

COLLECTION MANAGEMENT PLAN



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SPRINGFIELD ARMORY

March 1977

Division of Museum Services

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T A B L E O F C O N T E N T S

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F O R E W O R D

FOREWORD

The weapon collection at Springfield Armory was established in the early 1870's and maintained by the Army until 1968. At that time the Armory was decommissioned and the collection and museum exhibits were moved from a fairly good museum environment into the Main Arsenal Building. The Army left the maintenance of the collection and the operation of the museum to the Springfield Armory Museum, Inc. The Museum, although hindered by severe resource limitations, kept the museum intact and open to the public. It's heroic efforts over the past nine years are admirable; this plan is not intended as a criticism to their efforts.

The Springfield Armory National Historic Site has not yet been established and therefore the Service has not yet assumed responsibility for the collection. The recommendations that follow are intended to facilitate the acquisition of the collection and to assist in the planning of collection management.

THE COLLECTION

No one is certain of the size or extent of the weapon collection at Springfield Armory. No meaningful inventory has been taken for years, and it is believed that there have been significant unrecorded losses by theft, as well as additions to the collection, since the last inventory. A recent "nose count" of the collection indicates between 10,000 and 12,000 weapons in the collection.

The collection of more than 8000 shoulder weapons and hand guns range from a 1795 musket to a rapid-firing electronic machine gun of the Vietnam War era. All of the important guns made at Springfield - the 1795 flintlock musket, the 1842 percussion rifled musket, the 1873 "trapdoor" rifle, the Krag Jorgenson, the Springfield "03", the M-1 Garand, and the M-14, are well represented in the collection. Many additional firearms are from other countries, both wartime enemies and allies. The Friend Collection, on loan to the museum from Tufts University, contains about 150 commercial firearms of 19th century vintage.

An unheralded segment of the collection includes several thousand more objects - the modified or experimental parts of firearms. Most of these parts are significant because each represents a modification or stage in the evolution of a particular model line.

Crew served weapons in the collection, over 825 pieces, range from Gatling to Vietnam War vintage.

Over 1500 edged weapons - bayonets, swords, pikes, and spears - form a sizeable portion of the collection.

Besides the large number of weapons, the collection includes flags, uniforms, documents, military hardware, historic photographs, books, and historic furniture. A collection of miniature military figures adds another 10,000 pieces to the collection.

Two items on exhibit are of special interest. Few firearm associated exhibits are more awe inspiring than the "organ of guns", the massive gun rack holding rows of muskets that is described in Longfellow's poem "The Arsenal at Springfield". The Blanchard lathe, the first pattern replicator enabling the mass production of gun stocks, was developed at the Armory, and is the only piece of old Armory machinery in the collection.

There are at least 30,000 major museum objects in the collection; estimates of the total number of objects on site indicate over 100,000 items.

A 1971 memo used as legislative support to establish the National Historic Site defines the importance of the collection:

"The museum collection at Springfield is, by itself, a national treasure of enormous cultural significance to the economic, technological, and military history of this country. It is the largest collection of military small arms in the world, built by the United States Army for research purposes and historically intended to include a specimen of "...every gun ever built." It is a living collection, one still used for research and development by the Army, and for studies intended to illuminate the successes and failures of warfare as an instrument of national policy by scholars. The core collection of small arms is buttressed by small, but important, related collections of manufacturing tools, armor, uniforms, and archival research materials. The collection alone is conservatively estimated to have a current market value of over \$7,000,000.00."

SCOPE OF COLLECTIONS STATEMENT

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A scope of collections statement defines the extent and content of a museum collection. It specifies the place, time, and subject to which all specimens must relate and therefore determines both the limits and goals of the collection.

The development of a scope of collections statement for SPAR should begin immediately. Before negotiating for the acquisition of the Armory collection, a well-conceived scope of collections statement should be approved for the site. Ideally, the NPS should not be obligated to acquire the entire collection from the Army and should be able to determine what should be included in a collection for which it will have responsibility. A carefully prepared scope statement will:

1. Ensure the integrity of the collection;
2. Eliminate extraneous material now in the collection;
3. Facilitate the management of the collection.

The collection at SPAR has been described as an arms library, implying the collection should be broad in scope and encyclopedic in content. The collection must, however, have focus and should not include all types of material. Dilution of the important and historic firearms collection into a typical war museum collection should be avoided. The scope of collections statement should reflect the historical significance of the site and the weapon collection.

The following comments and categories concerning the scope of collections for SPAR reflects the views of this team. They are offered for consideration and as a possible format for such a statement. The Curator at SPAR should draft a more refined scope of collections statement to proceed with the process of developing an approved statement for the site.

SPRINGFIELD ARMORY NATIONAL HISTORIC SITE

SCOPE OF COLLECTIONS STATEMENT

The SPAR firearms collection is unparalleled in both quantity and quality. The entire collection is significant in itself and has the reputation of being the "world's largest collection of firearms". Within the collection, however, are several categories of objects that are significant in terms of historical interpretive themes:

Springfield Armory History

Military firearms history

The development of firearms design and manufacturing techniques

The leading role of the firearms industry in manufacturing technology in the 19th century.

The following categories of objects should be included in the collection:

1. All Springfield arms and small parts, 1795-1968.
2. Domestic Contractual Military Arms, 1800-1968.
3. Domestic arms of the Innovative Period, 1800-1900.
4. Arms production machinery and tools, 1800-1968, concentrating on the 1800-1900 period.
5. Archival materials concerning:
 - The Springfield Armory
 - Weapons in the Collection
 - Arms manufacture during the Armory period, 1800-1968.
6. All edged weapons and accoutrements manufactured at the Armory.
 - A. Springfield Firearms, 1795-1968
 - Principally shoulder arms from the Model 1795 flintlock to the M-14 automatic rifle, small parts of these weapons.

Purpose:

To document the complete line of government arms produced at Springfield Armory.

Interpretive Value:

To interpret:

Armory history and products

Government and ordnance supervision, testing, and acceptance of Armory arms

Design evolution of the Springfield line

The role of Springfield arms in the wars of the United States.

Acquisition Needs

The collection already includes an extensive group of such firearms, including experimental pieces and model variants and parts. Limited acquisition will be necessary.

B. American Contractual Military Arms, 1800-1968.

Purpose:

To document:

Arms made by private manufacturers to military pattern, for military use (Whitney, North, etc.)

Arms made by private manufacturers, not to military pattern, for military use (Hall, Sharps, Remington, S & W, Colt, etc.).

Interpretive Value

To interpret:

Government contractual and inspection procedures in the commercial sector involving pattern arms

Comparisons and contrasts between Springfield arms and commercial contractual arms in quality and design innovation

The role of contractual arms in the wars of the United States.

Acquisition Needs

The collection is fairly complete but could well be augmented with further acquisitions.

C. Domestic Arms of the Innovative Period, 1800-1900

Significant or unusual examples only

Purpose:

To document:

The evolution of firearms design from the flintlock through percussion to metallic cartridge ignition

The adoption of high grade cast steels and smokeless powders

The design, adaptation and refinement of breech-loading, revolving cylinder and magazine arms

The evolution from single action to fully automatic weapons.

Interpretive Value:

To interpret the tremendous advance in design of firearms during this era and the role of the Springfield Armory in this evolution of design.

Acquisition Needs:

The collection includes considerable material in this category

The careful selection of additional pieces would be in order.

D. Arms production machinery, tooling, and gauging, 1800-1968

Purpose:

To document the industrial workings of the Springfield Armory and innovations in American arms manufacturing which transformed the entire arms industry.

Interpretive Value:

To interpret:

Armory working conditions
Theories and inventions in
standardization
interchangeability of parts
pattern duplicating
gauging
mechanized metal working

The transformation of arms production from singular craftsmen to an industrial process performed by skilled mechanics

The adaptations of arms manufacturing techniques to other manufacturing industries.

Acquisition Needs

The collection includes the important Blanchard lathe but virtually no other material in this category.

An acquisition project should be initiated to actively add to the collection this type of material.

E. Archival materials concerning:

The Springfield Armory
Weapons in the collection
Arms production in the United States.

Purpose:

To document material in the collection.

Interpretive Value:

Provide the basis for in-depth interpretation of other objects in the collection.

Acquisition Needs:

Much valuable documentary material can be found already in the National Archives and Patent Office records. Any material not in the possession of an institution or in danger of destruction should be acquired.

F. Edged weapons and accoutrements manufactured at the Springfield Armory.

Purpose:

To further document the entire production capacity of the Armory.

Interpretive Value:

To interpret Armory history and products.

Acquisition Needs:

(Undetermined).

The collection presently contains extraneous material only indirectly related to the historical significance of the Armory. It is doubtful that these materials should be included in the SPAR collection:

1. Foreign arms, particularly 20th century pieces.
2. Edged weapons not manufactured at the Springfield Armory.
3. Uniforms, insignia, flags, accoutrements, suits of armor, and other materials not closely related to the Armory.
4. The collection of military miniatures.

ACQUISITION OF THE COLLECTION

ACQUISITION OF THE COLLECTION

A review of documents concerning the establishment of SPAR reveals concern over the continuing presence of the arms collection owned by the Department of the Army at the site. The Departmental Report on the authorizing legislation states as a requirement for the establishment of the site an agreement "with the Secretary of the Army for the retention or transfer of the arms collection and other museum objects located at the armory." While there has been discussion of a long term loan of the collection to the NPS from the Army, the Service should only consider the other alternative -- transfer of the collection to NPS ownership.

It is the opinion of this team that the NPS should immediately and actively seek the complete transfer of property of the portion of the collection included in the scope of collections statement for the site. This would give the Service full responsibility for and control over the collection. Only if the collection is owned by the NPS can the Service justify the sizeable investment of time and money necessary to provide proper storage, preservation, maintenance, and exhibition of these important artifacts.

A loan arrangement of the collection between the Army and NPS may seem the easiest solution to the question of ownership at this time, in view of past discussion of this type of arrangement. However, such extensive, long term loans have inherent tendencies to create disagreement and even antagonistic relationships between the borrower and lender. Any two institutions will invariably have differing philosophies and procedures concerning the management of a museum collection and the Army and NPS would be no exception. In fact, better relations might well be maintained with the Army if such a loan agreement is avoided.

The acquisition of the entire collection by the NPS is logical and justifiable. The Service has the expertise to identify, catalog, and interpret the collection and to perform general and specialized preservation treatment. The Service is certainly able to store the collection in the best possible manner and make the collection available to the Army, scholars, and researchers.

Thus, the transfer of the weapon collection from the Army to the NPS will ensure its proper care and deprives no one of the opportunity to benefit from the collection. It would allow the NPS to conduct preservation, interpretive and curatorial programs without restraint or fear of losing an investment. The Service is willing to accept the challenge but must have the opportunity to proceed free of the complications inevitable if it does not own the collection.

The following Transfer of Property form indicates how the transfer could be properly and simply accomplished.

INSTRUCTIONS

This form is to be used in reporting the transfer of property from one accountable officer to another or between bureaus or services when authorized.

Instructions for its use in specific cases will be furnished officers transferring and receiving property. Generally, this form will be prepared in quadruplicate, signed as indicated, and signed copies furnished the transferee, the transferor, and the offices involved.

If the collection can only be acquired through a loan, the loan agreement must be carefully worded and negotiated to prevent as many problems as possible. A recent draft loan agreement reviewed by this team provides the Army with every privilege of ownership without any of the responsibilities of managing such a large collection. See Appendix 2. The NPS is given responsibility for the maintenance and care of the collection, yet is not given the right to acquire a collection at the site or any type of authority over the collection. If the Army wishes to retain control of the collection, they should be ready to provide for its maintenance and care.

A balance of privilege and responsibility is difficult to achieve in any loan arrangement. The requirements for supplemental agreements, negotiations, and meetings are expensive in time and money and questionable in value. Even optimists must recognize potential areas of disagreement in this draft loan - the formulation of a scope of collections, establishing standards for security, and loaning of the collection. Most of these matters could be solved expertly and far more quickly by one agency rather than through continual negotiations.

While areas of disagreement and potential differences could be kept to a minimum through a very workable loan agreement, a few major problem areas persist.

Preservation of the Collection. Can the NPS ignore its general policy to avoid performing extensive and costly preservation treatment on objects it does not own? On the other hand, could the Service justify not adequately curating and preserving a collection housed and exhibited at one of its historic sites?

Growth of the Collection. Additions to the weapon collection may be inevitable and even desirable. Who would own additions to the collection? The only sensible approach would be to have the NPS accept new acquisitions. Then the site would have the additional complication of having two collections at the park, creating two sets of records, two inventories, etc.

The following draft for a loan agreement eliminates or reduces in gravity most of the problem areas of previous draft agreements.

