



National Preservation Office

Packing and Moving Library and Archive Collections

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Why move collections?

There are a number of reasons for moving collections. The most usual are relocation to different premises, the renovation of the fabric of the building, the installation of security systems, preparation for exhibition or rearrangement of the collection itself. The whole collection, or a part of a collection, may be moved within the building, within a complex of buildings or off site altogether. The extent to which the collection is affected will vary but any movement of books and archives has the potential to cause them harm, so it is important to be aware of the risks and to begin planning as far as possible in advance of the move.

This leaflet gives guidance on best practice for conducting the move of a library or archive collection. It describes areas of the move where the collection may be at risk, and suggests how the risks may be minimised by good planning. Outlines for the specification of handling and packing criteria for contractors are provided.

Risks

Risks in collection moves can arise from the sheer number of objects to be handled, lack of personnel, lack of time and lack of space. Restricted finances, constraints imposed by other contractors, for example over-running building works, or the need for the library or archive to be available to readers for as long as possible, contribute additional risk factors. Early assessment of risks to both staff and collections allows input at the planning stage when extra finance may be made available for protecting the material to be moved and for sensible staffing levels to be maintained throughout the project.

Planning

Good planning is essential and should be started as far as possible in advance of the move. A single member of staff should take on the role of project manager, if necessary full time, to manage the complex job of keeping all aspects of the move under control without having to deal with routine work as well. Depending on the size of the collection and the timescale for the move, several project managers may need to be appointed to deal with different aspects of the task, reporting to a co-ordinator.

The project manager should be present at all discussions, or if unavailable, be consulted about the topic of conversation prior to any meeting he or she cannot attend. This is crucial, as the project manager may be aware of factors not known to the other parties. A full written minute/report of discussions and decisions taken should be kept.

Contact should be made and actively maintained with any contractors involved, with library and archive managers, health and safety and buildings staff, insurance and security advisers, equipment suppliers, conservators and, in some instances, local journalists and community leaders. A timetable with start and finish dates for each element of the move should be prepared for all those involved, with allowance to minimise the effect of unforeseen problems, which may dramatically affect the project. Regular meetings should take place, as liaison with all contractors is essential, especially if the collection move is only one element of a larger project, such as the renovation of the building.

Budgets for all stages of the project should be discussed, estimated and information centralised with the project manager to ensure both that the likely overall cost is assessed before any work is undertaken and that at least one person has a complete overview.

Staff and volunteers

Moving collections is hard work and some tasks require physical strength and fitness, so the suitability of staff for the move must be assessed. Those with bad backs, dust or mould allergies, bronchial problems or other disabilities may be at risk. People unfamiliar with the collection or building may be brought

in to help with the move, for example volunteers or students, and advance training will be required for them before they are ready to work. Staff will also require training in any job which is new to them; this will help avoid injury to the staff and damage to the collection. Failure to provide training for all personnel involved, including contractors, will result in time being wasted and additional stress for those managing the project.

The number of staff or helpers required will depend on available space, the way in which the move is planned and how quickly the job has to be done. The collection may be moved by in-house staff or a removals company. The latter will supply staff to pack and move the collection but it is advisable to have members of staff working alongside them, for security reasons and to ensure that the collection is handled properly.

Buildings

The move may take place between a number of buildings – the library or archive itself, a store, an exhibition venue or a permanent new location for the collection. The main areas of concern are the environment and floor strength.

■ Environment

Books and archives are sensitive to changes in environment. During a move they will pass through a number of different environments: their original location, rooms between that and the outside of the building, the removals truck etc. Fluctuations in relative humidity (RH) levels cause the most damage to books, so RH and temperature levels should, if possible, be monitored for at least a year in advance, especially in the original location and final destination, then compared and brought into parity to prevent damage to sensitive items. The greatest degree of risk is experienced if the environmental variations are very significant and if the material is kept in interim storage sufficiently long for it to require full re-acclimatisation on return to its original storage or new home. Parchment and vellum books, bound archives and documents are at greatest risk of distortion from fluctuations in the environment and if the collection contains such items, environmental control becomes of particular importance. It may not be possible to control the removals lorry, although air-conditioned trucks

are available, but books and archives may be wrapped in such a way as to buffer them during transit. Equally, interim storage areas may not have ideal conditions but it is possible to create environmentally-controlled areas within a building or store by making rooms within rooms, heated with oil-filled radiators controlled by a humidistat. Expert advice should be sought on the best type of equipment for this.

