and playing.
Dust accumulation can also provide an attractive foraging place for insects and mould. Another adverse consequence from a wider viewpoint is the impact of the perception by visitors, including potential donors, that there is a basic lack of care for the collection.

Filtration of outdoor fine particles should be considered as an important control strategy. Periodic vacuum cleaning is needed and the vacuum cleaner should have a high-efficiency filter.

Sulphur dioxide (SO_2). Since 1900 most energy consumed by industries, transportation and heating has originated from fuel or coal combustion. SO_2 is the main compound responsible for acid deposition. In areas with high levels of SO_2, acid precipitation has had serious negative impacts on building structures, outdoor monuments and the overall system. Many leather books stored in urban archives from the start of the industrial age have been severely damaged. Fortunately, the regulation of SO_2 emissions in the 1970s greatly reduced its atmospheric level. Today power plants based on coal and oil combustion in the United States and in Europe are the major sources of SO_2, followed by industrial processes and transportation. Only small quantities of SO_2 come from gasoline-fuelled motor vehicle exhaust.
Effects on materials include acidification of paper, corrosion of copper, fading of some artist's colorants and weakening of leather.
Materials inside enclosures (i.e. sulphur-vulcanised rubbers, some dyes) are sources of sulphur compounds. While damage to objects has been attributed to them, the sulphur compound gases generated by these objects and products in enclosures have not been monitored closely.

Water vapour (H_2O) is included as a key airborne pollutant even though there are well established guidelines for RH levels for archives, libraries and museums to prevent physical deterioration caused by incorrect levels or by excessive fluctuation. Water vapour can directly damage, by hydrolysis, cellulose-based materials which are usually an important part of the collections. Materials that are sensitive to the hydrolysis action of water vapour include cellulose acetate and nitrate, especially in the

form of thin sheets or rolled films, papers and polyurethane-based magnetic tapes, photographic gelatine, many types of papers, natural varnishes and flexible PVC. Water vapour also greatly influences the deterioration processes caused by other pollutants. It increases the rate of other deterioration such as corrosion of metals, efflorescence on calcium-based materials and photo-oxidation of artists' colorants. Based on the 80-20 rule and the great impact of water vapour on the collection, it is inevitable that it would be a key pollutant.

An increasing number of visitors in a poorly ventilated room can increase water vapour levels inside buildings. Within enclosed rooms, newly applied liquid products (such as water-based paints or adhesive) can elevate the humidity levels. However, the drier the better in terms of preserving many objects, such as metals, shells, paper-based materials and many plastics. Often target levels must consider the RH specification of a composite collection or a composite object, not forgetting the historical average RH levels in the building.

Besides the seven key airborne pollutants already described, other pollutants may need to be investigated and controlled, when they are present in unusually high levels or if the par of the archival, library or museum collection is particularly sensitive to them.
Other airborne pollutants, which damage collections, are: ammonia, carbon dioxide, formaldehyde, oxygen, volatile organic compounds.

Formaldehyde (CH_2O). Indoor and outdoor sources of formaldehyde include carpet finishing components, fungicide in emulsion paints, fabric-finishing components, gas ovens and gas burners, natural history wet collections, ozone-generating air purifiers, urea formaldehyde-based adhesive products, tobacco smoke, vehicle exhaust and other combustion.
Wood products may contain many very emissive adhesives. The most common adhesives are based on formaldehyde-containing resins, and formaldehyde is known to cause deterioration of metal and calcium-based items when carboxylic acids are present. Formaldehyde might reduce some silver ions to colloidal silver and result in discolouration of black-and-white photographs. However, the threat of formaldehyde pollutants to artworks and photography is being reconsidered.

Methods of monitoring the air quality
There are many pollutants, and there are many ways to qualify and quantify them. No single method or test can provide a complete picture of the situation. Monitoring should focus on the most probable or critical pollutants. Techniques for monitoring air quality are based on a sampling period ranging from a few seconds up to a few weeks. An indoor air consultant or a conservation scientist should be contacted to select the pollutants to be monitored and the monitoring process.

Controls at the building / exhibiting venue level
The main issues at the building level are the infiltration of outdoor gaseous and particulate pollutants, and the emissions from indoor products, visitors, and, in some cases, the collection itself.

There is usually very little that can be done to control the levels of pollutants outside buildings. However, some measures that can be applied locally include limiting heavy traffic close to the archive, library or museum or having paved parking spaces and a paved entranceway to prevent raising dust.

Limiting the maximum density of visitors
In a crowded exhibiting room with inadequate ventilation, the level of pollutants such as ammonia, hydrogen sulphide, dust and water vapour may increase; likewise, the temperature may rise. For the

comfort of both visitors and collection, limiting the maximum density of visitors per room is recommended. For popular exhibitions, allowing only a certain number of visitors to enter the exhibition every half hour can do this.

Avoid three products

Due to the high dilution capacity of an exhibiting room (from natural or forced ventilation), pollutants generated by products do not tend to reach high levels beyond a few weeks following their application. However, three products should be avoided in large quantities: oil or alkyd-based paints and varnishes, wool carpet, uncoated wood products such as particleboard or waferboard made with urea formaldehyde-based glue. Noticeable smells in a room are often related to the collection itself on open shelves or to moisture problems. If there are silver or copper objects in a room with wool tapestries or carpets, these metals should be protected. There is usually no need to replace old oil-based paints or old uncoated wood panels if there is not a pronounced smell. However, as precaution, objects having lead components should be protected.

HVAC System

Large new buildings control the level of pollutants through a central HVAC system especially designed for this purpose. An HVAC system is a heating, ventilating and air-conditioning system that includes any interior surface of the facility's air distribution system for conditioned space and / or occupied zones. Such systems must fulfil requirements for human health and for preservation of the collection at a minimum cost. Basic HVAC systems tend to concentrate on a stable and uniform climate with a modest control of dust.

Filtration systems are important in the control of pollution in new or retrofit buildings. An HVAC filter system can have different filter configurations ranging from a simple water spray with a coarse particle filter to a complex series of specialized gas and high-performance particulate filters.

ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers) and CEN (European Committee for Standardisation) have developed new performance standards for dust filters: the ANSI / ASHRAE Standard 52.2 (ASHRAE 1999a) and the EN 779 (CEN 2002).
For controlling gas and vapour pollutants, a gas filter is added between the first- and the final-stage particle filters.
Electrostatic air cleaners incorporated into an HVAC system are not appropriate for archives, libraries and museums. With this type of cleaner system, particles acquire a charge as they pass through a high voltage. Negatively charged particles are then attracted by oppositely charged surfaces from which they may be removed later. However, the ionization produces substantial amounts of ozone, a strong oxidant.

A wet scrubber of a water spray system incorporated into a HVAC system partly removes particles and gases by bringing them into contact with water. Such a system by itself does not reduce the water vapour infiltration into the building. It has uneven efficiency for gaseous pollutants but it does reduce the level of fine particles ($PM_{2.5}$ = suspended particle matter of 2.5 μm diameter or less) by about 50% and particles having a diameter of more than 10 μm by more than 99% (Air Pollution Training Institute 2000). The main disadvantage of wet scrubbers is that they need periodic cleaning to avoid calcareous deposition and mould contamination.

Portable Filtration Units
Portable filtration units are an efficient way to control the climate at the exhibiting room level for a moderate cost. They provide, locally, good preservation of sensitive objects. The environmental performance maintained by a portable unit will be optimal if the room is well isolated. Most particle and gas filters can be adapted for portable units.

Natural Ventilation
Exhibiting venues without an HVAC system should avoid placing objects vulnerable to outdoor pollutants close to entrances or windows which are periodically opened. However, this approach will not provide sufficient performance for well-visited exhibitions where adequate fresh air is required for the health of visitors and staff.

Vacuum Cleaning
Proper housekeeping is important. When vacuuming floors, be sure to use proper filter bags; if the filter's efficiency is below 75%, about half of the fine particles ($PM_{2.5}$) can be suspended in the air. This means that in the institutions without an HVAC system, each vacuuming will result in about half the deposed fine particles settling down in hard-to-clean places such as an object's surface. Fortunately, it is now easier to get vacuum cleaners designed for high-efficiency filtration (Stavroudis 2002a, b).

Monitoring and recording temperature and relative humidity levels is a necessity in the in-situ monitoring of pollutants.

Chapter IV

Framing and display cases

Enclosures are usually categorized as one of three types depending on their air exchange rates: airtight enclosures (~1 air exchange per day); leaky enclosures (~10 air exchanges per day); and open enclosures (~100 air exchanges per day).