DRAFT LOAN AGREEMENT

1. The effective date of this agreement is _____.
2. The Department of the Army (hereinafter the Army) agrees to lend to the Department of the Interior (hereinafter the Department) that portion of the Springfield Armory Collection now deposited at the Springfield Armory Museum, as detailed in an inventory conducted by the NPS and approved by the Army, and all provenience records and additional cataloging information, and designated as desired by the Department (hereinafter the property) for preservation and display at the Springfield Armory National Historic Site for a period of ten (10) years.
3. This agreement shall be subject to renewal every ten years for periods of like duration. Ninety days prior to the expiration of each 10-year period, the Army and the Department must meet to consider modification of these specific terms of agreement, the administration of the property, and either party's non-compliance with the conditions of this agreement.
4. The extent of the collection covered by this agreement shall be defined in the scope of collections statement developed by the Department. The Department may acquire offered additions to the collection or may refer these offerings to the Army for acquisition. Items may be deaccessioned from the collection only on agreement of both parties. The Army shall leave no other property on the site.
5. The Army may make reasonable withdrawals of items from the property for the purposes of temporary loans to the Department of Defense installations. A reasonable withdrawal is one which does not destroy the historical significance, integrity or unity of the Springfield Armory NHS, pose an undue threat to the preservation of individual items, nor interrupt conservation or interpretive programs which may be in progress at the site, and will be with agreement on the part of the Department. Prior to the withdrawal of any item of the property, the Army shall consult Department officials directly in charge of the site within a reasonable time prior to proposed withdrawal, but no less than 30 days. The Department will be responsible for supervision of packing and shipping of items of the property withdrawn. The Army shall be responsible for costs involved in packing and shipping, including the return of any items withdrawn at its request.
6. The Department may lend any portion of the property to any other agency of the Federal government or private institutions and museums at its discretion, in accordance with Department policy.

7. The Department shall have sole curatorial responsibility for and control of the care and display of the property and shall adopt a program of maintenance, record keeping, storage, security, preservation, display, and interpretation of the property, in accordance with Department Curatorial Activity Standards, subject to the availability of appropriated funds for these purposes.

8. The Department shall permit the on-site study of the property by students, scholars, and representatives of museums, colleges, governmental agencies, or other institutions and organizations under prescribed rules and regulations. Preparation and execution of such rules and regulations shall be the responsibility of the Department.

9. The premises shall be available for inspection only to those Army personnel who have obtained permission from the Secretary of the Army. The Army will, in general, have the same opportunity to study and use the collection as designated in term #8.

10. The Army shall provide (\$200,000) the first five (5) fiscal years for the maintenance and preservation of the collection and (\$100,000) each year thereafter. These funds shall be administered by Department officials.

There has apparently been discussion of requiring the Army to bring the collection "up to standard" before transferring or loaning it to the NPS. For several reasons, the involvement of the Army in the care of the collection at this time seems unwise.

It must be emphasized that the Army and NPS philosophies of museum management, methods of preservation treatment for weapons, and museum record systems are quite different. Duplication of effort, disagreements, and complication of the tasks are likely, if not inevitable, if both agencies are involved. The Army's lack of interest in the collection over the last nine (9) years hardly suggests that it would be enthusiastic in any undertaking at the Armory now. While a transfer of funds from the Army for curatorial work would be welcome, the NPS should begin caring for the collection as soon as the acquisition of the collection is negotiated.

If the Army will not relinquish ownership of the collection, a sharing of the considerable curatorial and preservation work that must be done might be feasible. It must be recognized that Army ordnance maintenance procedures are vastly different from the preservation treatment of museum firearms in philosophy, materials used, and the attention to detail. The NPS must be involved in any work done by the Army, and ideally should designate standards and procedures for all work.

If the NPS is to assume ownership of the collection, the possibility of the Army being involved in the care of the collection probably should not be considered.

The complete transfer of the collection identified as appropriate in the scope of collections statement to the NPS is the ideal way to acquire the collection. The NPS should take a firm stand in the acquisition of the collection and insist that curatorial requirements of the Service, who, after all, is assuming the responsibility for the care of the collection, are met. The commitment of resources to preserving and curating the collection will be considerable; every effort must be made to acquire the desired collection without unnecessary complications.

MUSEUM RECORDS

MUSEUM RECORDS

The museum records kept by the Army appear to consist of a combination accession and catalog system consisting of a card file. Accession numbers assigned to weapons appear to be what the NPS considers catalog numbers. The identifications of weapons on these cards are not always accurate and descriptions are usually incomplete. In most cases, however, the numbers assigned through this system are still in place on the weapons.

The last inventory taken by the Army occurred in 1968. Weapons have been both added and removed from the collection since this time. Consequently there are no accurate records or inventory of the museum collection.

An inventory of the premises will be the first step in establishing a museum records system. The numbers assigned to objects in the inventory and attached to each object will become the shorthand necessary to refer to and identify individual items in this large collection. A photographic record of the collection should be made at this time.

Accession records will be required immediately with the recording of all transactions involved in the acquisition of the collection. All of the objects received from one source - the Army, the Springfield Armory Museum, Inc., Tufts University - at one time constitutes one accession. If the Army transfers or loans the entire collection at one time to the site, the single accession will include all several thousand objects. If the collection is acquired in segments from the Army, there will be several large accessions. A complete accession inventory will form the basis of these accession records. Objects will be referred to in the inventories first by inventory numbers, and later as the collection is cataloged, catalog numbers will replace inventory numbers on these lists.

As much information as possible must be gleaned from the old record system and collected from the Museum Association Staff. The history of ownership of groups of objects considered a collection and important individual objects should be recorded if known. All of this information should eventually be found in the catalog records.

Cataloging the collection obviously follows the inventory and recording of accessions as they occur. As catalog numbers are assigned, all other numbers attached to each object should be removed to avoid confusion. These old numbers, if important, can be recorded on the catalog form. If the photographic record is not completed at the time of the inventory, it should be completed as the objects are cataloged.

The excellent photographs of firearms noticed by the team on site are valuable documentary records. They should be matched to the subject and eventually placed in catalog folders.

CONSERVATION OF THE COLLECTION

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Weapons

The conservation of the weapon collection will be a monumental task. The sheer numbers are staggering - 10 to 12,000 weapons, each requiring individual preservation treatment.

Since these weapons are "one of a kind", their treatment will be individual and must be highly organized. There will be only occasional opportunity for assembly line and mass-production procedures. Special techniques must be devised and controls instituted to prevent interchanges of parts of similar models.

Although a modern firearm can be quickly disassembled, cleaned with light oil, reassembled and ready for use, the treatment of historic weapons is an involved and time consuming procedure. After examination the conservator determines the exact nature and extent of preservation treatment. The basic procedure involves weapon disassembly, cleaning and removal of corrosion, and reassembly. A careful record of each step must be kept, aberrations noted, and a complete photographic record compiled. These efforts will insure that the historic integrity of each piece is not compromised and will allow a researcher to draw historic affirmations and correct conclusions.

A proper sequence of weapon treatment includes:

1. Preliminary examination and photographic documentation of condition, and preparation of a condition report.
2. Disassembly and recording of hidden markings.
3. Corrosion removal, methodology determined by a conservator, depending on the condition of the piece.
4. Application of a barrier to inhibit future corrosion.
5. Reassembly.
6. Catalog number application.

These procedures require approximately two days per weapon, depending on the condition of the piece. Using available collection numbers, rough estimates indicate that the preservation treatment of the weapon collection alone will require one man nearly 100 years to properly complete.

This is a sobering thought. However, it is hoped that the innovative genius which characterized Springfield Arsenal from its inception will prevail to accomplish this huge conservation task efficiently and professionally. Such a program should be implemented as soon as a work area can be readied.

Immediate treatment is needed for most of the firearms to prevent further deterioration. A feasible short-gap measure is to apply either CRC-3-36 or WD-40 oil on all weapons that exhibit signs of corrosion. This technique, though preliminary, would provide short-term stabilization until each weapon can receive more extensive conservation treatment. All weapons should be protected with plastic drop-cloths or individual plastic bags during any type of restoration or construction work producing wood dust, plaster dust, or similar particulate matter.

Since this collection is extensive, the most logical approach to future conservation work is to establish a preservation treatment laboratory on site. The laboratory should be equipped and supplied to insure that the highest quality conservation practices are carried out. Appendix 3 includes a partial list of major equipment necessary in such a laboratory in addition to the expected hand tools and supplies. The costs of equipping a laboratory will probably approach \$35,000. Upon request, the Division of Museum Services will work with the site Curator to identify all necessary equipment and supplies, and design a suitable laboratory.

Other Materials

The collection includes a number of documents, books, photographs, textiles, and leather accoutrements that show definite signs of deterioration and are not exhibited or stored in suitable conditions. Initial efforts in improving the condition of these materials should concentrate on providing adequate storage.

The maintenance of a constant environment as close as possible to 65° F \pm 5° and 50% \pm 5% relative humidity is essential for the organic materials found throughout the collection - wood, paper, textiles, and leather. Stability of the environment is the goal; all efforts in working with heating and cooling systems must keep this in mind.

All archival materials should be stored in document storage containers to protect them from soiling and light. Such containers include acid-free folders, envelopes, storage boxes and Solander boxes. Map cases should be used to store large drawings and documents. Framed items should be hung from wire screening in an area with a minimum of light. See Conserve O Gram in Appendix 6.

All textiles should be stored in acid-free boxes or folders, protected with paradichlorobenzene crystals, and shielded from light. Uniforms, unless too fragile, should be hung on padded hangers and stored with paradichlorobenzene crystals in cabinets. Large flags and other textiles should be stored on rollers.

The furniture should be cleaned and covered with cloth dust covers.
See Conserve O Gram in Appendix 6.

Several types of elementary conservation treatment should be performed on site. Work space should be planned for:

Humidification and flattening of documents.

Use of solvents to remove pressure sensitive tapes from documents
and solvent-soluble foreign matter from other objects.

Treatment of leather objects - humidification, cleaning, and
application of dressings.

Many objects will require extensive conservation treatment by a
conservator:

All framed objects should be unframed, cleaned, and framed with
acid-free materials.

Many leather objects show severe signs of dryness and brittleness
and require extensive treatment.

The Sedgewick flag and other textiles need cleaning and proper
mounting.

Most books need extensive repairs and rebinding.

Many documents need cleaning and deacidification.

C O L L E C T I O N S T O R A G E

COLLECTION STORAGE

The Problem

While the unparalleled size of the SPAR collection presents manifold problems of storage and care, it is obvious that the present storage situation is inadequate and that physical deterioration is underway. In order to evaluate current conditions, an area-by-area survey of storage facilities in the Main Arsenal Building follows:

1. Basement (north)

This is the principal storage area for 19th century long arms. The central portion of the room is occupied by open, upright racks of mid-19th century vintage. The peripheral walls are lined with low metal or wood shelving. There are adequate aisles between these storage structures. Access is constrained within the central area by very narrow aisles and in some areas by the stacking of arms upon shelving and piles of boxes and miscellaneous items at the bases of shelving. Negative storage aspects include:

A. Artifacts are exposed on open racks to dust and dirt; there is an obvious lack of regular cleaning. All arms in the area have an appreciable coat of dust and dirt.

B. The measured temperature of 92° F and relative humidity of 22% are unacceptable conditions. This situation is most detrimental to the stocking, causing extreme dryness and shrinkage. At present, there are no environmental controls, monitoring or recording.

C. Indiscriminate piling of arms on the uncushioned, peripheral shelving is highly damaging in terms of scratching, denting, and breakage.

D. The presence of an overhead sprinkler system plus other overhead piping and steam pipes around the wall present a water damage threat. One of the steam pipes recently leaked, resulting in the active corrosion of perhaps 100-200 firearms.

E. There are boxes, the majority opened with objects still within, and unprotected items placed and piled directly on the floor. These hinder access and are subject to breakage, water damage, and excessive dirt.

2. Basement (south)

This area houses 20th century domestic and foreign arms for the most part. The negative aspects noted above are equally applicable here. The situation is further complicated by excessive piling of arms on shelving and bins, storage of archival material, and pervasive disorganization. While some of the archival material is housed in filing cabinets, no small amount is subject to dirt, water damage, and pests. Additionally, this material, in conjunction with many wood boxes and packing material, presents a fire hazard.

3. Second Floor

This area presently houses a disorganized miscellany of weapons parts, exhibit materials, archival material, and furniture. The principal negative factor here, which is largely absent in the basement, is high natural light levels. This is detrimental to the furniture fabrics and woods, and to archival material. The presence of dust and dirt and lack of cleaning are obvious.

The Collection Storage Evaluation section of the Curatorial Operations Evaluation Report in Appendix 4 and the photographs in Appendix 7 further describe storage conditions.

T H E S O L U T I O N

T H E S O L U T I O N

The site curator has identified the Second floor of the Main Arsenal Building as a possible collection storage area. The team agrees that the Second floor is the logical location for collection storage. The addition of standard museum storage equipment to this floor will vastly improve the storage situation; the restoration of the building and the addition of modern environmental controls will make it nearly ideal. This area is large enough to accomodate the entire collection now at the site and will allow for considerable growth of the collection.

The Second Floor provides over 12,200 sq. ft. of storage space. Half of the floor space should be allocated to the storage of the weapon collection. The other half of the floor will accomodate documents, books, textiles, framed materials, equipment, and all other objects. The center of the floor is a logical collection study area and could house the library. The floor plan shows a suggested use of space and arrangement of storage cabinets.

Partitioning off the two storage areas from the center study area will increase the security of the collection. Intruders arriving on the second floor will be confronted with two secure storage areas and a study area. A curatorial staff member will be able to remove a few objects from the storage area for a visiting scholar, re-secure the area, and also work in the study area when visitors are present.