■ **Floor strength**

Floor strength is also of great importance: books on shelves against a wall are a very different proposition from books off shelves, and all over the room. Before books are moved, floor loading capabilities in the library, storage area and destination must be assessed by the architect, surveyor or structural engineer. Their findings will define how the collection is moved and stored, affecting the rate at which books are removed from shelves, the number of people required, the area available for stacking crates and thus the frequency with which they have to be removed from the premises and unloaded at their destination.

■ **Protecting the building**

It may be necessary to protect parts of the building, for example banisters, carpets, fixtures or fittings. Materials used should, if possible, be fire-retardant or fire-resistant. If the route avoids stairs, so much the better. Ramps may be installed on single or small flights of steps, especially if trolleys are to be used. Lifts should be serviced before the move starts.

Shelving

The length of shelving should be calculated, both at the current store and at the destination, and in any interim storage area. Collection moves can be an opportunity to improve the standard of shelving, for example by providing horizontal shelving for elephant folios or large drawings. It may be possible to provide for future space requirements if the collection is still growing.

If the floor can take the weight and if access to the collection is not necessary, shelving in the interim storage area can be deeper than in the permanent storage, so that books may be double- or treble-banked, with less headroom than normal. Archival boxes may be stacked higher than usual, subject to the weight and nature of their contents. The load-bearing of the shelving must be assessed, as some metal shelving is not as strong as it looks. Adjustable metal shelving is often ideal for interim storage, provided that the ends are packed out with board to prevent screws or bolts damaging books or unprotected archives. Wooden shelving is generally acceptable but should be lined with archival board if it is rough or new.

The collection

The collection may comprise rare books, modern books, bound and loose archives, albums, journals, music or any combination of these. Rooms containing the collection may also contain other items, such as desks and chairs, or artefacts, such as busts, ink-stands and library steps. There may be objects on top or in front of bookshelves which have to be moved to gain access to the shelves. Desks and tables may be kept *in situ* if they are likely to be appropriate as packing surfaces.

At the planning stage, it is essential to count the number of individual items being moved. Cataloguing systems often identify sets of books as a single item, but each volume must be counted individually for the move. Conversely, archives may be listed as individual pieces but be stored in groups in boxes. The number of boxes to be moved should be counted, not the number of individual pieces.

The condition of the collection should be assessed. Any items with weaknesses which could be further damaged during the move must be identified. Typical problems include volumes with detached boards, broken sewing, torn or loose covering materials or dust-jackets, or embossed, reversed or limp bindings. Archives must be assessed for problems such as tears, decaying self-adhesive tape, protruding material, (e.g. a print slipping out of a portfolio or album), brittle material, folded items, and documents with seals. Damaged material should be stabilised prior to the move. A programme of *in situ* conservation may be advisable, especially if repairs or custom-made

protective boxes or other enclosures are required. The work can be carried out by conservators, trained staff or volunteers, depending on the complexity of the work required. Action should be taken to control mould or pests prior to any move to avoid the recurrence of these problems in the storage or destination areas.

Equipment

Tables, whether existing or hired, should be strong, stable and high enough for individuals packing crates to be able to stand straight. Most trestle and collapsible tables are designed for people to sit at, and tables may therefore need to be raised. The Health and Safety Officer must be consulted to ensure that tables are safe to work on and that any adaptations fall within health and safety regulations. Tables should be covered with padding of some kind, for example a folded cloth, with heavy-duty plastic sheeting on top: this creates an easily-cleaned, smooth but forgiving surface on which to work.

Ladders may be necessary for reaching high shelves and should be checked for stability, portability and suitability for the job in hand. All staff and helpers should have training in their use. Scaffold towers, battery-operated lifts or fork-lift pallet stackers may be required if a large number of shelves is beyond easy reach or if the collection is housed on an upper gallery with a narrow access route. Training for their use should be included in the budget and time schedule.

Crates should be rectangular plastic, rigid and lidded, without ventilation holes. Cardboard cartons are less expensive but do not provide sufficient protection, especially if they become wet. They cannot be stacked safely. Plastic crates should be flat sided with vertical walls. Oversize items may be put into open stacking bakery trays, although protection from the weather must be provided. Crates may be hired or bought, or the removals company may provide their own. The number of crates required will depend on whether they are being unpacked at their destination as they arrive, in which case they may be returned to the starting point and re-used, or they are left in storage or have to wait to be unpacked. The size of crates for each particular move will depend on the size of objects. For example, a large number of similarly-sized archival boxes will require a certain crate size, as will a room-full of octavo or other small

bindings. The ability of personnel to lift a full crate, and whether the contents are suitable for stacking should also be assessed when deciding on crate size.