Airtight (closed) enclosures such as display cases, cabinets, and transportation cases offer good protection against external pollutants, dust, and insects as well as making it easier to control temperature and relative humidity.

Recommendations for framing and display cases

It is essential that display cases are constructed with care and attention to detail. They form an essential barrier to the conditions within the exhibition space and can also be used to provide a contrasting micro-environment.

Many materials may release corrosive vapours. For materials of initially unknown composition, the manufacturer may be able to provide information to evaluate the material. Ask for general product literature, as well as a Materials Safety Data Sheet if available, as either or both may give information on volatiles that off-gas in fabrication or application which could be harmful to humans as well as displayed items. Consequently, materials of unknown composition must be tested before use.

Technical recommendations for display cases materials

All materials used in the construction of both showcases and showcase fittings should be inert, preferably metal (avoid galvanic corrosion) and glass. The outer case shell must be made from laminated glass; toughened glass should not be used. Float glass may be used for shelves within a case. The possible loading of the shelves must be checked and suitable thickness of glass used.

Recommended materials

Materials used for the construction of showcases and for exhibiting originals should never contain plasticizers. Emission of corrosive gases should be avoided. Safe materials are listed below:

1 glass and other vitreous systems
2 alcoxy silicones
3 unbleached, undyed cotton and linen
4 acid a lignin free paper/card (archival quality)
5 metals – care of electrode potentials
6 silica gel
7 polyethylene (PE)
8 polypropylene (PP)
9 polyester – polyethylene terephtalate (PET)
10 polymethylmetacrylate
11 polycarbonate
12 polytetrafluoroethylene (PTFE).

Construction

Display cases must provide adequate access for the placement of objects. The interior of the cases should be safely accessible for installation and maintenance by staff, yet secure from unauthorized

access. Opening display cases must not place the object at risk; it must be possible to remove an object without dismantling the display cases around it.

Display case fittings must be securely fixed to the case, making it impossible for an object to slip from a shelf and suffer damage. Design should allow some form of mechanical environmental control to be added at later date.
Mechanical and electrical components should be exterior to the showcase. Display case design should take into account risks associated with the possible failure of mechanical and electrical systems frequent tests can be made to ensure that systems are indeed working.

Environment

Display cases can be constructed to minimize air infiltration and to provide a physically secure environment that meets the levels for relative humidity, temperature, light and pollutants but it should be possible to accommodate passive humidity buffers (e.g. silica gel, Art-Sorb) in trays bellow. It may be possible to change this buffering material without disturbance to the display space.

Lighting

Display cases should not have internal lighting. Lights should be housed in separate compartments to the object, with ultraviolet filters between the lamps and items on view and with separate access.

Flammability and water damage

Fire resistance or non-flammable materials should be used in the construction of showcases. Display materials in direct contact to exhibited items should not be treated with fire retardant chemicals that are potentially corrosive. Display cases must be designed to prevent or minimize water damage from sources such as sprinklers or leaks.

Technical recommendation for framing

Paper is a material that is very sensitive to its surroundings. Paper can be easily affected be negative factors in its environment, not only by temperature, relative humidity and air pollutants, but also by the composition of its display cases and frames.

The Frame

Some materials used for the production of frames can emit gas. This can cause damage to the original material in the frame. Be sure that the frame can hold all the material necessary, such as the glass, the window mount, the original, the back mount and the backboard. The corners of the frame must be strong and reinforced. If wood is chosen for the frame, again, be aware of emissions. The finishing of the wood should be inert, and no residues should be able to affect the original art in the frame. Finishes such as varnishes, lacquer and paint must be stable and emission free. If old frames have to be re-used, be sure that the frame fits the needs of the object. Keep in mind that reusing old frames is time consuming and often more expensive than using new ones.

Mounting

There are various options for materials to use for mounting an original. When the original object is in direct contact with the mounting board it should thus be of the highest quality, standard mounting board should be avoided since it is frequently of poor quality, highly acidic, and will cause staining and degradation of the original. Conservation board is far more suitable for mounting original materials and is made out of chemically purified wood pulp and in most cases contains an alkaline buffer. When material costs are an issue, this board can be safely used as it is of a reasonable price. Museum board on the other hand is of the highest quality, made of cotton linter (100%). For maximum safety and

conservation this board should be used for the most sensitive items. In mounting and framing the mount should be smaller than the dimensions of the frame in order to allow the board to expand under the influence of relative humidity.

Mounting of originals

When original items are to be mounted, a number of techniques are available and well described in many standard manuals. For attaching the window mount to the back mount, it is preferable to use a linen hinge. The folded hinge, needed to attach the original to the back mount, should be made out of Japanese paper and the glue should always be easy to remove afterwards and should not cause any tension in the original. The best glues to use are made of rice or wheat starch paste and the use of self adhesive tapes should be avoided since most commercial taping will darken in time and even damage the original. These tapes also become hard to remove even sometimes conservation tapes become difficult to remove. If tapes are used, they should be PAT tested, pH neutral and reversible. Naturally the window of the window mount should overlap the original. This avoids damage such as tears to the edges of the original. If foams are used, be sure they do not contain plasticizes, polyethylene (PE), polypropylene (PP) or silicone.

For mounting photographs, as mentioned, no board with an alkaline buffer should be used as some photo graphical techniques can be damaged by an alkali.

Glazing materials to be safe may contain the following, polyethylene terephtalate (PET), polyethylene (PE), polymethymetacrylate or glass. However, synthetic glazing should not contain plasticizes and no coatings). The glazing material should always be kept away from the original. The window mount facilitates this. If no window mount is used, small strips of filler material in the frame rebate should be used to ensure that the glazing material does not come into contact with the original. Because Perspex and Plexiglas are lighter than glass and so often preferred, it should be noted that these kinds of materials are static and cannot be used when exhibiting pastels, chalk and other similar materials.

The glazing material should filter the UV part of the light adequately.

Closing the frame

For closing the frame at the back, use a backboard which should be made of a stable inert material. For fixing the backboard onto the fame, use non rusting nails, staples or other fixings. The small gap between the backboard and the frame should be closed with gummed paper and no self adhesive tapes should be used.

Chapter V

Safety precautions and security

In addition to hazardous environmental conditions, vandalism and theft constitute major possible forms of damage endangering exhibitions. Proper assessment of the exhibition's potential for becoming a terrorist or fanatics target may require consideration. Therefore, special care must be taken to the design and security levels of an exhibition to prevent avoidable threats. The following recommendations list the most important criteria for exhibiting items and also recommendations for staff and visitors. Naturally, the budget, resources, nature of the exhibition space have to be realistically judged first, followed by planning for or implementation of any specifically targeted areas of particular concern.

Security measures

The most recommended areas to display documents are those specifically designed for that purpose, with the same environment and the same protection against theft, vandalism, fire and other hazards as in the repository.

- Exhibited items must be secured both during and after normal working hours.
- At least one person should be designated to be responsible for exhibition security.
- Windows, skylights and fanlights in the exhibition area should be barred or fitted with locks, and the glass reinforced with security film or replaced with laminated glass. In addition, grills or screens on ground-floor windows or glass break detecting devices should be installed.
- Good quality door locks, such as mortise locks with dead bolt attached, and fixed-pin door hinges should be installed if possible.
- In addition to good locking systems, the institution should consider installing alarm systems to improve its security.
- The building and exhibition area should be protected by intruder alarms, sited at entry points and internal areas (at windows) and be active when the building is not occupied. The need for motion detector should also be evaluated.
- Buildings should be outfitted with automatic fire detection and suppression equipment (sprinklers or a water misting system are recommended). They should also have smoke and heat sensors with warning alarms that sound within the building; alarms connected to the security office and fire station are also desirable.
- In addition to the sprinklers, the building should be equipped with a sufficient quantity of strategically placed portable fire extinguishers which should be checked on a regular basis.
- A water detection system should be installed in the exhibition area if the facility is outfitted with a sprinkler system. Water detectors are also desirable if there is any possibility of flooding (e.g. exhibition area is surrounded by water pipes or located near restrooms).

- The water detectors should react in the presence of water, not under conditions of high humidity. In conjunction with smoke and heat detectors, they provide complete protection against fire and water damage.

- All security systems must be checked on a regular schedule to ensure that they are operational and functioning properly.

- No food, drink or smoking is to be permitted by anyone in the exhibition area.

- Exhibits should be placed away from windows, radiators, water pipes and any other areas that might be susceptible to fire damage, flood damage, theft or other harm.

- Unauthorized removal or touching of valuable original exhibits must be prevented. Display cabinets should be kept locked and framed originals should be fixed securely to the wall with security mounting systems.

- All exhibits should be checked regularly for signs of damage, and removed if thought to be at risk from theft or vandalism.