The 19th century firearm storage racks presently in use in the north basement storage area should be moved upstairs and fully utilized. Appendix 6 includes plans for firearm storage racks incorporating a standard specimen cabinet. The specimen cabinet can accomodate handguns and any objects associated with the weapons in the accompanying racks. Estimates indicate that one half of the second floor could accomodate 2000 additional firearms.

Both natural and artifical light must be controlled in the storage area. The numerous windows on this floor are in deep window wells. The addition of controllable opaque window shades or draperies to these windows on the room side of the well will control natural light in the storage areas. Daylight will be effectively eliminated as a damaging factor, yet can be admitted if necessary. The historic character of the exterior of the building will not be disturbed since the shades or draperies will not be obvious from outside. Artificial lighting of the Second Floor is inadequate. The incandescent fixtures shown in the plan will provide adequate general lighting and portable lights will allow detailed study of objects.

The severity of the need for environmental controls in the proposed storage area cannot be determined until environmental conditions are recorded. The use of portable humidifiers and dehumidifiers may be necessary.

F I R S T S T E P S

INVENTORY, ORGANIZATION AND IMPROVED STORAGE

FIRST STEPS - INVENTORY, ORGANIZATION AND IMPROVED STORAGE

The first major step in management of this collection should include steps toward property accountability and improvement of storage. As soon as the Springfield Armory is an established site, the collection should be inventoried and moved to better storage facilities. A great deal of preparatory work can be accomplished prior to this time to insure the efficiency of the operation, mainly the preparation of the second floor.

Preparation of the Second Floor

As soon as possible, the second floor must be cleared; all waste material should be removed from this floor and disposed of. Objects that are not to be disposed of should be moved to the third floor for temporary storage. The entire floor must be empty.

Monitoring of temperature and humidity of the second floor should be initiated to determine needs for portable humidity control appliances and air conditioning. Portable fire extinguishers should be placed throughout the area. Insects and rodent pests must be controlled.

Incandescent light fixtures must be added so daylight can be excluded from the area. Window shades or draperies must be selected, ordered and installed. Once the area is cleared, the floor should be cleaned, sealed, and prepared for use for several years. Foresight and extra effort here will eliminate the need to move the large collection and storage equipment for floor treatment.

A floor plan arrangement must be adopted and storage equipment acquired. Appendix 3 includes 2 recommended floor plans, a list of storage equipment included in the floor plan and sources of acquisition. Firearm storage racks, cabinets and shelving should be ordered as soon as possible.

A method of moving the 19th century firearm storage racks to the second floor must be determined. Their length might preclude the use of the elevator.

THE INVENTORY

An inventory of all firearms and weapons found at the site, regardless of ownership, is necessary for property and museum records. Such an inventory will be the basis of any transfer of property to the NPS, to be used for accession inventories, and provide the basis for property accountability and determination of any future losses to the collection.

Such an inventory should be a numbered list of objects with enough description to distinguish each object from others at the site. The objects should be identified correctly and be followed by a description, including the already attached property numbers. As the inventory progresses, each object should be tagged with the inventory number to avoid any confusion as to what is inventoried and what is not as well as to identify the objects. The use of pre-numbered "Poly-Lok" plastic tags which cannot be removed without breaking them and will not be rendered illegible during the process is recommended.

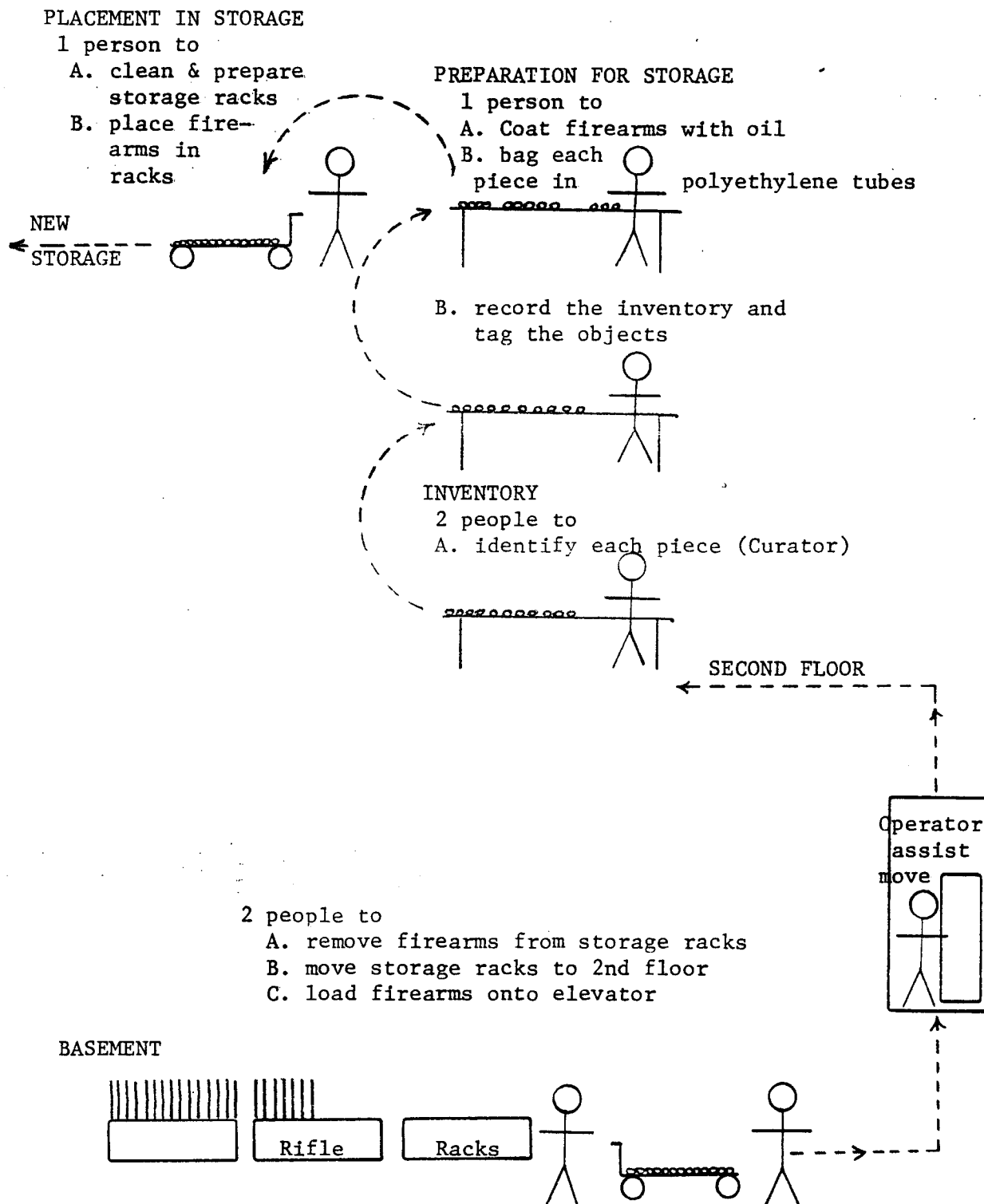
The inventory of the weapons in storage can best be accomplished as they are moved to the second floor for storage. The combination of these two efforts will necessitate only one handling of the collection and will make the most efficient use of manpower. The objects on exhibit should be inventoried right after the weapons in storage; after the basement storage area are cleared of weapons that are to be stored upstairs, other objects will be more accessible and can be inventoried as their storage is improved.

THE INVENTORY AND THE MOVE

The inventory of the collection and the movement of the firearms collection and other materials to improved storage can best be accomplished by a team. The operation will include the following tasks:

1. The storage area must be prepared as previously described.
2. The firearms must be removed from the storage racks in the basement and then the racks and the firearms moved upstairs.
3. The firearm storage racks must be cleaned and placed in position.
4. As the weapons are received on the 2nd floor, they should be inventoried - identified, listed, photographed, and tagged.
5. The firearms should be treated with oil as previously described and placed in polyethylene tubes that are open at one end.
6. The firearms should be stored in a logical order, either in numerical order or by type of weapon.
7. All of the material in the exhibit areas should be inventoried next. Tags should be placed on all objects as inventoried to prevent confusion. When the inventory of the exhibit areas is completed all tags can be removed if necessary.

The following chart indicates how a 7 member team could perform the operation.



MUSEUM EXHIBITS

MUSEUM EXHIBITS

The museum exhibit halls on the main floor of the Main Arsenal Building are old and not in the best condition. The exhibits are, in a sense, little more than "open storage" in terms of artifact environment and protection. Many of the exhibits are in need of rehabilitation or replacement in the near future. While the handguns are adequately encased, many of the shoulder arms, edged weapons and crew serviced pieces are displayed on open pegboard or are completely exposed. This allows not only for the accumulation of dust and dirt, but also for handling by visitors with resultant corrosion, breakage, and theft. Detrimentially high light levels are present throughout the exhibit area, including both fluorescent and sunlight.

The light problem can be relatively easily solved, and at the same time perhaps add to the attractiveness of the exhibit areas. Both visible and ultra-violet light are extremely damaging to organic material. Ultra-violet filters should be placed over fluorescent lights and all windows. Only those light fixtures that are necessary for adequately illuminating the exhibit area should be used. The addition of attractive window shades or draperies to the numerous windows will further control the entrance of sunlight into the rooms and could add a touch of color or blend into the neutral background. Additional filtering should be used on glass cases containing exceptionally rare and vulnerable objects. An exhibit design team should be requested from HFC to recommend stop-gap improvements in the exhibit room.

Although any large scale rehabilitation or redesign of the exhibits might not occur in the immediate future, several minor changes will improve the appearance of the exhibits. Attractive, informative labels replacing the illegible and sometimes inadequate ones would unify the exhibits and interpret their contents to the visitor. Thorough and regular cleaning of case interiors as well as exteriors will improve the appearance of the exhibits. A few heavily soiled and damaged cases could be painted.

The security of the collection on exhibit should be improved. Where possible, cases should be made more secure, including the addition of glass fronts where missing. A larger staff will allow for more monitoring of visitor activity in the exhibit halls. Encouraging a respect for this special collection and emphasizing the need for visitors not to handle the weapons could be included in the interpretation of the museum and collection.

S E C U R I T Y

S E C U R I T Y

Recommendations concerning security are limited since the existing system was not thoroughly evaluated. Information in past correspondence and discussion with the staff provides the basis for these comments.

A security survey by a qualified person should be conducted immediately with the assistance of the Regional Security Officer (recommended: John Hunter, Curator and Physical Security Coordinator, MWRO). This survey should be done prior to the establishment of the site so that the Service will be ready to implement an improved system once in control of the site.

The ADT central alarm system now in the Main Arsenal Building works well and response is rapid. It is recommended that the service be extended to cover the proposed collection storage area on the second floor of this building. Furthermore, the next negotiation with ADT should require that a NPS person be on the scene before any responding central alarm police enter the building. This is not an unusual requirement; most jewelry stores require the same stipulation. A building containing several thousand valuable and easily concealed museum objects offers a temptation that many cannot resist.

It should be recognized that the presence of the TV station, with a large staff, extensive equipment, and extended hours of operation, creates an additional security problem in this building.

B U D G E T P L A N N I N G

BUDGET PLANNING

The costs of curating the Springfield collection are going to seem enormous. This is only because the National Park Service has never undertaken a project of this curatorial magnitude. All during the planning process the National Park Service made it abundantly clear that the costs would be higher than usually encountered.

A January 1972 memorandum from Manager, Harpers Ferry Center, to Regional Director, NARO indicated the following:

<u>Collection Conservation & Management</u>	<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>
1. Weapons Conservation	288,000	288,000	4,000
2. Military Miniatures Conservation	48,000	48,000	4,000
3. New Accessions Conservation			35,000
4. Collateral Objects Conservation ¹			100,000
5. Museum & Curatorial Records	60,000	60,000	50,000
6. Archival Management & Records			15,000
7. Equipment, Tools and Supplies	30,000		
Subtotal, CC&M	426,000	396,000	208,000

Subsequent legislative support documents tended to corroborate the assertion that approximately one million dollars would be necessary to care for the collection during the first three years.

This report reaffirms this cost level and modifies the breakdown for the first 12 months of operation as follows:

1. Preparation of second floor	\$ 30,000
2. Purchase and installation of window coverings	5,000
3. Installation of proper lighting	15,000
4. Purchase of necessary storage equipment	107,000
5. Cost of conducting inventory and movement of specimens to second floor. (Calculated at 180 working days - see below).	48,746
6. Supplies for inventory and materials handling equipment.	4,000
7. Conservation of specimens - (mostly labor) - this is a continuing process, but during the first year the program is only partially underway.	60,000

8. Equipping shop and conservation laboratory	50,000
9. Preparation of space lab and shop	25,000
10. Cataloging collection - labor costs	50,000
11. Cataloging hardware, supplies, equipment	12,000

Inventory calculated on basis of following:

1 ea. - GS-7 - Museum Curator	
8 hrs. x 180 days x 6.15/hr =	8,866
3 ea. - GS-5 - Museum Technician	
8 hrs. x 180 days x 5.00 x 3 =	22,600
3 ea. - GS-4 - Museum Aid	
8 hrs. x 180 days x 4.00 x 3 =	<u>17,280</u>
	\$48,746

S T A F F I N G R E Q U I R E M E N T S

STAFFING REQUIREMENTS

The curatorial tasks at Springfield are so formidable that all parties must reconcile themselves that it will take many people to do the job.