Trolleys can reduce much of the stress of carrying heavy crates, especially if it is some distance to the exit. Make sure that they will go through all necessary doors and passages when loaded with crates and that they will fit in lifts.

Cleaning

If possible, the collection should be cleaned, at least externally, before being moved. This not only prevents dirt being transferred to other collection items and to the destination storage area, but also provides the opportunity to inspect the condition of each item before the move. Items may be dry cleaned, using brushes made from natural fibres, such as pony hair or hog's bristle, smoke sponges or a vacuum cleaner with a HEPA (High Efficiency Particulate Air) filter and variable suction control, preferably made to an industrial specification. Expert advice should be sought on the best method of cleaning and staff should be instructed in the use of tools and materials.

Those carrying out the cleaning should be trained in book and archive handling and cleaning and should wear masks with a relevant protection factor. Overalls or old clothes are likely to be essential. If there is a mould problem, personnel with skin damaged because of a medical complaint or with any cut or scab should wear surgical gloves, possibly over cotton gloves.

Packing

Packing and moving may be carried out by staff or by a specialist removals company. However experienced such companies are, it is always worth watching them in action as part of the tender process, in particular to assess their handling. The company's references should always be checked. The experience of colleagues who have moved their collections should be sought. The safety of the collection must be of first importance and whilst careful packing may take longer it may save money in the long term. Repair costs for items damaged during the move as a result of poor handling or packing can add thousands of pounds onto the bill. Provision for repairing damage caused by poor handling must be considered before the contract is agreed. A condition assessment should be made before moving and after the collection has been unpacked at its destination so that any item damaged in transit may be identified immediately. The cost of repairs (by an appropriately qualified conservator) should be borne by the removals company.

The order in which the collection is to be moved, and whether or not it is to be unpacked in the same order, must be carefully considered. Other personnel or contractors may need access through the packing area or along the route to the removal trucks, so whilst it makes sense to try to pack and unpack in some kind of sequence, this should not be planned in isolation.

There are too many variables involved to provide accurate figures on the time it takes to pack a collection: factors such as the height of the shelves, the number of people available or the method of packing the material will all have an impact. A practice run on one or two shelves of material as part of the planning process will be of use in estimating the time it takes to line a crate, remove boxes of archives from high shelves, wrap and crate books of various sizes, or protect oversize items. Working in teams in a production line will speed up the process. For example, the person lining crates with bubble-wrap should do enough for fifty crates, not one or two at a time. It is sensible to switch roles from time to time, to overcome tedium and fatigue that may result in damage and injury. If using a removals company, a member of staff should work with each team to ensure work is being carried out according to the specification in the contract.

Case study

The following figures are taken from the move of a library of 5,660 rare books and 120 pamphlets. Few books were in good condition and all were dirty. 40% of the shelves required access by ladder. The time taken includes external brushing.

Number of people packing	6 (2 teams of 3) which included an experienced overseer/packer
Number of people unpacking	2 – 3
Number of crates moved	357
Number of 40cm(h) x 40cm(w) x 60cm(l) crates hired	100
Rolls of 150 x 7500cm bubble-wrap	5
Reams of 51 x 76cm unglazed acid-free tissue	15
Rolls of packaging tape	8
Tape dispensers	2
Pencils	6
Erasers	4
Marker pens	4
Pencil sharpeners	2
Scissors	2
Shorthand notepads	As needed
Labels	360 sticky crate marking labels and 360 non-sticky A5 labels for inside crates
Time taken	9 days (16 return journeys)

Packing instructions

These criteria apply where the move is to be handled by staff but they can be used as a standard against which removals companies may be assessed, or adapted as part of the tender specification.

Crates

- Crates should be lined with bubble-wrap, with the bubbles downwards and the smooth surface upwards towards the packed material.
- A layer of Plastazote™ foam or large-bubbled bubble-wrap in the bottom of each crate may be used help to reduce vibration.
- Items with particular sensitivities may need specially-made packing cases to give maximum protection against environmental changes and vibration during transit. The cases may need to arrive early to be conditioned to ambient RH (Relative Humidity) and temperature levels.