- Case keys and door keys should be kept in a secure part of the building in a cabinet or safe with only authorized persons having access to the keys.

- While there is a place for automated security systems of various types, an exhibition area must not depend solely on these systems to protect the exhibited items, there needs to be reasonable surveillance of the premises at all times.

- To increase the efficiency of supervision procedures it is possible to install surveillance equipment, such as closed circuit television cameras (CCTV).

- A 24-hour security presence should be considered when the most precious items are exhibited. Based on budget and the value of the items being exhibited, the use of specially hired guards might be a consideration.

- A security guard should check visitors prior to their entering the exhibition area as well as when they depart. Visitors should be received in a separate reception area where a coat room and lockers should be provided for visitors' personal belongings and outer wear.

- There should be a routine that ensures that all areas of the institution/exhibition are secure each time the building/exhibition closes, that all persons are out, and that there is nothing amiss that could cause a disaster while the staff is away. At the same time? evacuation is something different and is discussed below, the evacuation procedures of the institution should state that everyone leaves the building/exhibition in the case of an emergency.

- Part of the closing procedure should include checking that nothing is missed, and that unnecessary electrical circuits in the exhibition area are turned off.

- Staff should be trained to respond to a security emergency and understand what to do in the event of possible theft or damage. They should also be trained in the operation and deployment of fire

extinguishers be aware of the workings of the institution's fire detection and suppression systems, and be familiar with the alarm systems and with the most current plan for evacuating the building.

- When meeting any request for the loan of items to be exhibited in another institution, consider and determine the minimum requirements for permission to be granted. Concerns will include the following: building and exhibition case security; flood and fire risk; detection and suppression systems; and disaster response capability. For detailed descriptions of loan conditions see chapter *Arrangements Between Parties*. It may be considered necessary to visit and inspect a proposed venue to ensure that satisfactory protective measures are in place or can be provided.

Security planning

The purpose of security planning is to institute measures to improve security within the building, in particular within the exhibition space. A written security policy underlines a commitment to security management, and includes a statement supporting security planning, prevention of incidents, and the implementation of response procedures. These procedures and recommendations will include such things as maintainability of the building, providing security staff, controlling entry and departure from its premises, providing adequate training for staff, installing theft detection systems, and calling in the police when necessary.

The performing a security survey to assess needs should identify potential areas of risk, and rank security threats according to the probability of occurrence any subsequent investment in security can take into account most at risk areas. Defining the role of staff in their responsibilities requires a manager to delegate these responsibilities and have them included in employment contracts. Regulations as to visitors and staff need to include access permission and times of access for each also whether the security should be in place at all times even when the exhibit is being assembled. Many of the principles for writing and maintaining a disaster plan will also apply to preparing a security plan; therefore, in most institutions these two plans will be closely related.

Any security plan and checklist of preventive measures to be undertaken should include details of which staff members have security responsibilities and also those who have security clearance. With newer and better security systems, knowledge of its workings and limits, needs to be known by members of staff and relevant pass codes given to the right people. Linked to this a scheme for the correct distribution and control of keys to the building. Practice response plans with the staff and coordinate plans with outside officials can be performed at regular intervals and keeping up-to-date with current names and telephone numbers of institutional and law enforcement contacts is essential. Review the document periodically to insure that descriptions of response procedures continue to be adequately addressed.

Copies of all policies and procedures relating to security need to be kept secure and with easy access to the right members of staff. In the event of a theft there should be a list of procedures for responding to a security breach

All copies of the plan must be stored in a secure area where the general public cannot access them.

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PART TWO

APPENDICES

Appendix 1. Transportation

Manuscripts or loose papers should be wrapped in packages. After the sheets are wrapped, the container should be turned on its side and then the wrapped packages stacked on top of each other in the box or transfer case until it is full. Then the box bottom should be turned side down so the packages are standing vertical and not lying on each other. This will prevent the sheets from compressing together and forcing debris into the paper fibres.

Loose paper wrapping

First wrapping - wrap each object in a clean smooth paper such as acid-free glassine or tissue. It is often desirable to place a stiff, non-acidic paper or cardboard behind especially fragile objects to support them.

Second wrapping - the objects should be placed between stiff boards and secured to one of the boards with envelope corners. The boards should be taped together and wrapped in a sturdy material. Objects of a similar size may be packed together at this stage.

Although it is tempting to use a water resistant sheeting such as polyethylene, use of non-breathing, impermeable material may not be wise. If the package is subjected to abrupt temperature drops, condensation can form inside the package.

Three-dimensional objects such as books should be wrapped in tissue paper and/or plastic sheeting for protection against scratching or abrasion before being placed in a transfer case or crate. Several such items in single boxes should be separated by packing materials to inhibit movement and to minimize the possibility of an object damaging an adjacent piece.

Procedures
The principles for packing books for shipment are similar to those for sending flat objects. Books, however, tend to be heavier and have concerns that are subject to crushing. They must be shipped in rigidly constructed crates or boxes rather than in padded book bags.
Each book in the box should be wrapped individually. The first wrapping material should be clean, smooth paper like acid-free tissue or glassine.

If the volume is bound in a paper wrapper or limp binding, acid-free boards should be cut to the size of the volume and placed on the outside of the front and back covers before the volume is wrapped a second time.
The second wrapper should be a padding material that will both absorb shocks and buffer changes in temperature and RH. This second layer may be one of the cushioning materials, bubble wrap, or flexible rolling corrugated wrap.
The whole book, including spine, fore edge, top and bottom, should be covered. The volume can be wrapped a third time in sturdy paper.
This package should be placed in a wood crate or rigidly constructed carton surrounded by cushioning material.
The number of volumes shipped in one carton should be determined by value, weight and size. If a carton containing several volumes is shipped, it should weight no more than 20 pounds (20 pounds = 9,07 kilograms).
Books wrapped in sheets of acid free tissue and several layers of bubble-wrap should be given time to acclimatise without damage

Maps and plans

For maps and plans the optimal storage mode is to keep them flat. Frequent use can put them at risk if moved from map drawers without support to the search room or to an other location.

To make portfolios for supporting maps and plans, corrugated board can be used. They may be separated into groups within the portfolio and kept together using wrapping paper.

If they cannot be stored flat, plans will have to be kept rolled onto tubes. Some repositories employ map boxes, long thin storage boxes that open at the top. Tubes are covered with conservation grade paper before the plan is rolled onto the outer part of the tube. A wrapping of paper is used on the outside and unbleached linen is used to secure the outer wrapping. Smaller plans can be stored rolled in standard boxes.

As an alternative, rolled items may be carefully wrapped in tissue paper or plastic (polyethylene or polyester) and slipped inside a wide-diameter tube that is large enough so that no pressure is exerted on the rolled documents. The preliminary wrapping will prevent the rolled item from expanding to fill the interior of the tube, which would make safe removal difficult.

Negatives

Glass plate negatives pose problems in transit whether they are loose or housed in vintage wooden boxes with dividers separating each plate.

Small, fragile items that are unprotected, such as cased photographs, diaries, albums, and lantern slides will require special handling. Sturdy envelopes in varying sizes can be used to enclose many small items, which then can be safely placed in flat document boxes.

It is not recommended to exhibit or transport items with insecure media such as pastels or charcoal drawings. These items are especially vulnerable to vibrations, which occur during travel. Such

materials should be hand-carried whenever possible. If pastels must be shipped, speak with a conservator first. It is essential that fragile objects be well-cushioned.

Items with painted or glazed surfaces that are flaking or chipping (or are expected to have such damage) should be wrapped with extreme care in tissue paper and kept from jostling or making contact with other items. Plastic sheeting should not be used in direct contact with the surfaces of such objects since loosely adhered media could be damaged by static electricity.

Framed items

If the object is framed with glass and cannot be safely removed from the frame, it is best not to ship it.

If sending such an object is absolutely necessary, apply strips of masking tape to the glass. The tape may not keep the glass from cracking, but it will hold the glass in position so there is less danger of damaging the object. The tape should cover the entire surface of the glass in parallel strips that are both vertical and horizontal. To absorb shocks, framed pictures must be cushioned extremely well.

When artwork travels, framing glass should be taped to prevent its shattering and splintering. Glass on works of art for shipping is taped, as protection against damage to the art; should the glass break in transit, its fragments adhere to the tape, instead of falling and scattering onto the surface of the art. Wide strips of masking tape should be applied side by side to the surface of the glass, with their ends doubled over for pull tabs. The tape to be used should have a low tack. Removing the tape must be done carefully. Acrylic sheeting should never be taped.