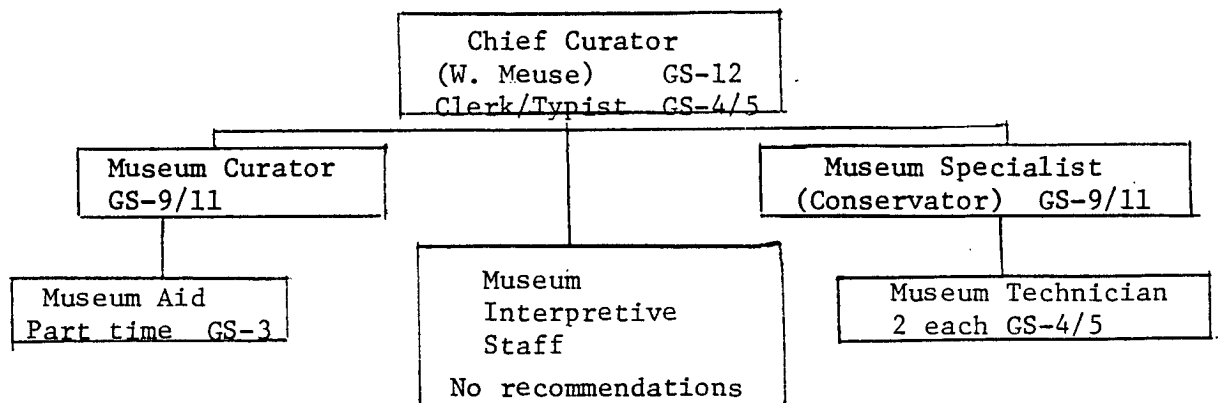
What is the job? The curatorial standard at Springfield is precisely the same as it is at any other park in the System. It is best expressed in the Director's Guidelines NPS-6, Chapter 2, page 8:

1. A Scope of Collection statement has been prepared by the interpretive staff and approved by the Regional Director. The statement clearly defines the needs and limits of its museum collection and is suitable as a guide for an active program of acquisition or disposal.
2. The museum collection is utilized in a beneficial but non-consumptive manner. The use of the park museum specimens for scholarly studies, interpretive exhibits, or historical reference material are examples of such desirable uses.
3. The park interpretive program provides the visitor with an understanding and appreciation of the values of original objects.
4. Every object in the park museum collection is properly numbered and cataloged in accordance with existing National Park Service museum records and procedures, and the records are housed in a physically safe and fire resistant location. (Proper recordkeeping includes accessioning, cataloging, and marking as described in the Museum Manual.)
5. Each object is authoritatively identified and, whenever appropriate, authenticated in the museum records system. Letters pertaining to the uses made of an object, the persons owning an object, and the circumstances surrounding its acquisition are included in the permanent museum records.
6. All objects in the collection having a current value of \$100 or more are inventoried annually. The inventory includes other objects regardless of monetary value which have special significance or desirability by collectors.
7. Each specimen is examined periodically by a trained employee and the stability of its condition is determined. Specimens which are unstable or deteriorating are treated by a trained employee or professional conservator in the NPS conservation Laboratories.

8. Every object in the park museum collection is either exhibited or stored under environment conditions which will arrest deterioration. This requires control of light, dust, temperature, and relative humidity. (See the Museum Manual.) The museum collection has a security system appropriate to the value and significance of the specimens.

9. Films, tapes, books, research data, and other reference materials relating to park resources are properly housed, maintained, and recorded. Data is made available for use by park personnel and interested public.

To accomplish these minimum standards, we believe Springfield Armory will need the following staff:



The functions of these positions would be as follows:

Chief Curator GS-12 - Directs the entire museum operation, answers scholarly correspondence relating to the collection, supervises interpretive efforts, manages and directs cataloging program and conservation work. Determines if all curatorial efforts are up to standard. Is responsible for security and environment of collection.

Museum Curator GS-9/11 - Establishes and maintains the documentation and inventory control for entire collection. Works with researchers to make historic resources available for study. Supervises and performs cataloging, accessioning, and loans for the entire collection. Is assisted by Museum Aid who can perform routine record keeping chores.

Museum Specialist GS-9/11 - Is responsible for the continued cyclical maintenance of the entire collection. Should be well qualified in metal conservation as well as general knowledge in wood and paper conservation. Is assisted by two Museum Technicians who will perform the routine and repetitious semi-technical conservation work. The conservator will maintain careful treatment records on each weapon treated.

Staffing for proposed inventory

It is estimated that in order to conduct a proper and comprehensive inventory of the entire collection, and to safely move the collection from its unacceptable storage condition into the proposed second floor area, the following people will be needed:

- 1 each GS-7 Museum Curator (needed for at least 180 days).
- 3 each GS-5 Museum Technician (needed for at least 180 days).
- 3 each GS-4 Museum Aid (needed for at least 180 days).

The team recommends that the necessary staff for the inventory be hired on 180 day appointments. Some of these people may be considered for permanent appointments later, so this affords an excellent chance to evaluate their work performance.

The Division of Museum Services, HFC has had great success with cooperative work-study arrangements in association with college level museum studies programs. Springfield Armory can easily enter into an informal agreement with nearby (or far away) colleges to reach well qualified and highly motivated young people who are eager to do such work.

It should be stated that one member of this planning team, Mr. Richard Rattenbury, is intensely interested in participating in any segment of the Springfield work. He is currently working at HFC as a work-study graduate intern from Texas Tech University. His particular skills lie in weapons conservation and he is well versed in the history of the development of American arms, particularly arms of the Connecticut Valley.

S U M M A R Y

S U M M A R Y

The museum collection at Springfield Armory presents a true challenge to the NPS, charged with its care. It is a time for action to replace words if this valuable collection is to be preserved and properly managed.

Summary of recommendations in the Collection Management Plan:

1. Determine a scope of collections for the site.
2. Initiate negotiations concerning the acquisition of the collection.
3. Prepare the Second Floor of the Main Arsenal Building for collection storage while doing #1 and 2.
4. As soon as the extent and nature of the acquisition of the collection is determined and the site is established, inventory and organize the collection in improved storage as outlined in the "First Steps" section.
5. Initiate and maintain NPS accession records.
6. Steadily improve the storage situation of the entire collection.

A P P E N D I X 1

DEPARTMENTAL REPORT ON AUTHORIZING LEGISLATION

SPRINGFIELD ARMORY NATIONAL HISTORIC SITE,
MASS.

DECEMBER 3, 1973.—Ordered to be printed

Mr. BIBLE, from the Committee on Interior and Insular Affairs,
submitted the following

REPORT

[To accompany S. 979]

The Committee on Interior and Insular affairs, to which was referred the bill (S. 979) to authorize the establishment of the Springfield Armory National Historic Site, Massachusetts, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

An open hearing was held on S. 979 by the Parks and Recreation Subcommittee on November 6, 1973.

PURPOSE OF BILL

The purpose of S. 979, as amended, is to provide for the preservation and management of the Springfield Armory as a National Historic Site for the inspiration and enjoyment of the American people. The Armory has already been determined to be nationally significant and is a Registered National Historic Landmark.

The proposal includes:

1. Acquisition by donation from the City of Springfield of the Main Armory, Commanding Officer's Quarters and sufficient land for supporting services, setting and buffer; acquisition of the Master Armorer's Quarters, other historic structures worthy of preservation, and a strip of land to the southeast and northeast of the Main Armory from the Commonwealth of Massachusetts.

2. Scenic controls covering the Parade and the exterior of the historic structures presently surrounding it, on the northeast and southeast side. This applies to land owned by the Commonwealth.

3. Access right-of-way through Commonwealth property.

4. Assurance of continuing presence of the arms collection owned by the Department of the Army.

99-010

DETAILED DESCRIPTION

The city-owned land, approximately 18.35 acres, contains two of the major buildings—the Main Armory and the Commanding Officer's Quarters—and the original sites of the Master Armorer's Quarters and the Paymaster's Quarters.

The structures are needed to display the world famous weapons collection, interpret the history of the Springfield Armory, and to accommodate the various needs and interests of the visiting public, weapons enthusiasts, scholars, and researchers who will make use of the proposed National Historic Site. Examples of such uses include study areas, library, curatorial offices, display rooms, settings for special events, and the like.

Acquisition of the city-owned grounds will make it possible to preserve the distinct identity and individuality of historic Armory Square, specifically those grounds at the rear of the Main Armory and the Commanding Officer's Quarters. Fee acquisition of a small strip of land owned by the Commonwealth is needed to provide continuity and unity of the historic scene in the southern portion of Armory Square. Visually, this strip is a part of the city-owned property; however, it is owned by the Commonwealth.

Subject to an agreement with the Commonwealth certain historic structures owned by them will possibly be relocated within the National Historic Site. The Master Armorer's Quarters will be relocated to its original location beside the main arsenal building. In addition other buildings of architectural importance will be considered for possible relocation within the proposed park boundaries. These buildings are presently located within the area to the northwest of the parade field and if not relocated will be demolished during the construction of the modern campus of the Springfield Technical Community College. Relocating the Master Armorer's Quarters will add to the integrity of the historic site and along with the other structures, in addition to the main arsenal, will be needed for administrative, study, classrooms, tour staging, special events, meetings, and maintenance workshop.

The proposal includes a recommendation for scenic and developmental control over the Parade and the facade of the historic buildings facing the Parade on the northeast and southeast side. These buildings along with the parade field will continue in the ownership of the Commonwealth and will be managed directly by the Springfield Technical Community College. The scenic and developmental controls are necessary to insure the preservation of the historic setting and the environment of the proposed National Historic Site. The buildings on the northwest side of the Parade, part of the modern college development, are already under construction and will be of a contemporary and massive scale.

The proposed right-of-way through Commonwealth property is to provide an entrance to the National Historic Site from Federal Street.

Assurance of the continuing presence of the arms collection owned by the Department of the Army is proposed, since it is an inseparable part of the story of the Springfield Armory. It will form the basis of interpretation, augmented by displays and audio-visual techniques.

S.R. 590

A total of 54,923 acres is proposed for inclusion within the site of which 20,317 acres would be donated to the Federal Government and 34,606 acres would be preserved by the State of Massachusetts. Visitation is expected to be approximately 28,000 the first year and grow to approximately 52,000. The Department proposes to charge a 50-cent admission charge.

The Advisory Board on National Parks, Historic Sites, Buildings, and Monuments endorsed this proposal in its 65th meeting. October 4-6, 1971.

COSTS AND COMMITTEE AMENDMENTS

Because the land would be acquired entirely through donation, no land acquisition costs are involved.

Total development costs are expected to be about \$5,365,000 over a five-year period with operational costs estimated at about \$355,000 a year. The Committee amended S. 979 to limit the amount authorized for development to the amount stated above.

COMMITTEE RECOMMENDATIONS

The Committee on Interior and Insular Affairs in executive session on November 27, 1973, unanimously recommended enactment of S. 979, as amended.

DEPARTMENTAL REPORTS

The reports of the Department of the Interior, the Office of Management and Budget and the Department of the Army are set forth in full as follows:

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY.
Washington, D.C., August 31, 1973.

HON. HENRY M. JACKSON,
*Chairman, Committee on Interior and Insular Affairs, U.S. Senate,
Washington, D.C.*

DEAR MR. CHAIRMAN: Your Committee has requested the views of this Department on S. 979, a bill "To authorize the establishment of the Springfield Armory National Historic Site, Massachusetts, and for other purposes."

We recommend the enactment of the bill.

The bill authorizes the Secretary of the Interior to acquire by donation such real or personal property at the historic Springfield Armory in Springfield, Massachusetts, as is adequate in his judgment to constitute an administrable unit. The Secretary is to establish the Springfield Armory National Historic Site when he has accepted the donated property and has reached satisfactory agreements (1) with the Commonwealth of Massachusetts or state agency or instrumentality for preservation of Springfield Armory lands and buildings that are not in Federal ownership, and (2) with the Secretary of the Army for retention or transfer of the arms collection and other museum objects located at the armory. The area is to be administered by the Secretary in accordance with the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1, 2-4), and the Act of August 21, 1935 (49 Stat. 666; 16 U.S.C. 461 *et seq.*).

S.R. 590

Springfield is Massachusetts' third largest city, with 163,905 inhabitants in 1970. It is located in the western part of the State not far north of Connecticut. Interstate Highway 90 runs in an east-west alignment just north of the city. For nearly 200 years, the armory has been the heart of the Springfield area. From its inception, the operating center of Springfield Armory has been Armory Square, which lies above the center city and the Connecticut River. The Armory Square complex contains a tree-covered parade and various historic buildings once used for housing, administration, manufacturing, and storage at the armory. Since 1968, when the armory was deactivated, many of these buildings have been used in conjunction with Springfield Technical Community College.