Books and bound archive material

- Rare books, loose archival material or bindings with torn or flaking covering should be wrapped in acid-free tissue, to prevent abrasion and loss of material, and to provide some cushioning during transit. Sheets of unglazed 1000 x 750mm tissue should be used, as these are big enough for most items and can be halved or quartered for smaller items.
- Books should preferably be moved lying flat, as in this position jolts cannot cause movement of the textblock within the boards and thus put undue strain on the binding structure. However, this is more time consuming than packing books upright or on their fore-edges in shelf order in crates, especially during the unpacking phase, and thus more costly. Should time and financial constraints make it impossible to lay books flat, care must be taken to protect those with weaknesses caused by deterioration or whose weaknesses are intrinsically part of their design, e.g. limp or yapp-edged bindings.
- Albums require special attention and should always be laid flat, without any heavy objects on top, so as not to compress contents, which may vary in thickness and fragility. It may be possible to combine methods and pack

weaker books flat and stand those with more robust structures on their fore-edges or upright. An assessment of robustness can take place during cleaning.

- Tissue-wrapped books should be laid flat in the bubble-wrap lined crates, spine to fore-edge and not fore-edge to fore-edge. This will prevent boards digging into textblocks should the crates be jolted.
- Once the crate is full, excess space should be packed out with bubble-wrap.
- Books too large to fit into crates should be individually wrapped first in acid-free tissue and then in at least two layers of bubble-wrap and placed in open stacking trays, such as bakery trays. Vulnerable oversize books should be wrapped in several layers of tissue and four separate layers of bubble-wrap to buffer them from changes in environment. The bubble-wrap may be left on for a few days at the destination to allow them to acclimatise to their new environment, if this is different from the previous storage environment. Bubble-wrap helps to protect the books from handling and from changes in the environment but it should not come into direct contact with books or archives. Identification of large items ahead of schedule is important in order to know how many trays will be required.
- Shelfmarks should be pencilled onto the outside of the wrapping at the head of the spine so that books may, if necessary, still be shelved in the correct sequence and the right way up despite being tissue-wrapped. If items are to be shelved by size when stored, marks on the wrapping can also help to identify the moving sequence, especially if relying on non-library staff to move the collection. Pre-printed self-adhesive labels could be used in the short term but there is a risk that if the tissue remains on the books, adhesive residues will leach through it.
- Crates should be labelled and the contents listed, so that it is easier to position crates at the store or destination as close as possible to the shelves on which their contents will be housed. A list of shelfmarks or inventory numbers with an additional column into which the box numbers may be written should be prepared before packing starts. An accurate list of the crates and their contents is also vital for security purposes.

Other archive material

- Archival material may already be protected by boxes, folders, tubes and other enclosures, either because it is already well-housed or as part of a pre-move stabilisation programme. However, boxes should be checked to ensure that their contents are safe from being damaged within the box if being moved. Acid-free tissue puffs may be used as extra padding if necessary.
- Any unboxed archival material should be wrapped in acid-free tissue and crated in smaller crates to avoid compression in large crates.
- Flat works may be wrapped in tissue and sandwiched between pieces of archival or mount board for protection and support.
- Photographic material should be wrapped in Silversafe or Melinex™, not acid-free tissue.
- Boxed archives should be put in crates lined with bubble-wrap to protect them and to make it easier to carry several at a time.
- Tubes may be bound together with webbing straps or placed in crates or stacking trays.
- Tissue-wrapped items should be stacked with larger, heavier and more robust items at the bottom of the crate and lighter, more fragile ones on top. Any wedge-shaped items should be piled with thick and thin ends alternating.

Once each storage area is emptied of its contents, there should be a thorough search of the shelves and the spaces behind and beneath them to find any pieces of archival material or bindings which have become detached. These should be kept in clear, self-sealing, bags, labelled with the shelf number, so that there is a chance that the pieces may be married up at a later stage. The bags may be made of polythene, but polyester should be used if storage is likely to be lengthy.

Moving

Depending on the available space, manpower and floor loading, crates can be moved in a steady flow, at selected intervals or all at once. If moving small quantities of books and archives, it is probably easier to pack them all at the same time and then remove them to their destination. Large collections are better moved in a steady stream, in other words crates should be moved in batches to their destination as soon as they are packed, with a team ready to deal with them as they arrive.