Appendix 2. Exhibition recommendations

Display of bound material (books)
Taken from: Christopher Clarkson; The safe Handling and Display of Medieval Manuscripts and Early Oprinted Books, Book and Paper Conservation, Archives of the republic of Slovenia, Ljubljana 1997, p. 141-188.

Books are one of the most difficult objects to display safely and well. This is partly because a book is an object taken for granted and is thought of as two – and not three – dimensional. Generally, exhibition designers lack recognition of the wide variety of the different structures, materials and techniques used in books and their bindings. Unfortunately there is no one ideal solution to the safe support of a displayed book. This is not simply because books vary so much in dimension, weight, material and structure strength, but because they also vary in degrees of fragility and areas of weakness. A closed book is far easier to display safely than an open one.

Closed book lying horizontally in a case requires the minimum amount of work.
- Simply create a barrier between the book and the display deck by cutting an archival board to size or slightly under-size (so as not show).
- If there are no forms of fastening, or if on fastening they would cause too much strain to the sewing structure and joints, then simply cut a thin strap of polyethylene and wrap it around the fore-edge from head to tail.
- Stiff-board vellum bindings and skin text-blocks will need more careful strapping and environmental control within the display case.

When stood vertically, a binding is under constant strain. The problem of text-block drag within the boards is particularly acute with:
- large format books
- particularly thick books
- particularly heavy text-blocks
- books displayed open at steep angles
- books, which are left standing on their own without restriction or support.

Whenever a book is in a position other than horizontal you must be aware that its centre of gravity has altered. A basic rule is always to support the text-block in correct relationship to its boards whenever you are holding or displaying it. In summary, the safest way to display a closed book and to limit strain from text-block drag will always incorporate three inseparable features:
- display the book firmly closed,
- incorporating a text-block support piece, that also serves to
- support the boards by being in correct relation-ship to them.

Display of the open book is more problematic. On opening a book, the problems become immediately more difficult, because strains and stresses are set up which, being compounded by the particular type of binding structure and deterioration of period materials, become highly individual to the binding handled.

Open books are far happier displayed when their spines are horizontal.
When books are removed from a display case, certain books are not going to close. This is due mainly to a resetting and hardening of spine adhesives, bands and linings. Worse still, it may be due to the distortion of parchment leaves; perhaps the atmosphere in the exhibition has been too dry. In this

situation the book is best left with a light weight on it in an atmosphere of 55% to 60% relative humidity until it closes. **Do not force closed.**

General points of particular note:
- It must be appreciated that opening a book makes it more three-dimensional, articulating and demanding its own space, more so, particularly if it is opened at 90˚ rather than 180˚.
- The silhouette of the spine of the open book is affected by the type of binding and by the page opening chosen.
- Whenever a book is held or displayed, its binding type determines how the components are supported.
- Do not display an opening which has extremely light sensitive products, such as fugitive dyes, oxidation-sensitive paint binders and pigments.

The angle of opening

The angle of opening refers to the angle formed between the displayed book pages. If the two halves of the text-block are flat, in most cases the book boards will be at the same angle. If, however, the displayed leaves are curved, then the angle, of opening is best expressed by that taken by the book boards.
Never over strain the opening angle. Using a hand and some fingers at the joints to support the book's spine helps structural strains become more evident.
Once the angle of opening has been determined, then the type of support can be decided.

The open book displayed at an angle to the horizontal

Whenever a book is in a position other than horizontal, its centre of gravity has altered. Note the following:
- Open books become progressively more uncomfortable and difficult to display as they are tilted/orientated upwards from the horizontal to the vertical and as their centre of gravity alters.
- Structural strains in the majority of binding increase in relationship to the book opening angle beyond 90˚ and is at the same time oriented upwards from the horizontal.

The making of the support/cradle

Techniques used for the designing and manufacture of a tailored support must not encourage more handling of the item than is absolutely necessary.
To be able to make a safe support for the open book one must first obtain an accurate silhouette of the shape formed by the outer surface of the book.
When designing a book cradle remember that the fixed determinations are:
- the angle of opening
- relationship of book joints to each other, to boards and to the spine
- the size and dimensions of the boards.

Traditionally cradles and lecterns used to be laboriously made of wood or cloth-covered card. In 1972 Christopher Clarkson introduced cradles made of Plexiglas. Such firm support is essential for the heavier books and indeed for most formats over quarto size. Where such supports are tilted, it is essential to add ledges with text-block support pieces.

Display case

The idea behind sound display techniques is that a book should be so supported that its structure is nowhere under strain. This means awareness of the book as a fully three-dimensional object, and display cradles must be designed accordingly.

Closing the exhibition

However carefully installed and monitored, the exhibition is, the more damage occurs to the items after an exhibition. This may be in part psychological, once the great concentrated effort of an exhibition is over, and partly because that knowledgeable staff have been directed onto the next exhibition. A few hours of ignorant handling causes more damage than the past hundreds of years.

II. Mounting two-dimensional paper items

Taken from: Jedert Vodopivec; Recommendations for Mounting Artifacts on Paper; Exhibiting Archival and Library Material and Works of Art on Paper, Archives of the Republic of Slovenia, Ljubljana, 2004, p. 137-159.

Artworks on paper and other two-dimensional items are often mounted to offer physical protection or to protect the artifact while on display. The type of mount is dictated by the image technique, and size as well as the condition of the artifact. The basic mount function is to protect against mechanical damage and harmful effects of the environment. In the process of mounting, attention must be paid to the choice of appropriate materials as well as function and aesthetic considerations.

The purpose of a mount is to protect an artefact on display, while handled, or in storage. Mounts protect artefacts in direct contact to other materials such as glazing as well as the top and back of the mount. Moreover, data on the verso of the artefact can be written on the back of the mount that are vital for records and documentation. Lastly mounts provide aesthetic emphasis to the object. A functional and aesthetic mount made of appropriate durable materials is practically eternal.

To ensure a mount is as effective as it can be, attention must be paid to:
- the choice of quality mount materials
- method of hinging the artefact
- functional aspect of the mount and
- its aesthetic aspect.

Materials: paper board (mount board, adhesive, adhesive tapes)

A special standard for manufacturing mounting board for conservation use has yet not been found, although conservators and restorers have discussed it for a long time.
The basic criteria for distinguishing mounting boards is their composition of fibre additives as well as their chemical stability. Only board containing quality cellulosic fibres that are chemically stable can be used for such purposes.

Such board can only contain:
- cellulosic fibres (high quality chemical pulp of rag or wood origin)
- pulp that is manufactured in a neutral or slightly alkaline medium
- an alkaline reserve in the form of CaCO3 (mostly advisable to contain min. 2%).

It must not contain:
- aluminum sulphate
- optical whitening agents
- dyes.

Adhesives

For mounting artifacts, adhesives are distinguished between:
- those in contact with originals used for hinging an artifact on the mount
- those for hinging parts of a mount together.

Only chemically stable and reversible adhesives can be used in contact with artifacts. Such requirements are met only by starch paste and adhesives based on cellulose, e.g. methyl-cellulose (MC) and carboxyl-methyl-cellulose (CMC); all other adhesives are inappropriate. Synthetic adhesives and self-adhesive tapes or foils are never to be used, even when declared as being of archival quality. Because they adhere poorly to smooth surfaces, starch or methyl-cellulosic adhesives hinder mounting photograph print on plastic laminated paper or coated paper grade or on a similar coated material. Stronger adhesives are not applied in such cases; other techniques of mounting by means of corners are useful alternatives.

Adhesives for fixing parts of mounts not in contact with artifacts can include quality synthetic adhesives as well as self-adhesive tapes and foils. Only products declared as chemically stable and certified adhesives can be used for such purposes. However, it must be pointed out that such adhesives cannot be removed without damaging the surface, and can also change color and/or cause permanent staining of the object. They must never come in contact with originals. Commercially available adhesives and self-adhesive tapes and foils should never be used.

Choice of mounting size and type

The size of the mount is dictated by the size of an artifact and the frame. The choice of mount size must take into account:
- the idiosyncrasy of an art work (for instance printing plate mark and signature.)
- functional aspect
- aesthetic aspect
- economic use of the material
- economic use of space during storage and display.

The latter is particularly valid when artifacts have no frames of their own but are fitted with typical frames. Mounts are usually made in standardized sizes so that artifacts can be kept in standardized folders and fitted with standardized frames for display.

The thickness of mounting board is particularly important for:
- artifacts of larger sizes
- sensitive surfaces

Only thicker board or several layers of a thinner variety can be used for larger artifacts. The backboard (artifact support board) must be strong enough to support an art work sufficiently, while the top window board must allow for sufficient spacing between the artifact and its glazing.