The proposed national historic site would include three major Arsenal buildings: the commanding officer's quarters, the master armorer's quarters, and the main arsenal. The main arsenal houses the Springfield Armory Museum, which contains the outstanding Benton Arms Collection as well as other exhibits. The arms collection includes not only the products of Springfield Armory but also firearms that illustrate the growth of the entire American arms industry.

Armory Square has retained its identity and overall architectural composition for the past 100 years. The square's size and distinction, provided in part by its elevation and the iron fence enclosing it, provide a degree of isolation from the adjacent urban environment. Within walking distance of the proposed national historic site is the quadrangle that is considered the cultural heart of Springfield.

The proposed Springfield Armory National Historic Site would commemorate the important role of the Springfield Armory in the Nation's military history. For nearly 200 years, the armory was a center for manufacturing and development of small arms, producing weapons which achieved a justified reputation for quality, accuracy, and dependability. For a substantial portion of this time, the armory made Springfield the small arms center of the world. The site's history began in 1777, when Armory Square in Springfield was selected as the location for a magazine and laboratory for the development, production, and storage of guns and powder. During the American Revolution, Armory Square was the site of important ordnance manufacturing and storage facilities; it served as a supply depot for the entire northern theater of war. Following the Revolutionary War, in 1794, Congress officially established the Springfield Armory. During the latter half of the 19th century, from the time of the destruction of the Harpers Ferry installation in 1861, until the Rock Island Arsenal began some production of rifles in 1904, the Springfield Armory was the sole supplier of military small arms manufactured by the U.S. Government. Most of the United States Armed Services small arms were developed in the laboratories at Springfield Armory until the time that the armory was deactivated as a military installation, in April 1968. -

In addition to its historical role in the development and manufacturing of small arms, Springfield Armory was also the site where Shay's Rebellion was quelled. On January 25, 1787, the rebellion of small farmers under Daniel Shay against alleged unfair taxation ended at

Springfield Arsenal, with their defeat as they attempted to seize the magazine.

The Department believes that Springfield Armory represents a heritage of Government arms development and manufacture that is worthy of preservation. In April 1963, the Armory was dedicated as a National Historic Landmark. And at its 65th meeting in October 1971, the Secretary's Advisory Board on National Parks, Historic Sites, Buildings, and Monuments "heartily endorse[d] the establishment of the Armory Square portion of the Springfield Armory as the Springfield Armory National Historic Site."

After deactivation in 1968, part of Armory Square was conveyed to the city of Springfield, which in turn leased a portion to Springfield Armory Museum, Inc., a nonprofit foundation, for preservation and management. Other parts of the Armory were conveyed to the Commonwealth of Massachusetts. It became apparent, however, that preservation of the appearance of historic buildings, particularly those marked for use by the Springfield Technical Community College, was not assured. Furthermore, the foundation which managed the arms collection encountered funding difficulties; subsequent to unsuccessful national fund-raising attempts, its management asked that the National Park Service preserve and manage the armory as a national historic site.

Springfield Armory National Historic Site would encompass approximately 55 acres. The Department proposes to acquire in fee, through donation, 18.35 acres of land owned by the city of Springfield and a strip of 1.97 acres owned by the State of Massachusetts and utilized in conjunction with the college. The remaining 34.61 acres would remain in State ownership, constituting a "Preservation Control Area", pursuant to an agreement to be concluded with the State, that would preserve the historic appearance of the parade and the exterior of structures, including the Technical College, surrounding it. In addition, the Department would conclude an agreement with the Secretary of the Army concerning the arms collection and other museum objects now at the site. Since the arms collection is a key feature of the historic site, the Department believes that a satisfactory agreement should include a loan of the articles on a long-term basis, subject to renewal, to the National Park Service. A draft of an agreement containing this type of loan arrangement has been negotiated; its signing awaits the passage of legislation creating the historic site.

Because land would be acquired entirely through donation, no land acquisition costs are involved. The estimated cost of operation and maintenance is expected to be about \$356,000 per year. A staff of 14 permanent and two seasonal man-years of personnel is contemplated.

Restoration of the buildings included in the proposed national historic site would be necessary and we propose undertaking development of interpretive exhibits in the main arsenal. Development costs are estimated to be about \$5.3 million, based on February 1973 prices. Of this amount, \$3 million is programmed for development of interpretive exhibits in the main arsenal, and about \$2.3 million is for buildings, restoration, and grounds work. The \$3 million for development of the interpretive exhibits includes a complete cataloguing of the arms collection and preservation or restoration as needed.

S.R. 590

A ten-years and cost data statement is enclosed.
 The Office of Management and Budget has advised that there is no objection to the presentation of this report from the standpoint of the Administration's program.
 Sincerely yours,

DOUGLAS P. WHEELER,
Acting Assistant Secretary of the Interior.

Enclosure.

U.S. DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE—SPRINGFIELD ARMORY NATIONAL HISTORIC SITE

	19CY	19CY+1	19CY+2	19CY+3	19CY+4
Estimated additional expenditures:					
Personnel services.....	\$194,000	\$206,000	\$206,000	\$206,000	\$206,000
All other.....	722,000	1,195,000	1,505,000	1,890,000	820,000
Total.....	916,000	1,401,000	1,711,000	2,096,000	1,026,000
Estimated additional obligations:					
Land and property acquisition.....					
Developments.....	559,000	1,043,000	1,353,000	1,740,000	670,000
Operations (management, protection, and maintenance, planning, development, and operation of reclamation facilities).....	357,000	358,000	357,000	356,000	356,000
Total.....	916,000	1,401,000	1,710,000	2,096,000	1,026,000
Total, estimated expenditures: Man-years of civilian employment.....	15	16	16	16	16

DEPARTMENT OF THE ARMY,
 Washington, D.C., October 19, 1955.

HON. HENRY M. JACKSON,
*Chairman, Committee on Interior and Insular Affairs,
 U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: Reference is made to your request for the views of the Department of Defense on S. 979, 93d Congress, a bill "To authorize the establishment of the Springfield Armory National Historic Site, Massachusetts, and for other purposes."

The purpose of the bill is to provide authority to establish the Springfield Armory National Historic Site. It also would provide authority for the Secretary of the Interior to negotiate with the Commonwealth of Massachusetts and the City of Springfield for the use of land not in Federal ownership which comprised part of the Springfield Armory, and with the Secretary of the Army for the use of the Springfield Armory Museum Collection, housed at the Springfield Armory.

The Department of the Army, on behalf of the Department of Defense, favors the bill. This collection is of great historical value and without parallel in the United States. Springfield, historically the center of America's small arms production and development, is the logical home for the collection. It is felt that retention of the collection at Springfield will commemorate the Armory's contribution to the Nation throughout its history.

For the foregoing reasons, the Department of the Army on behalf of the Department of Defense, recommends that the bill be favorably considered.

S.R. 596

The enactment of this bill will cause no apparent increase in budgetary requirements of the Department of Defense.

This report has been coordinated with the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

Sincerely,

HERMAN R. STAUDT.
Acting Secretary of the Army.

EXECUTIVE OFFICE OF THE PRESIDENT,
OFFICE OF MANAGEMENT AND BUDGET,
Washington, D.C., September 7, 1973.

HON. HENRY M. JACKSON,
*Chairman, Committee on Interior and Insular Affairs, U.S. Senate,
New Senate Office Building, Washington, D.C.*

DEAR MR. CHAIRMAN: This is in response to your request of May 24, 1973, for the views of the Office of Management and Budget on S. 979, a bill "To authorize the establishment of the Springfield Armory National Historic Site, Massachusetts, and for other purposes."

The Office of Management and Budget concurs in the views of the Department of the Interior in its report on S. 979, and accordingly recommends enactment of the bill.

Sincerely,

WILFRED H. ROMMEL,
*Assistant Director for
Legislative Reference.*

A P P E N D I X 2

D R A F T L O A N A G R E E M E N T

COOPERATIVE AGREEMENT
between
DEPARTMENT OF THE ARMY
and
DEPARTMENT OF THE INTERIOR

WHEREAS, P.L. 92-____, ____ Stat.____, authorizes the Secretary of the Interior to establish the Springfield Armory National Historic Site; and

WHEREAS, the Springfield Armory, commissioned by President Washington in 1794, was the site of Shay's Rebellion (1786-1787) and, until deactivated in 1968, the oldest manufacturing arsenal in the United States; and

WHEREAS, the Springfield Armory Collection which is owned by the United States and in the custody of the Department of the Army, has special relevance to the historical significance of the Springfield Armory; and

WHEREAS, the Department of the Army is authorized by P.L. 92-____, ____ Stat.____, and the Economy Act of June 30, 1932, 47 Stat. 417, 31 U.S.C. § 686 (1970) to utilize the services of the Department of the Interior in preserving and displaying the Springfield Armory Collection; and

WHEREAS, transfer on loan of the Springfield Armory Collection is deposited by the Department of the Army at the Springfield Armory Museum, for continued preservation and display at the Springfield Armory National Historic Site is in the best interest of military history, the Department of the Army and the Department of the Interior;

NOW, THEREFORE, in consideration of the promises to be performed by the parties hereto and of the mutual agreement contained herein, it is agreed as follows:

1. The effective date of this agreement is _____.

2. The Department of the Army (hereinafter the Army) agrees to lend to the Department of the Interior (hereinafter the Department) the Springfield Armory Collection, deposited at the Springfield Armory Museum, as jointly inventoried by the Army and the National Park Service on _____, and all provenience records and additional cataloguing information (hereinafter the property) for preservation and display at the Springfield Armory National Historic Site for a period of ten (10) years.

3. This agreement shall be renewed automatically at the end of ten (10) years for periods of like duration unless either party gives written notice, ninety days prior to expiration of each 10-year period, of the other party's non-compliance with the conditions of this agreement.

4. Ninety days prior to the expiration of each 10-year period, the Army and the Department may meet to consider modification of those specific terms of the agreement concerning the administration of the property.

5. The Army will from time to time improve the property by making additions to it that clearly conform to a defined scope of the collection to be agreed upon by both parties. Offers of specimens for this collection from other agencies, organizations, or individuals will be referred to the Army for approval. No items in the collection will be de-accessioned by the Department without prior approval of the Army.

6. The Army may make reasonable withdrawals of items from the property for purposes of temporary loan to Department of Defense installations, private organizations and contractors. A reasonable withdrawal is a withdrawal which does not destroy the historical significance, integrity or unity of the Springfield Armory National Historic Site, nor pose an undue threat to the preservation of individual items. Prior to the withdrawal of any item of the property, the Army shall give the Department five days notice; except that in the case of the withdrawal of any item on permanent public display, the Army shall give the Department 30 days notice. The Department should be responsible for the packaging and shipping of items of the property withdrawn for purposes of temporary loan to Department of Defense installations and contractors.

7. The Department shall have curatorial responsibility for the care and display of the property and shall adopt a program of maintenance, storage, restoration, and display of the property, subject to the availability of appropriated funds for these purposes.

8. The Department shall permit the on-site study of the property by students, scholars, and representatives of museums, colleges, governmental agencies, or other institutions and organizations under prescribed rules and regulations, which will be published in the Code of Federal Regulations.

9. The Department may lend an item of the property to any other agency of the Federal Government for up to six months without prior approval of the Army. The Department may lend any item of the

property to any agency, organization, or individual outside the Federal Government only upon the prior approval of the Army.

10. It is the intent of the parties to this agreement that if the Department determines that an item of the property has specific historical relevance to a National Park System installation other than the Springfield Armory National Historic Site, the Army and the Department may negotiate a supplemental agreement for the transfer of the item to that installation.

11. Copies of all provenience records and additional information appropriate for accessioning and cataloguing individual specimens will be maintained in a permanent records file, according to the standard museum records practice of the National Park Service.

12. The property shall be available for inspection and inventory by the Army at any reasonable time.

13. The Secretary of the Interior shall specify measures to be taken for the physical security of the property which are consistent with the standards prescribed by Army Regulation 190-18 (July 19, 1967) or established through negotiation as acceptable substitutions thereof.

Secretary of the Army

Secretary of the Interior

(Date) _____

(Date) _____

A P P E N D I X 3

LIST OF EQUIPMENT NECESSARY IN A FIREARMS
PRESERVATION LABORATORY

REQUIRED EQUIPMENT IN A FIREARMS PRESERVATION LAB

Camera and darkroom

Distilled water source

Stainless steel sink

Stainless steel tanks

Large oven

Solvent storage cabinet

Workbenches, racks, cabinets

Welding apparatus

Air abrasive unit

Air compressor

Wire wheels

Metal lathe

Grinder

Flexible shaft drill

APPENDIX 4

CURATORIAL OPERATIONS EVALUATION REPORT

CURATORIAL OPERATIONS EVALUATION REPORT

Part C

Collections Storage Facilities & Environment

Site: Springfield Armory Date: 2-23-77

Storage Area Location: Basement - North

	YES	NO
Museum storage areas are not used for other purposes (e.g. staff lounge, maintenance storage, etc.)	90	10
No inflammable materials (cleaning supplies, paints, etc.) are stored in collection storage area.		
Storage areas are set up as storage areas, not just a stack of boxes in a closet or empty room.	60	40
Small items are <u>NOT</u> stored in historic furnishings, such as drawers, cabinet bases, etc.	NA	
Access to storage area(s) is limited to those personnel working with the collections and is off limits to all personnel who have no responsibility for collections care, maintenance, or records.	✓	
Storage area(s) are well organized for easy access to cabinets, racks, and shelves, with aisles between storage units wide enough for easy maneuvering of artifacts, specimens and storage units.	20	80
Storage area(s) are regularly cleaned.	70	30
Cleaning is performed by or supervised by person responsible for collections management.	NA	
Storage area(s) are large enough to permit storage of all collections not on exhibit without crowding.	70	30 ✓
Standard steel specimen cabinets are stacked no more than two high.	NA	
Shelving is constructed to prevent it from swaying or toppling.	80	20
Boxes are adequately packed, padded and labeled to prevent damage to specimens through mishandling.	50	50
Particularly fragile or valuable objects are under additional security with limited access.		✓

CURATORIAL OPERATIONS EVALUATION REPORT

Part C(con't.)