If library or archive staff are packing and crating the collection, a removals company should be brought in to carry the crates to the lorries as well as to drive them from one location to another. Crates are generally very heavy and should not be moved by those unused to lifting weights all day. Particularly fragile objects which may be affected by vibration should be transported in air-ride trucks by specialist removals companies but this is generally unnecessary for books and archives.

Conclusion

Packing and moving a collection is hard work but it cannot be emphasised enough that preparation and planning with all those involved is the key to a successful move. Appointing project managers, liaising with a range of departments within the organisation and with external contractors and advisors, and beginning the planning and budgeting as far as possible in advance of the move, are essential to the smooth running of the whole operation. The careful selection and training of personnel will ensure that the potential for harm to both them and the collection is kept to the minimum.

Bibliography

Habich, E. C., *Moving library collections: a management handbook*, Westport, Connecticut & London: Greenwood Press, 1988

List of supplies and suppliers

The suppliers listed below have been used by the author but are not specifically endorsed by the NPO. Other suppliers may be identified through the internet or local directories. The NPO and the Society of Archivists both maintain lists of suppliers of conservation/preservation materials and equipment.

Acid-free tissue

■ Conservation By Design

Timecare Works, 5 Singer Way
Kempston, Bedford MK42 7AW
T 01234 853555
www.conservation-by-design.co.uk

■ John Purcell Paper

15 Rumsey Road
London SW9 0TR
T 020 7737 5199
www.johnpurcell.net

Board for floor protection

■ Swiftec

Pennine House, Tilson Road
Roundthorn Industrial Estate
Manchester M23 9GF
T 0161 945 1500

Brushes: Hog bristle and Pony hair

■ Edward Mason Ltd

14 Brownfields
Welwyn Garden City
Herts AL7 1BB
T 01707 331911

Crates: Lidded

■ Hays Rentacrate

Crate House
16 Evelyn Street, Surrey Quays
London SE8 5DQ
T 020 7740 3700

■ Quickcrates

17 Buzzard Creek Industrial Estate
River Road
Barking
Essex IG11 0EL
T 0870 3500953
www.quickcrates.co.uk

Crates: Bakery trays

■ Action Plastics Storage Equipment Ltd

48 Glendinning Way
Madeley
Telford
Shropshire TF7 5TB
T 01952 684972
www.plastic-storage.co.uk

Fire retardant materials: Antimar

■ Swiftec

Pennine House
Tilson Road
Roundthorn Industrial Estate
Manchester M23 9GF
T 0161 945 1500

Fire retardant materials: Antinox

■ Twinplast Ltd

Unit 2
Greycaine Road
Watford
Herts WD2 4JP
T 01923 230191
www.twinplast.co.uk

Masks: FFP rating of 2 or 3, for example 3M 8810 or 3M 8822 disposable cup masks

■ **ARCO**

Head Office
PO Box 21
Waverly Street
Hull
HU1 2SJ
T 01482 222522 (contact for regional suppliers)

■ **Preservation Equipment Ltd**

Vinces Road
Diss
Norfolk IP22 4HQ
T 01379 647400
www.preservationequipment.co.uk

Plastic sheeting, heavy duty

- Homebase, B&Q Garden Centres etc.

Powered superlift

■ **HSS Lift and Shift**

25 Willow Lane
Mitcham
Surrey
CR4 4TS
T 020-8260 3100
(Plastic pallet also required – supplied by Action Plastics *see Crates section*)

Shelving

■ **Romstore**

Unit 22
West Station Industrial Estate
Spital Rd
Maldon
Essex CM9 6TS
T 01621 855600

■ **Link 51 (Storage products)**

Link House
Halesfield 6
Telford
Shropshire
TF7 4LN
T 0800 515600
www.Link51.co.uk

Silversafe

■ **Conservation Resources**

Unit 2
Ashville Way
Off Watlington Road
Cowley
Oxford
OX4 2RD
T 01865 747755
www.conservationresources.com

Smoke sponge

see Acid-free tissue section
Conservation By Design
see Silversafe section
Conservation Resources

Vacuum cleaner: Nilfisk

■ **Nilfisk Ltd**

Newmarket Road
Bury St. Edmunds
Suffolk
IP33 3SR
T 01284 763163

Vacuum cleaner: Conservac or Museumvac

see Acid-free tissue section
Conservation By Design
see Masks section
Preservation Equipment Ltd



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The Society of College, National
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