The window board must be deep enough to protect uneven surface and friable media such as:
- uneven surfaces (relief prints, collages, deformed surfaces)

- friable techniques (e.g. pastel, chalk drawings and the like)

In case of sensitive surfaces or when a greater spacing is required between an artifact and its glazing on account of the size of the window, thicker board made of several layers is used for the top window board. Archival quality corrugated board can also be used for one of the window layers in the case of larger sizes. In selecting the thickness of a window board, attention must be paid to glazing so that it never comes in contact with the artifact.

The standard or basic type of the mount always consists of two boards of the same size:
- the back board on which the object is fixed (support board)
- the top one with a window cut into it (window board)

When the size of the mount is selected according to the above-stated criteria as well as the type and thickness of the board, the two boards are cut along the grain.

An item is always hinged to the backboard and never to the window board. It is fixed only along one side so that it hangs freely without causing any tension due to shrinkage or extension resulting from possible changes in relative humidity. This way also facilitates viewing of the verso.

Only water-soluble adhesive and paper tabs (hinges) can be used for hinging.

When water-soluble adhesives may not or cannot be used, the corners are the only solution; for example, in case of modern papers coated with water-repelling substances, hinging with corners is the best solution.

Display of two-dimensional parchment items
taken from: Christopher Clarkson; The permanent Display of the Single Parchment Membrane in Fluctuating Environmental Conditions: From Small Charter to the Mappa Mundi, Exhibiting Archival and Library Material and Works of Art on Paper, Archives of the Republic of Slovenia, Ljubljana, 2004, p.33-50.

Problems of the display of a single sheet parchment items (charter, indenture, estate map.) are different from that of paper items. Parchment is an extremely hygroscopic material and will readily respond in area and thickness to changes in the surrounding relative humidity. Paper, card and wood move less and at different rates. An important point to realize also is that parchment, being of biological origin, absorbs and gives up moisture in a varying manner over its whole surface; therefore the degree of relaxation or shrinkage is variable.
Various methods of utilizing linen threads or stainless steel springs in the mounting system are used.

Linen thread system as a mounting method for parchment sheets is based on the principle that a length of twisted linen thread will shorten in length as its moisture content increases, and increase in length when moisture decreases. Since fibres expand with rising moisture levels, the fibres which make up the twisted thread expand in width; therefore, the twist is increased and the length of the thread is shortened. The opposite happens when moisture levels fall.
Twisted thread is the only material that will lengthen in a dry environment and shorten in a damper environment.

Adding the Window Mat/s is mainly for aesthetic appeal rather than to support the document – the threads can detract from the visual enjoyment of the object.

Springs should be used when mounting larger parchment items. That is to say, the membrane can stand slight continuous stress. The tolerance one can allow on such movement of the parchment membrane must be directly related to the particular characteristics of the decorative layers of an object. Other factors which must always be considered in association with this, are:

- the dimensions of the sheet
- the dimensions of the vulnerable decorative layers.

Some Alternative Solutions

Occasionally more complex-shaped objects are mounted with individual springs on each thread or two threads from opposite edges on one spring. But towards the outer sides the number of springs used can be decreased by attaching several threads to shaped pieces of card that are connected to springs.

Most common mistakes when mounting single parchment leaves:

- Sticking the parchment membrane down overall, to a rigid support. The problem is that it will never give up the struggle; it will split at any weak area.
- Treating the membrane in a similar way but only drumming (sticking it) around the edges to a rigid support. With a healthy skin the adhesive line usually breaks down along two edges, causing diagonal distortion to occur across the membrane. Where the adhesive bond is stronger than the weakest area of the parchment membrane, it will split across from that area.
- Attaching the membrane from its head-edge, as though it were a paper object. This has proven disastrous in many cases since it is not a cellulosic material and it will move and distort. As it expands, the membrane can buckle as its edges catch in the window of the frame.

Sandwiching parchment membranes between acrylic sheets can cause damage, particularly where there is lack of environmental control. The number of acrylic sheets seen over friable paint layers are also unacceptable. But in certain cases where the membrane is particularly weak, it could be argued that this method is the only safe one for storage and display.

Appendix 3.

Sources for information in this section include the following:

1. Bertrand Lavédrine, *A Guide to the Preventive Conservation of Photograph Collections*, The Getty Conservation Institute 2003, ISBN 0-89236-701-6
2. Jean Tétreault, *Airborne Pollutants in museums, galleries, and archives: risk assessment, control strategies and preservation management,* Canadian Conservation Institute 2003, ISBN 0-662-34059-0

Qualifying light

Our eye perceives electromagnetic radiations with wavelengths (λ) in a range of approximately 400 to 780 nanometres (nm). This infinitesimal part of the electromagnetic spectrum constitutes what is called light. Artificial and daylight sources are not limited to the emission of visible radiation, but are usually accompanied by infrared (IR) and ultraviolet (UV) radiation, located on either side of the visible spectrum.

Colour temperature, colour rendering index, luminous intensity, luminous flux, illiminance/luminance, light exposure, quantity of ultraviolet radiation and luminous efficacy are the units which inform us about the lighting characteristics.

Colour temperature (CT). When an incombustible object is heated, it emits light. At approximately 1000ºC, a piece of metal glows red. As the temperature rises, it turns yellow. This is a principle behind the incandescent bulb. The flow of electric current raises the temperature of the filament and causes it to glow. To qualify the appearance of such light, physicists use an idealized reference tool, the blackbody radiator, which, when heated, transforms any input energy into a continuous spectrum of radiation. Colour temperature of a light source is the temperature to which the blackbody must be heated for it to emit light with the same spectral distribution. On the other hand, the blackbody can be described as a body capable of absorbing all of the light radiation it receives and of transforming it into heat in order to reach the CT. This is expressed in kelvins (K; to calculate the temperature in degrees Celsius, subtract 273 from the temperature in kelvins) and provides important information about the quality of light. As the CT increases, the colour of the emitted light changes from warm tones (red) to cooler tones (blue).

Colour rendering index. (CRI). While colour temperature gives qualitative information about the appearance of light, it does not determine how the observer will perceive objects illuminated by the source of that light in comparison to a reference light source. To resolve this problem, one uses the CRI. Colour rendering indicates have been grouped into five categories. A light source with a CRI of 90 is entirely satisfactory for an observer.

Luminous intensity is the quantity of light emitted by a light source in a given direction, expressed in candela (cd).

Luminous flux is the quantity of light produced by a 1 cd light source, measured in a steradian. It is expressed in lumens (lm).

Illuminance is a measurement of the luminous flux received by surface. It is expressed in lux. A one-square-meter wall uniformly irradiated by one lumen of luminous flux receives one lux of illuminance (1 lux = 1 lm/m²). This unit was established based on visual perception. It is used in recommendations for exhibition of light-sensitive artworks. However, items may absorb nonvisible radiant power that has

significant deteriorating effects. Illuminance depends of the intensity of the light source and the distance between the item and the light source.

Light exposure is the product of illuminance times duration of exposure. It is expressed in lux-seconds (lx.s) or lux-hours (lx.h). This unit is used when exhibiting items to record the amount of light received by the object while it is exhibited. In that case, it is also called the total light dose (TLD).

Quantity of ultraviolet radiation is the proportion of ultraviolet in the light, expressed in microwatts per lumen.

Luminous efficacy in a light source a portion of the energy consumed is dissipated as ultraviolet radiation but also as infrared radiation, which generates the heat. Luminous efficacy is the relation between luminous flux and the energy consumed by the lighting source. It is used to evaluate the efficiency of a light source and is expressed in lumens per watt (lm/W).

Artificial light

Artificial light sources can be divided into two families, incandescent bulbs and discharge bulbs.

Incandescent Lamps. These lamps are composed of a tungsten filament in a glass bulb containing an inert gas (for example, argon, krypton or nitrogen). lamp. The electric current passing through the filament heats it to incandescent and produces light. These lamps produce a large amount of infrared radiation and can considerably raise the temperature in enclosed space with poor ventilation.
Tungsten bulbs generate fairly little UV radiation. The life expectancy of such bulbs is about one thousand hours.
Tungsten halogen bulbs are also called quartz iodine bulbs. With this type of bulb, it is advisable to check the UV levels and, if necessary, use filters. Some low-voltage halogen bulbs with low UV lighting content are now available on the market. The use of low-voltage halogen bulbs with dichroic reflectors has become widespread in homes and galleries. These allow each object to be aesthetically equipped with its own light. The light beam is intense and narrow. The dichroic reflector directs the most harmful radiation rearward. It is also necessary to check the illuminance and the heat, which may be dangerous if the bulbs are placed too close to the objects.