Collections Storage Facilities & Environment

Site: Springfield Armory Date: 2-23-77
Storage Area Location: Basement / North

	YES	NO
14. Sufficient facilities, cabinets, racks, etc. are available to adequately store items housed in the area.	70	30
15. Temperature is controlled within the storage area(s).		
16. A temperature range of 65°F ± 5° is maintained in the storage area(s) year round.		
17. Temperature measurements are taken and recorded at least once a week year round.		
18. Temperature records are maintained on file.		
19. The temperature recording device is calibrated at least quarterly.	70	
20. Humidity is controlled within the storage area(s).		
21. A relative humidity range of 50% ± 3% is maintained in the storage area(s) year round.		
22. Humidity measurements are taken and recorded at least once a week year round.		
23. Humidity records are maintained on file.		
24. The humidity recording device is calibrated at least quarterly.	10	1
25. Temperature and humidity measurements are made in several locations within each storage area if the area has poor ventilation or if it is large enough that dead air pockets could develop.		
26. Storage area(s) are free of light except when occupied by people.	80	

CURATORIAL OPERATIONS EVALUATION REPORT

Part C (con't.)

Collections Storage Facilities & Environment

Location: Springfield Armory Date: 2-23-76
 Storage Area Location: Basement North

	YES	NO
1. Storage area(s) are free of dust and air-borne particulates.		✓
2. Storage area(s) are free of gaseous air pollutants.	✓	
3. Storage area(s) are free of insects and rodents and approved insecticides and rodenticides are placed around storage area in accordance with established guidelines.	?	30-10-76
4. Storage area(s) are inspected regularly for evidence of vermin and other agents of deterioration such as leaks.		✓
5. Objects in the collection used primarily or exclusively for Living History demonstrations or similar interpretive purposes are stored apart from objects which are retained for their study value.	N	A
6. Reproductions are stored separately from original items in an obvious manner.	N	A
7. Packing material, padding, etc. is not stored with collections.	20	80

Note: Care of the collections and specific storage information should be considered when answering Part D Collections Care and Handling.

Do they have hydrothermograph?

Tests { Sulphur dioxide - negative
 Hydrogen sulphide - negative
 Sulphur dioxide indicator strips - bleaches white just leave out negative

CURATORIAL OPERATIONS EVALUATION REPORT

Part D Collections Care & Handling

Site: _____

Date: _____

	YES	NO
1. Standard NPS design steel specimen cabinets are used.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Objects in the cabinets are stored in chipboard trays.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Objects are cushioned to prevent damage from abrasion & movement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Drawers in the cabinets are spaced far enough apart to prevent damage to objects stored therein.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cabinet door seals are intact.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Cabinet door latches operate freely and close the doors tightly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Cabinet latches are of a key lock type	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Cabinets are kept locked and keys are kept in a key cabinet--not in the locks.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Paradichlorobenzene crystals are correctly used in the cabinets when appropriate and are renewed as needed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Objects stored on open shelves are boxed or wrapped in polyethylene and cushioned to prevent damage and to afford protection from dust, insects and rodents.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Paradichlorobenzene crystals are placed in boxes or plastic wrapped bundles when appropriate and renewed as needed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Open shelves are free from burrs, splinters & exposed nails or screws which could damage objects or injure personnel.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Wooden shelving is painted with an approved type paint or objects are insulated from direct contact with shelves.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. The vertical distance between shelves is such that stacking of boxes & bundles is not required or possible.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15. Bottom shelves of open shelf units are at least four inches off the floor to minimize damage if flooding should occur.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

CURATORIAL OPERATIONS EVALUATION REPORT

Part D (con't.) Collections Care & Handling

Site: _____ Date: _____

	YES	NO
<u>Historical, Archeological & Ethnological Artifacts</u>		
16. Rugs and tapestries are properly rolled and hung as prescribed.		
17. Rolled rugs and tapestries are wrapped with polyethylene.		
18. Paradichlorobenzine crystals are placed inside wrapped rugs.		
19. Rolled rugs and tapestries are unrolled and inspected for insects regularly. Paradichlorobenzine crystals are replaced periodically.		
20. Unframed prints, sketches, documents, manuscripts and similar valuable printed materials are stored in acid-free solander boxes or document boxes.		✓
21. The contents of solander boxes or document boxes are filed in acid-free tissue.		✓
22. Solander & document boxes are stacked or shelved so that their contents lie flat & so that the boxes are not crushed.		✓
23. Items in solander boxes are of correct size, or matted to prevent their being loose & rattling around.		✓
24. Items in solander boxes are flat & unfolded.		
25. Items in solander boxes are not packed tightly and can be easily removed.		
26. Framed prints & paintings are hung on wire mesh screens as prescribed.		✓
27. Framed materials hung on screens are not touching each other & are easily accessible without removal of other items.	N	A
28. Matted items are matted with 100% ragboard.	N	A
29. All framed items have backs properly covered & sealed.		✓
30. Particularly sensitive items have UF-3 or other light filtering "glass" as necessary.		✓

CURATORIAL OPERATIONS EVALUATION REPORT

Part D (con't.) Collections Care & Handling

Site: _____ Date: _____

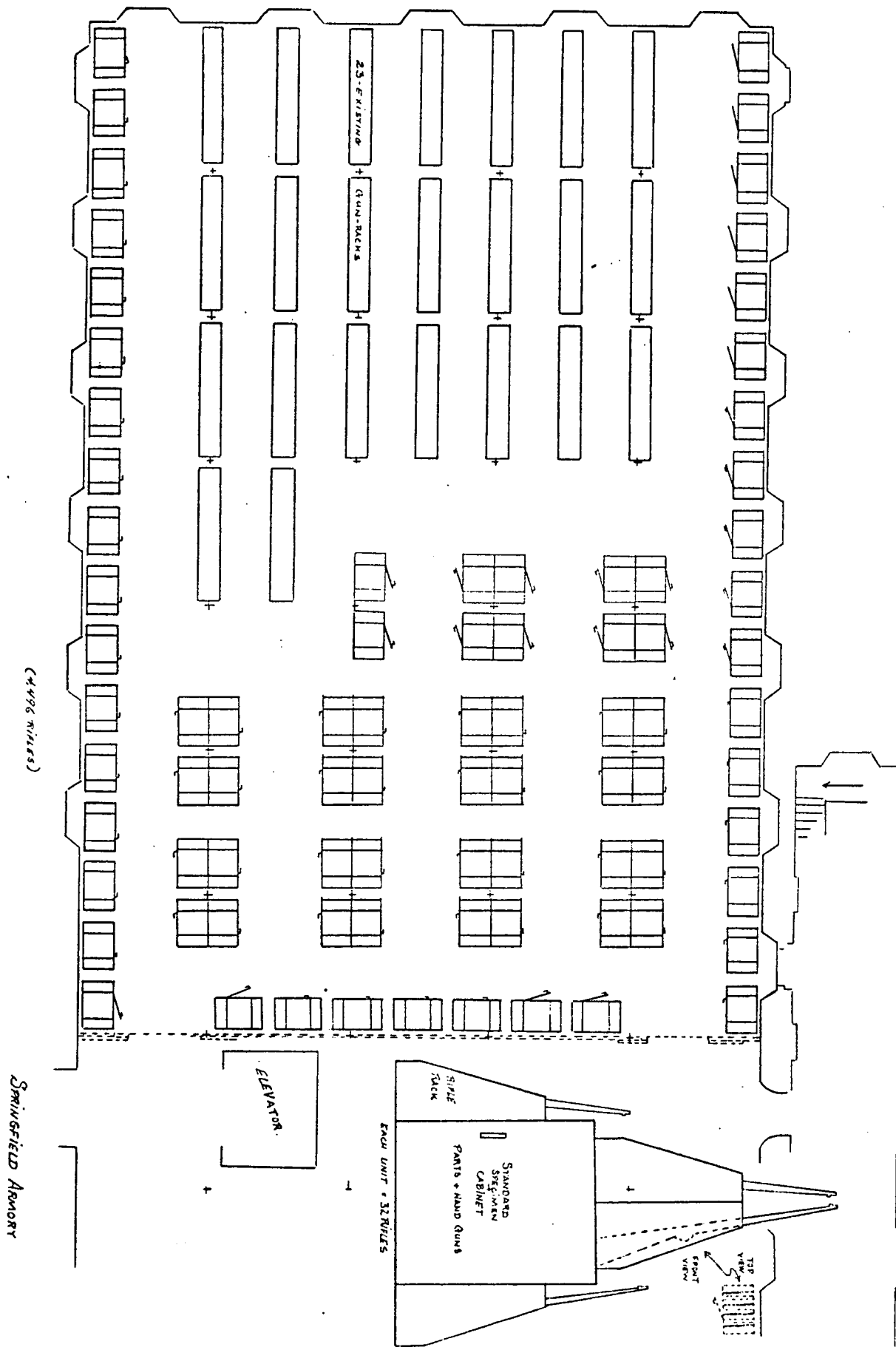
	YES	NO
31. Rifles and carbines are stored in standard design wooden rifle racks.		<input checked="" type="checkbox"/>
32. Rifle racks are padded to prevent damage to weapons stored therein.		<input checked="" type="checkbox"/>
33. Weapons have been treated to prevent rust & to prevent drying of wood.		<input checked="" type="checkbox"/>
34. Firearms show no evidence of rust, wood dryness or Finger-prints on metal parts.		<input checked="" type="checkbox"/>
35. Swords are stored in standard design sword racks & are padded to prevent damage.		<input checked="" type="checkbox"/>
36. Swords are stored out of their scabbards.		<input checked="" type="checkbox"/>
37. Swords & scabbards (including metal, leather, cloth & other parts besides the blades) have been treated to prevent deterioration.		<input checked="" type="checkbox"/>
38. Swords show no evidence of rust, fingerprints or other deterioration.		<input checked="" type="checkbox"/>
39. Firearms are stored in locked cabinets in the storage area.		<input checked="" type="checkbox"/>
40. Reproduction firearms are used in demonstrations.		<input checked="" type="checkbox"/>
41. Powder, primers, etc. are NOT stored with firearms in the same cabinet.		<input checked="" type="checkbox"/>
42. Metal objects show no evidence of rust, corrosion, tarnish, fingerprints or other deterioration.		<input checked="" type="checkbox"/>
43. Wood, bone, and other "natural" objects show no evidence of insects, mold, or other deterioration.		<input checked="" type="checkbox"/>
44. Glass objects are padded against shock and abrasion.		<input checked="" type="checkbox"/>
45. Plates, saucers, glasses and other similar shaped objects are not stacked within each other.		<input checked="" type="checkbox"/>

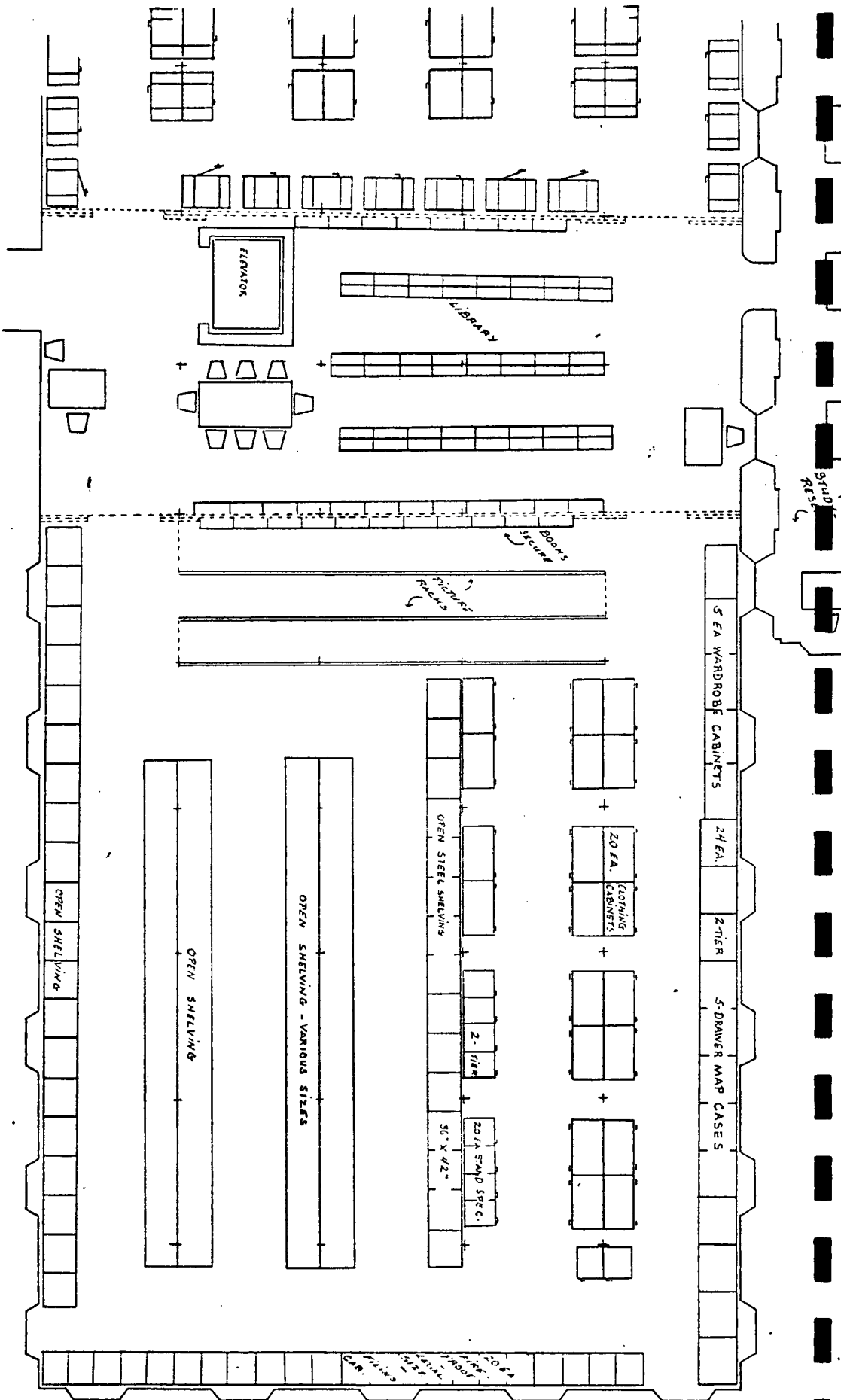
A P P E N D I X 5

RECOMMENDED FLOOR PLAN FOR STORAGE AREA

LIST OF EQUIPMENT AND SOURCES

SPECIFICATIONS & REQUISITIONS





SPRINGFIELD EQUIPMENT LIST

1. Gun rack - 332 each @ \$45 (approximately)	\$ 15,000
2. Standard specimen cabinets - 103 each @ \$350	\$ 36,000
3. Wardrobe cabinet - 5 each @ \$500	\$ 2,500
4. Clothing cabinet - 20 each @ \$500	\$ 10,000
5. Map cases - 24 each @ \$250	\$ 6,000
6. Fireproof files - 20 each @ \$500 ⁺	\$ 10,100
7. Picture rack framing - 100 + ft. @ \$10	\$ 1,000
8. Open shelving - Prison Industry - various sizes	\$ 15,000
9. Handling equipment - various	\$ 2,000
10. Cage partitions materials - 124 ft. + 4 each 5 ft. gates	\$ 7,000
11. Furniture	<u>\$ 3,000</u>
	\$107,600

UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION

Requisition Number

Date

To

Bureau or Office

Appropriation and Allotment or Project No.

Charge shipping costs to

Vendor

McMaster-Carr
2828 North Paulina Street
Chicago, Ill. 60657
Tel. 312/281-1010

Deliver to

Springfield Armory

ITEM OR FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Master Craft stock room partitions Panels - 5' wide x 7' high #6715W11 - 1 1/2" mesh	25	ea.	50.19	1,254.75
2	Corner angle posts - #6715W51	10	ea.	10.67	106.70
<p>NOTE: Additional P.O. required to: Local contractor for labor to install as picture hanging racks - see sketch in floor plan.</p>					

For Use When Additional Approval is Required

Bureau Officer

(Signature)

(Date)

Title

Requisitioned by (Signature)

Title

Approved by (Signature)

Title

**UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION**

Page 1 of Pages

4-1
(56)

Bureau or Office	Requisition Number Date
Appropriation and Allotment or Project No.	Charge shipping costs to
Steel Fixture Manufacturing Co. East Seventh Street Box 917, Topeka, Kansas 66601	Deliver to Springfield Armory

ITEM OR FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1.	Model GL-W-Wardrobe cabinets (gray)	5	ea.	405.00	2,025.00
2.	Model GL-C Gray	20	ea.	337.00	6,740.00
3.	Metal trays for GL-C	200	ea.	17.50	3,500.00
					12,265.00
	* Check current prices. Steve Daniels - 913/233-8911				

For Use When Additional Approval Is Required	Requisitioned by (Signature)
Requesting Officer	Title
(Signature) (Date)	Approved by (Signature)
	Title

UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION

Page 1 of Pages

To		Bureau or Office	Requisition Number
			Date
Appropriation and Allotment or Project No.		Charge shipping costs to	
Vendor McMaster-Carr 2828 North Paulina Street Chicago, Illinois 60657 312/281-1010		Deliver to Springfield Armory	

ITEM OR FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1.	MACARCO Battery-Hydraulic lift truck #2665Y2 - Fork model	1	ea.	781.84	781.84
2.	Stock-king Steel Shelf trucks 24" x 48" - #2892T2	2	ea.	175.91	351.82
	24" x 36" - #2892T5	1	ea.	155.57	155.57
3.	Mover's Choice Dollies #2601T2 - carpeted	6	ea.	35.14	210.84
4.	Roll-about Safety Platform #8106W86 - 38"	1	ea.	150.92	150.92
					1,650.97

For Use When Additional Approval Is Required

Bureau Officer		Requisitioned by (Signature)	
		Title	
(Signature)	(Date)	Approved by (Signature)	
Title		Title	

Prepare in single space typing. Use double space between items. Fill out top of requisition completely, showing shipping instructions and appropriation if different from that to which requisition is chargeable.

UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION

Page 1 of Pages

Requisition Number

Bureau or Office

Date

Appropriation and Allotment or Project No.

Charge shipping costs to

Deliver to

GSA

Springfield Armory

ITEM OR FORM NO.

DESCRIPTION

QUANTITY

UNIT

UNIT
PRICE

AMOUNT

1. Steel gray sectional map and plan filing
cabinet units

#7110-00-205-0822 - Base Section

12

ea.

50.00

600.00

#7110-00-205-0823 - Top Section

12

ea.

50.00

600.00

#7110-00-205-0821 - Five-drawer section

24

ea.

215.00

5,160.00

6,360.00

For Use When Additional Approval Is Required

Requisitioning Officer

(Signature)

(Date)

Requisitioned by (Signature)

Title

Approved by (Signature)

Title

UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION

To	Bureau or Office	Requisition Number
		Date

Appropriation and Allotment or Project No.	Charge shipping costs to
Vendor Get Bid-Price = Lane Science Equip. Co. Steel Fixture Mfg. Co. 105 Chambers Street 612 E. Seventh St. New York, NY OR P.O. Box 917 Paul Zimmerman Topeka, Kan. 66601 FTS 8-903/267-4445 Steve Daniels 913/233-8911	Deliver to Springfield Armory

ITEM OR FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
LANE					
1.	Model 301 Geology Cabinets, hinged doors	100	ea.	169.00(?)	16,900
2.	#301-T trays for above	1000	ea.	13.75(?)	13,750
3.	Freight charges ?				30.60
OR					
STEEL FIXTURE					
1.	Model GL	100	ea.	181.00	18,100
2.	Metal trays for GL	1000	ea.	13.50	13,500
	(Shipping paid by supplier)				\$31.60
* Confirm prices before P.O. & bids.					

For Use When Additional Approval Is Required		Requisitioned by (Signature)
Bureau Officer		Title
(Signature)	(Date)	Approved by (Signature)
Title		Title

**UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION**

Page 1 of Pages

Requisition Number

Bureau or Office

Date

Location and Allotment or Project No.

Charge shipping costs to

Deliver to

Master-Carr
2 North Paulina Street
Chicago, Illinois 60657
Tel. 312/281-1010

Springfield Armory

FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1.	MACARCO Industrial Steel Mesh Partitions				
	#6692W38 - 4' wide x 10' high panels painted	22	ea.	97.20	2,138.40
	#6692W32 - 1' wide x 10' high panels "	4	ea.	68.40	273.60
2.	Steel mesh doors - 8' wide x 10' high #6692W 83 double slide	4	ea.	523.00	2,092.00
3.	Cylinder locks - 6692W98 - for slide doors	4	ea.	88.90	355.60
4.	Corner posts - 6692W94 - painted	4	ea.	21.50	86.00
					\$4,945.60
	NOTE: Additional P.O. to local contractor for labor to install above.				

For Use When Additional Approval Is Required

Officer

(Signature)

(Date)

Requisitioned by (Signature)

Title

Approved by (Signature)

Title

UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION

Requisition Number

Date

To

Bureau or Office

Appropriation and Allotment or Project No.

Charge shipping costs to

Vendor

Deliver to

Local Contractor

Springfield Armory

ITEM OR FORM NO.

DESCRIPTION

QUANTITY

UNIT

UNIT
PRICE

AMOUNT

1.

Gun racks, as per attached drawings.
Painted, color _____.

332

ea.

45.00
(approx.)

ESTIMATE

L\$, \$

For Use When Additional Approval Is Required

Bureau Officer

(Signature)

(Date)

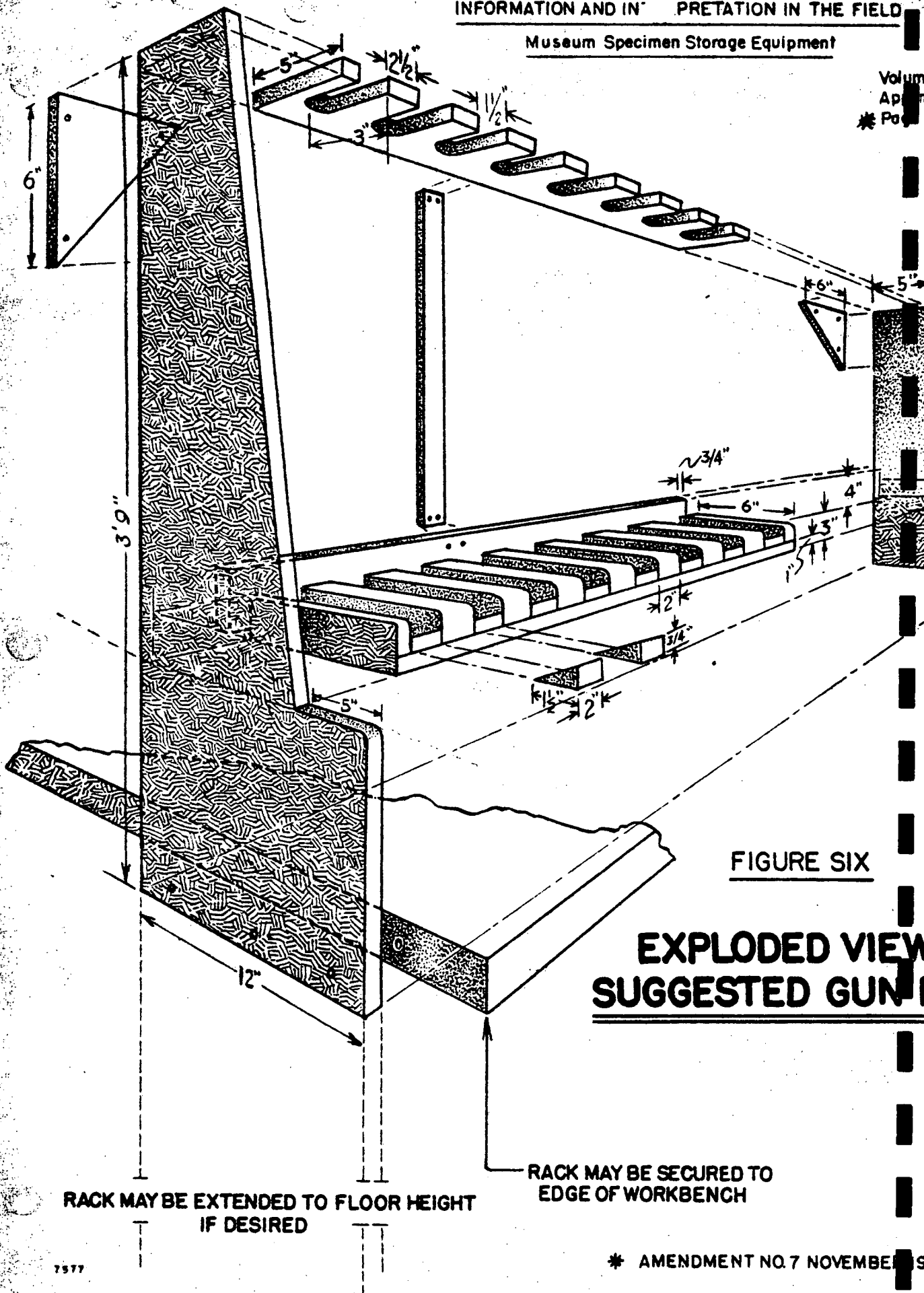
Title

Requisitioned by (Signature)