Discharge Bulbs. These tubular or oval glass tubes contain a gas (for instance, mercury, sodium or xenon vapour) and have an electrode at each end. In this case, light is not produced by heating a metal filament. When the bulb is turned on, electrons are ejected from the cathode toward the anode at the other end of the tube. As they travel, they collide with gas atoms, and radiation is emitted.
Fluorescent tubes have the advantage of dissipating much less energy in the form of heat than do incandescent bulbs, but they can generate much greater levels of UV radiation and, consequently, require the use of filters. Fluorescent tubes are grouped into several categories based on the color of the light they produce. Metal halide bulbs contain mercury vapour. Their life expectancy is greater than that of other bulbs, and they consume less energy. However, for illumination light-sensitive items, the very high level of UV radiation they emit limit their use.

Fibre Optic Lighting. Use of this type of device is currently widespread, since it solves certain difficult lighting problems. Strictly speaking, optical fibres are not a light source but a lighting device. Optical

fibres and optical cables (composed of a few dozen to several hundred fibres) are the only means of propagating light from a conventional tungsten halogen or metal iodide source. Using that light source, placed in a removed but accessible location, makes it possible to illuminate several items with different angles (display cases, objects). Bulbs can be changed without risk of disturbing the direction of the lighting. The light may contain the infra-red radiation, but it is off UV rays. Adding filters and lenses makes the appearance and focus the beam of light possible to modify.

In the last few years LEDs (light emitting diodes) have begun replacing incandescent and fluorescent lights in a number of niche applications (recent technological advances have allowed them to spread into areas like architectural lighting, traffic lights, flashlights and reading lights). Diode light is regarded by many people in the lighting industry as the lighting of the future for virtually all applications. The reason is that diode light is characterized by its low energy consumption, consuming approx. 2-6 times less energy than filament lamps. Diode bulbs are characterized by low energy consumption, long service life, considerable robustness, no use of mercury or other environmentally harmful substances in their manufacture. Furthermore, the technology makes it possible to regulate both the colour and strength of the light. So far they are still more expensive than ordinary lights and the color rendering is often very poor. Many institutions are using or considering using LED's for exhibit lighting.

Guidelines for light intensities for museum, gallery, library, and archive collections.

Category	**LOAED**[a] lowest observed adverse effect dose	**Preservation targets**[b]		
		1000 yrs	**100 yrs**	**10 yrs**
High sensitivity ISO 1, 2, 3	ISO 2: 1.0 Mlx h (million lux hour)	50 lx for 20 h/yr	50 lx for 25 days/yr 500 lx for 25 h/yr[c]	50 lx for 250 days/yr 500 lx for 25 days/yr
Medium sensitivity ISO 4, 5, 6	ISO 4: 10 Mlx h	50 lx for 25 days/yr 500 lx for 20 h/yr	50 lx for 250 days/yr 500 lx for 25 daysh/yr	340 lx for 365 days/yr 500 lx for 250 days/yr
Low sensitivity ISO 7, 8, above	ISO 7: 300 Mlx h	100 lx for 365 days/yr 500 lx for 75 days/yr	1000 lx for 356 days/yr[d] (500 lx/yr for target 200 yrs	

a. LOAED based on a grey scale 4 (British Standard BS1006) (Michalski 1987). Some ISO blue wool standard equivalencies for colorants and materials are mentioned in the previous paragraph.
b. Number of years before observing a low adverse effect. The illumination allowed are based on 8 h of light exposure per day, with UV radiation filtered. Intermediate preservation targets can be used as well. Variations in light intensity versus exposure period are also possible

(50 lux for 300 days/yr = 100 lx for 150 days/year).

c. If the object has dark surface or low contrast detail, the observers are old, or a difficult task must be performed, light levels may be increased up to 10 times: about 500 lux (2 of 4 visibility factors) (Michalski 1997).
d. The practice of having a light intensity higher than 500 lux may encourage other uniformed institutions (archives, libraries and museums) to use unnecessarily high light levels without doing a proper light fading risk assessment of the collection.

Monitoring devices

Measuring colour temperature

Thermocolorimeters use a photoelectric cell to compare luminous intensity at various wavelengths and to deduce color temperature from the data. This value is reliable for continuous spectra (incandescent bulbs), but one should be aware that it may be erroneous for discontinuous spectra (fluorescent lighting). Colour temperature is often specified on the data sheet for the light source.

Measuring illuminance

Illuminance is measured with a luxmeter, a device that contains a photoelectrical cell of the type found in cameras. The spectral sensitivity of a luxmeter is theoretically aligned to that of the eye. Therefore, this measurement emphasize radiation at the centre of the visible spectrum.

Measuring the ratio of ultraviolet radiation

This measurement is taken using UV meter, which contains a photoelectric cell that measures the quantity of radiation between 300 and 400 nm (UV-A) in ambient light. It is expressed in microwatts per lumen (µW/lumen) or in W/m².

Measuring Infra-red Radiation

Lighting and infra-red radiation can damage items by heating them. The simple way to evaluate this effect is to measure the increase in surface temperature during exhibition.

Measuring light exposure: dosimeters

Dosimeters are photocell data loggers that are placed in proximity to items so that they may be subjected to the same lighting conditions. These devices keep the running total of the illuminance they receive and thereby provide light exposure.

Filtering light

Filters for ultraviolet radiation

Ultraviolet radiation is particularly detrimental to exposed archival, library and museum items and adds nothing to visual comfort. Therefore, if the chosen light source emits UV radiation, it must be eliminated using a filtration system. UV filters must possess three qualities:

- They should stop radiation under 400 manometers; some filters may stop near-ultraviolet radiation, which is sufficient to deteriorate vulnerable items.
- They should not excessively modify colour rendering.
- They should have a degree of longevity. It is advisable to check its efficiency regularly.

Filtering artificial light
Cutting off harmful radiation as closely as possible to the source that generates it reduces the required surface to be covered by filters, thereby lowering the cost of the filters and the design of the filtration system.
There are a number of types of filters, but dichroic UV filters are particularly effective in protecting the items even as sensitive as photographs. Very selective, they stop 99% of the radiation under 400 nanometres, and the quantity of UV radiation goes down to under one microwatt per lumen. In addition these filters are durable and heat resistant.

Filtering daylight
Daylight has the drawback of being changeable and sometimes too aggressive. Items should not be placed facing windows, in particular sunny windows. Shutters, curtains, and neutral gray glass can mitigate the effect of excessive daylight. Sheet glass blocks UV radiation under 310 nm but does not eliminate near-ultraviolet radiation. For that reason, UV filters should be applied to windows. These may be packaged as sheets or adhesive plastic film that cling to windows. They are available in various shades of neutral grey.

Appendix 4
Stefan Michalski, *Guidelines for Humidity and Temperature in Canadian Archives*, Canadian Conservation Institute 2000, ISBN 0-662-29509-9

Three categories of inherent chemical stability of the archival and library items

High **chemical stability** *Lifetime 300-1000 yrs* *at 20ºC/50%RH*	**Medium** **chemical stability** *Lifetime 100-300 yrs* *at 20ºC/50%RH*	**Low** **chemical stability** *Lifetime 30-100 yrs* *at 20ºC/50%RH*
Parchment, vellum. Rag paper, not acidified by pollution or sizing. Alkaline paper. Wood. Most black-and-white (silver/gelatine) photographs or microfiche (on paper, glass or polyester). Most collodion negatives on glass. Paint on wood, canvas or stable paper.	Mildly acidic papers (most papers and boards). Most black-and-white (silver/gelatine) negatives and films on acetate and nitrate. Albumen photographs. Some collodion glass negatives. Some color photographs on paper, on film. Well-made optical digital media (CDs).	Strongly acidic paper (e.g. acidic newsprint or paper and leather exposed in the past to acidic pollution). Poorly processed photographs. Most color photographs. Some acetate and some cellulose nitrate film (and negatives). Magnetic media (e.g. video, digital tapes, disks). Poorly made optical digital media (CDs)(disc rot).

Appendix 5. Arrangements between parties

APPENDIX A

(for information)

Loan Form

(to be adapted according to the users' needs)

(to be sent by the lending institution)

Part 1 : to be filled by the borrower

(1form per exhibition)

Information about the exhibition

1 BORROWING INSTITUTION

Borrowing institution :

Name of the Director: ……

Address: ……

……

Phone number: ……

Fax number: ……

E-mail: ……

Administrative status of the borrowing institution:

National o

Public o

Private o

Other (give details) o ……

2 EXHIBITION

Name of the Commissioner: …… ……

Address (if different from the lending institution): ……

……

……

Phone number: ……

Fax number: ……

E-mail: ……

Title of the exhibition: ……

Address of the exhibition: ……

Dates of the exhibition: ……

Opening days and hours: ……

Catalogue : yes o no o

3 EXHIBITION PREMISES

Date of construction of the building: ……

Date of latest refurbishment: ……
Number of square meters of exhibition premise: ……
Main construction materials used: ……
Exhibition furniture and equipment available (existing showcases): ……

Room where the document is to be exhibited *(if the various documents are exhibited separately, use one column for each room)*	Room 1	Room 2	Room 3
Floor:	……	……	……
Number of square meters:	……	……	……
Please attach a blue print of the building and indicate where the Exhibition room is located.			
Environmental conditions			
Full air-conditioning equipment:	yes o no o	yes o no o	yes o no o
Heating (central, ground, electric…):	……	……	……
	……	……	……
Humidifiers:	yes o no o	yes o no o	yes o no o
Dehumidifiers:	yes o no o	yes o no o	yes o no o
Climatic control equipment:	yes o no o	yes o no o	yes o no o
Temperatures ranging from…. to ….. °C:	……	……	……
RH ranging from…. to….. %:	……	……	……
Lighting			
Natural :			
Orientation of the room (north, south, east, west):	……	……	……
Windows with anti-UV filters:	yes o no o	yes o no o	yes o no o
Sun block filters:	yes o no o	yes o no o	yes o no o
Shutters or awnings:	yes o no o	yes o no o	yes o no o
Door shutters or blinds:	yes o no o	yes o no o	yes o no o
Artificial:			
Incandescent - halogen:	yes o no o	yes o no o	yes o no o
Fluorescent:	yes o no o	yes o no o	yes o no o
If so, presence of anti-UV filters?	yes o no o	yes o no o	yes o no o
Security			
Fire alarm systems			
Extinguishing systems:	yes o no o	yes o no o	yes o no o
If yes, please give details:	……	……	……
Thief proof systems:	yes o no o	yes o no o	yes o no o
If yes, please give details:	……	……	……
Anti-intruders security			
Locked room:	yes o no o	yes o no o	yes o no o
Reinforced doors:	yes o no o	yes o no o	yes o no o
Thief-proof window panes, or bars:	yes o no o	yes o no o	yes o no o
Warning detection systems (movement, infrared, video…):	yes o no o	yes o no o	yes o no o
	……	……	……
If yes, alarm connected to:	……	……	……

Day keepers: Number: Night watchmen: Number:	yes o no o …… yes o no o ……	yes o no o …… yes o no o ……	yes o no o …… yes o no o ……

4 DISPLAY EQUIPMENT

Existing display supports: yes o no o
Existing supports to be made : yes o no o
Give detail: ……
Materials to be used: ……

5 PREMISES TO STORE ITEMS BEFORE AND AFTER THE EXHIBITION?

In which premises will documents be kept before the exhibition and after?
Floor: ……
Please indicate the location on the building blueprint.

Is the storage area equipped with thermo hygrographic devices? yes o no o
Temperature ranging from … to…. °C: ……
RH ranging from ….. to ……. %: ……
Is the room only used for storing exhibition items? yes o no o

Fire security

Fire alarm system: yes o no o
If yes, please give details: ……
Extinguishing system: yes o no o
If yes, please give details: ……

Thief- proof systems

Locked premises: yes o no o surface area: ……
Thief proof window panes: yes o no o
Strong-store: yes o no o dimensions: ……
Safe: yes o no o dimensions: ……
Reinforced doors: yes o no o
Strong-room: yes o no o surface area:……

Detection systems (movement, infrared, video…): yes o no o
If yes: alarm connected to: ……
Security rounds:
During the day: yes o no o
At night: yes o no o

Storage of wrapping materials and crates

In which room and how are the wrapping materials and crates stored during the exhibition?
……
……
……

APPENDIX A
(for information)

Loan Form
(to be adapted according to the users' needs)
(to be sent by the lending institution)

Part 2: to be filled by the borrowing institution
(1 form per document)

Document to be borrowed

(This form is to be adapted according to the type of document and its origin: library, archives, photographic document…)

Institution conserving the document:……

Shelf mark or inventory number: ……

Author: ……

Title or short description: ……
……

Publication place: ……

Date of publication: ……

Pagination: ……

Size: ……

Technique, carrier: ……

Characteristic of the item: ……
(signature, notes, Ex libris, ……
presence of another carrier, of an ……
original mounting) ……

Have you heard of other existing copies: yes o no o
If yes, where? ……

Page to be exhibited: ……

Reasons why you ask for this particular
document: ……
……

APPENDIX A

(for information)

Loan Form

(to be adapted according to the users' needs)

(to be sent by the lending institution)

Part 3: to be filled by the lender

(1 form for each document)

Characteristics of the lent document and conditions of the loan

(Form to be adapted according to the type of document: library or archival document, photography)

Person responsible for the document to be contacted by the borrower if necessary:
Name: ……
Phone number: ……
E-mail: ……

A. Characteristics of the lent document

Identification of the document:
Shelf mark: ……
Author/title/short description: ……
……

1. CHARACTERISTICS

Bound volume:

Size of document when closed (height x width x thickness) in mm: ……
Weight: ……
Binding material (leather, cardboard…): ……
Text block material (paper, parchment…): ……

Is the document preserved in a box? yes o no o
Size of box: ……

One-sheet document:

Material: ……
Size of the original document (height x width in mm): ……
Is the document framed? yes o no o
If yes, under glass o under polymethacrylate o
Size of the frame
(height x width x (eventually) thickness in mm): ……
Total weight: ……
Can the frame be removed: yes o no o
If so, under which conditions? ……

State of preservation: ……..
……..
……..
For a precise description of damage: see preservation report

Is a Restoration necessary before the loan? yes o no o
Costs paid by the lender: yes o no o
Costs paid by the borrower: yes o no o
Nature of planned interventions: ……..
……..
……..
Estimated cost: ……..

2. DUPLICATION

Item already duplicated for security copy: yes o no o
If yes, carrier and size: ……..……..
If no, duplication paid by the lender: yes o no o
paid by the borrower: yes o no o
Will a photograph be sent by the lender? yes o no o
What kind of photograph (B&W print, color slide…) : ……..……
Free of charge: yes o no o
If not, price: ……..……..

Authorisation to reproduce the document in the exhibition catalogue: yes o no o
From the printed photograph, slide, extra sent by the lender: yes o no o
Copyright to be mentioned under published photograph: ……
From a photograph taken by the borrower: yes o no o
Copyright to be mentioned under the published photograph: ……

Authorisation to take photographs or to film the document: yes o no o
In all cases: yes o no o
Only to advertise the exhibition: yes o no o
For printing of post-cards*: yes o no o
For objects on sale*: yes o no o
For training or cultural purposes: yes o no o
By the borrower : yes o no o
By a professional : yes o no o
If yes, name and address : ……
By visitors: yes o no o

When the lent document is not in the public domain, the lending institution must inform the borrower.

Note : * In those cases a separate contract should be established.

3. Insurance

Estimated value: ……..

B. Specific conditions of the loan

1. ENVIRONMENTAL CONDITIONS

The document must be stored before and after the exhibition, and exhibited in the following conditions.
Temperature: ……. °C
Relative humidity: ……. %
This corresponds to the climatic conditions under which the document is usually preserved. During the exhibition temperature and RH should remain
Temperature: ±……. °C
Relative humidity: ±……. %

Maximum light level authorised is: ……. lux/hour
The same page of the document must not be exhibited more than: ……. days

2. DISPLAY OF THE DOCUMENT

Bound volume:

The volume should be displayed
Flat back: yes o no o
Reclining back: yes o no o
Maximum incline level: ……° (from the horizontal)
Maximum opening of the volume: ……°

Compulsory use of base or stand supplied by lender: yes o no o

One sheet document

Framed document: yes o no o
If yes,
Framed by lender: yes o no o
Standard frame: yes o no o
Special frame on request from the borrower: yes o no o
Framed by borrower: yes o no o
(lender's approval is necessary for the materials to be used)

Document displayed in a show case: yes o no o
flat: yes o no o
reclining: yes o no o

3. SECURITY

Display cases should not be opened without using specific tools (keys, suctions cups, screwdrivers…). The exhibition premises must be kept secure day and night and equipped with fire alarm and anti-intrusion systems..

4. TRANSPORTATION

Transport by mail is forbidden

The document will be escorted by

The lender:	yes o	no o
The borrower:	yes o	no o
A private carrier acknowledged by the lender:	yes o	no o

Number of escorts required: …….

Means of transportation required:

Air:	yes o	no o
Rail:	yes o	no o
Car:	yes o	no o
Other:	yes o	no o ……

5. HANDLING OF THE DOCUMENT

Handling of the document and/or opening of the showcase should be prohibited except under the responsibility of preservation and / or collection staff.

If the work was lent framed, it is forbidden to unframe it even for filming.

Lent document should never be folded, punched or glued. The use of adhesive tape, nylon thread, elastic band, adhesive paste, paper clips or any other means of fastening presenting a risk of damaging the document is forbidden.

The lender,

Date and seal:

Signature and position:

Agreement signed by the borrower:

Date and seal:

Signature and position:

APPENDIX B
(for information)

Loan Contract

Between

The lender,

and

the organizer of the exhibition, named as the borrower,

agree to respect the following contract.

Article 1: Loan of documents

From to [dates of the exhibition or dates of the loan accepted by the lender, including transport], the lender entrusts the borrower the following documents, for the entitled exhibition: ……
……
……

List of lent documents:

Inventory number	Shelf mark	Author/title/date	Agreed value
……	……	……	……
……	……	……	……
……	……	……	……

The borrower commits himself (herself) to display the listed document during the above period of time in the exhibition premises:
[address]

and not to use it outside the exhibition or for other purposes.

The borrower commits himself (herself) to respect the dates of the exhibition. Any prolongation should be asked by letter, at least [n] days before the planned closing time of the exhibition.
The borrower commits himself (herself) to remove and bring back the documents as soon as possible before and after the exhibition opens, that is to say [n] days before and [n] days after.

Each loan is valid for this exhibition only. Lent documents cannot be transferred to another place that the place mentioned above.

A condition report will be established when the document:
- leaves the lending institution
- arrives at the borrowing institution
- is brought back to the lending institution.

Article 2: Transportation and escort

The conditions for the loan are the following ones:
[Conditions agreed by the borrower on the request of the lender: See Annex A, part 3]
[Dates of the transportation]
[Means of transportation: number of escorts, length of their visit, expenses paid by….]
[Address of the shipping company]
[Presence of the escort during setting up and removing of the exhibit]

Article 3: Preservation

The borrower will take all preventive measures for ensuring the security and the protection of lent items. The lender retains the right to control the conditions of preservation, even during the exhibition. When not satisfactory, the documents may be removed by the lender.

The borrower commits himself (herself) to respect all preservation measures imposed by the lender as stated in the various administrative documents and standards [list of the documents and standards].

No repair nor change even in the display is allowed unless written agreement is given by the lender. [conditions to be detailed: handling conditions].

No labels, no stamps should be added to the items by the borrower. Reversibly no existing label nor stamp should be withdrawn from the lent item, even for aesthetic reasons.

The borrower will take care that shooting or filming, for advertising reasons, will respect good preservation practices, and that the lender has given his written agreement and that the lender's name is mentioned when the photographs are published.

Article 4: Insurances

The borrower is responsible for all damage or loss concerning the lent items. In the care when the loss is complete the borrower will have to pay for the agreed value of the document as indicated in Article 1.

In the case of a damaged item, the borrower will have to pay for the restoration expenses. No restoration can be proceeded without a prior written agreement from the lender, indicating how the restoration is to be conducted.

If there is no agreement on the sum to be paid by the borrower, an expert must be nominated jointly by both parties.

The lender approves that the lent item is insured by the following company: [name and address of the insurance company] for the agreed value of:
The insurance is valid from (dates of the loan) for all risks, from the moment it leaves the lending institution until the moment it is taken back.

The borrower will send the insurance contract at least one week before the item is borrowed.

The borrower must immediately inform the lender about eventual damages occurring to the lent items and confirm them by mail.

Article 5: Expenses

All expenses related to the loan (insurance fees, transportation…) are to be supported by the borrower.

Article 6: Modification of the contract

Any modification to be brought to this contract should be written.
No additional oral agreement has been passed.

Signed in , on

The lender The borrower

A**PPE**N**DIX C**

(for information)

CONDITION REPORT FORMS

(to be adapted according to the users' need)

(to be sent by the lending institution)

MODEL 1 : Loose sheets

CONDITION REPORT

- **single sheet**
- **mounted or framed document**
- **document in an album**

Lending institution: Stamp of the institution:

TITLE AND DATES OF EXHIBITION:
.....
.....

SHELF MARK:.....
BRIEF DESCRIPTION : kind of item, author, title, technique used, date:
.....
.....
.....

SIZE:
• Single sheet:
Size of item closed, rolled or folded (height x width x thickness in mm):
……
Size of item opened, rolled or folded (height x width x thickness in mm):
……

• Mounted document:
Description of preservation or exhibition mounting:
……
Size of mounting (height x width x thickness in mm):
……

• Framed item :
Size of frame(height x width x thickness in mm):
……

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Name of reporter				
Position of reporter				
Signature				
Date				

Locate problems mentioned below on a drawing (in particular size of missing parts, of tears…) or a picture, photocopy…

State of preservation of the carrier:

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Observations (spots, tears, holes, carrier, loss, adhesives smears, humidity stains, folds, abrasion, cockling, etc…)				

State of preservation of drawing or writing:

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Observations (dustiness, ink migration, etc…)				

State of preservation of seal:

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Observations (split, slit, cracked, crumbly seal, loss, etc….)				

State of preservation of frame or mounting:

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Observations (chipped, unglued, broken, frame, etc…)				

MODEL 2 : Bound item

CONDITION REPORT

- **Book**
- **Register**
- **Album**

Lending institution: **Stamp of institution:**

TITLE AND DATES OF THE EXHIBITION :
.....
.....

SHELF NUMBER:
.....
BRIEF DESCRIPTION: kind of item, author, title, technique used, date :
.....
.....
.....
.....

SIZE:
Size item closed (height x width x thickness in mm):
.....
Size item opened (height x width x thickness in mm):
.....

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Name of reporter				
Position of reporter				
Signature				
Date				

COVER

State of preservation of binding material:

	State 1	State 2	State 3	State 4
Observations (cover: stained, torn, lacerated, shrunk, faded, scratched, loss, etc...)				

State of preservation of top cover:

	State 1	State 2	State 3	State 4
Observations (cover, edge, cardboard, woodcut block, loss, etc.)				

State of preservation of back cover:

	State 1	State 2	State 3	State 4
Observations (cover, edge, cardboard, woodcut block, loss, etc.)				

State of preservation of spine:

	State 1	State 2	State 3	State 4
Observations (headcaps, bands, spines, loss, etc.)				

TEXT BLOCK

State of preservation of the edges:

	State 1	State 2	State 3	State 4
Observations (dirty, faded, worm out, stained.)				

State of preservation of leaves and end papers:

	State 1	State 2	State 3	State 4
Observations (leaves of end papers: stained, torn, loss, etc.)				

State of preservation of exhibited page:

	State 1	State 2	State 3	State 4
Observations (stains humidity, mould, ink migration, cockling, brittle paper, tears, loss etc.)				

BINDING

State of preservation of the binding:

	State 1	State 2	State 3	State 4
Observations (torn sewing, cut hinge, missing or torn headband, etc.)				

Sketch a drawing showing the above observations or indicate them on a duplicate or transparency.

MODEL 3: PHOTOGRAPHIC ITEM

CONDITION REPORT

- **photograph**

Lending institution : **Stamp of the institution :**

TITLE AND DATES OF EXHIBITION:
.....
.....

SHELF MARK :…….....
BRIEF DESCRIPTION: kind of item, author, title, technique used, date:
.....
.....
.....

SIZE:
Size of photography (height x width x thickness in mm):
…….
Size of mounting (height x width x thickness in mm):
…….

If the photography is in an album, also use model 2 of the condition report.

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Name of reporter				
Position of reporter				
Signature				
Date				

State of preservation of the support :

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Observations (stains, tears, holes, missing parts… %, adhesive smears, humidity, folds, abrasions, cockling, broken glass, etc.)				

State of preservation of the binder and final material:

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Observations (dirt, abrasions, missing parts, tears, folds, cockling, yellowing, oxidation, silver mirroring, etc.)				

State of preservation of the frame or the mounting:

	Condition report 1	Condition report 2	Condition report 3	Condition report 4
Observations (broken frame, etc.)				

Sketch a drawing showing the above observations or indicate them on a duplicate or transparency.

Densimetric statement:

Before exhibition (Condition report 1):

Filters	Visual	Blue	Green	Red	Observations
Maximum					
Medium					
Minimum					

After exhibition (Condition report 4):

Filters	Visual	Blue	Green	Red	Observations
Maximum					
Medium					
Minimum					