Title

Approved by (Signature)

Title

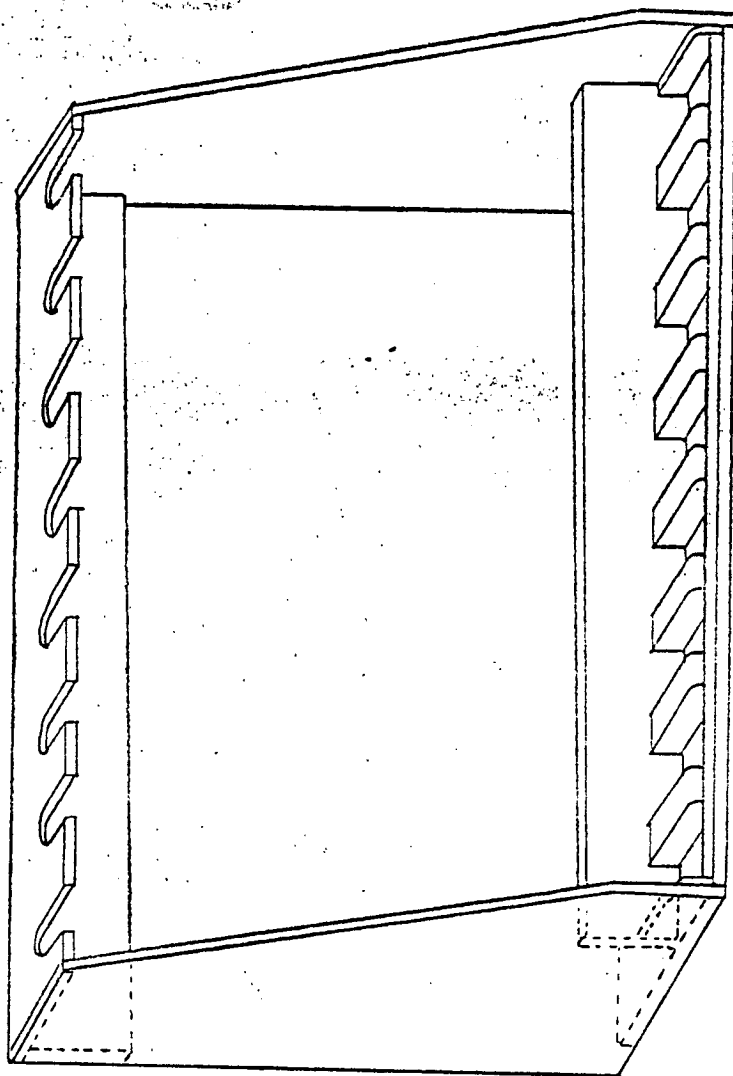
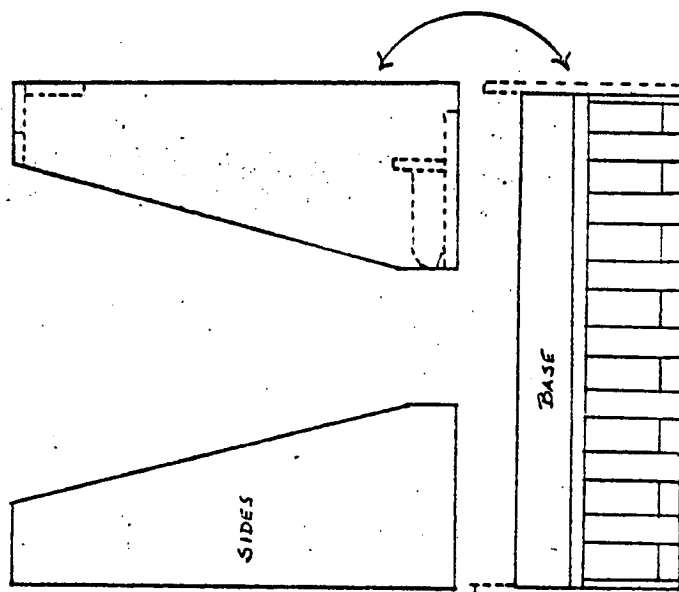
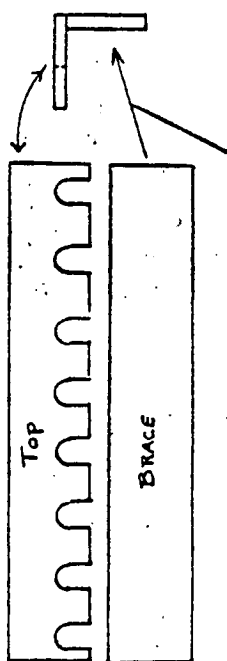


Rifle Rack Assembly Instructions

Put **BASE** on solid flat surface and fit **SIDES** flush at front. Nail sides to base.

Position **TOP** at top of sides and nail. Caution! Keep nails towards back away from narrow edge section. This is a very weak part and will easily snap off.

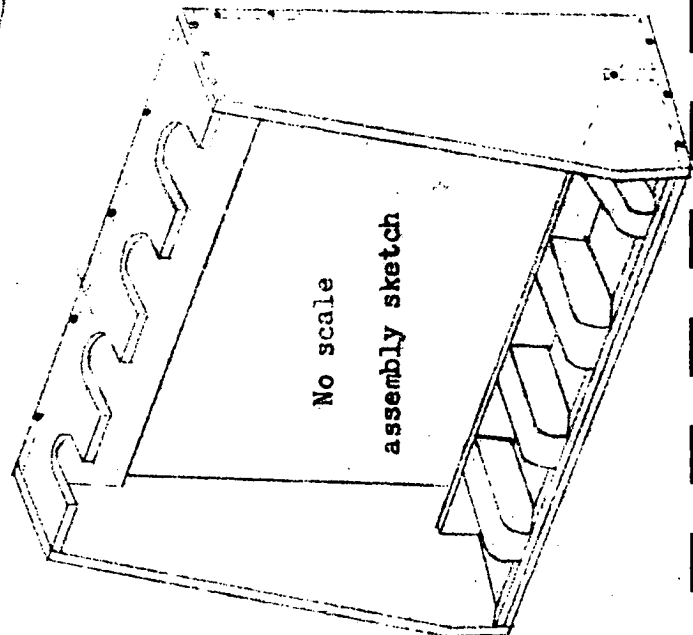
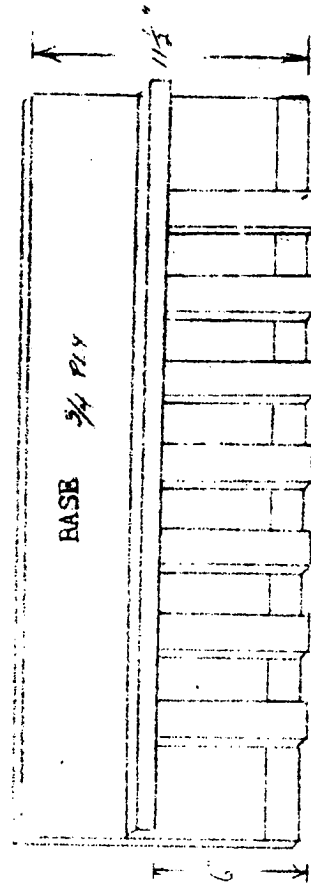
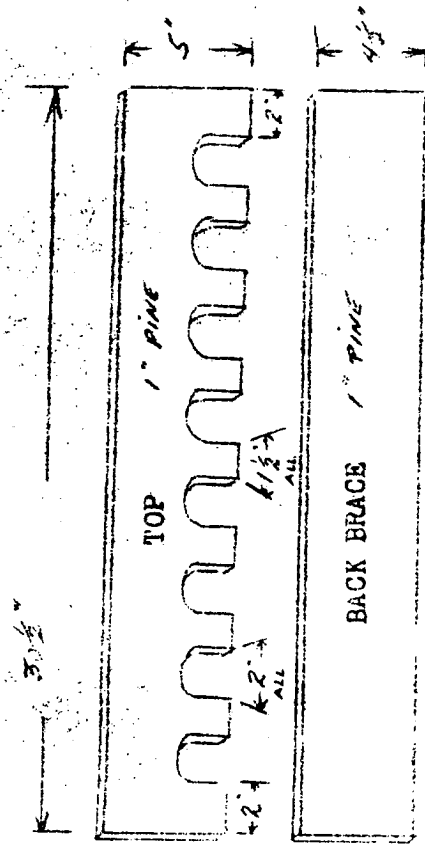
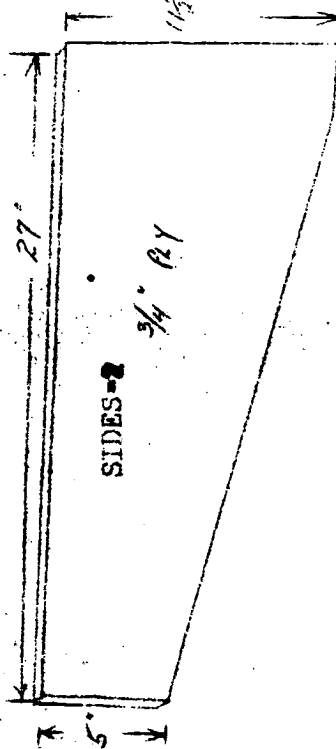
Fit **BRACE** under top at back and nail through sides and top both. When time and mood permit.....PAINT IT !!!!



No Scale -

GUN RACK

Scale = $1\frac{1}{2}" = 1'$



**UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION**

Page 1 of Pages

Requisition Number

Date

Bureau or Office

Appropriation and Allotment or Project No.

Charge shipping costs to

Deliver to

Rehold Incorporated
Grand Boulevard
Clinton, Ohio 45011
513/863-5900

Springfield Armory

FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1.	Files, insulated "C" - 4 drawer legal Class 350 insulated record containers Federal Supply FSC Group 71, Park V, Section E, Contract #GS-005028334 Item #7110-242-47	20	ea.	520.00	10,400.00
	* Call for current prices and shipping charges before ordering.				

* Estimated

For Use When Additional Approval is Required

Officer

(Signature)

(Date)

Requisitioned by (Signature)

Title

Approved by (Signature)

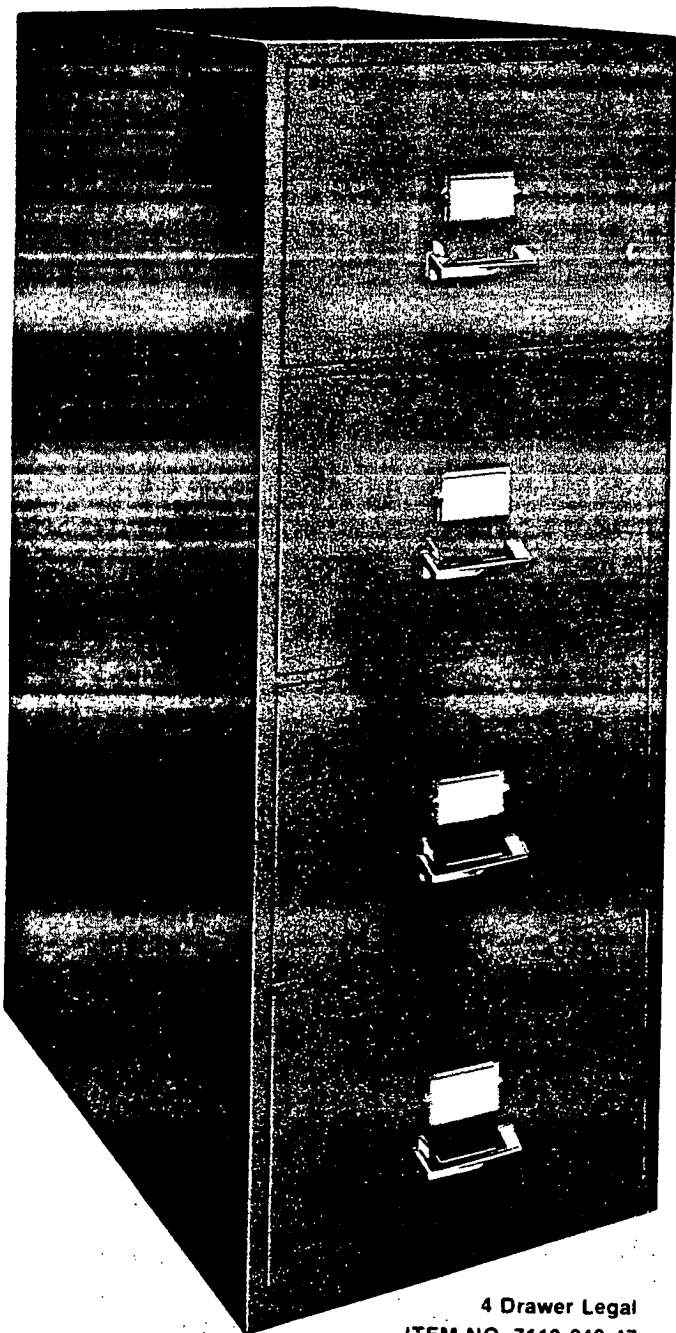
Title

DIEBOLD "C" LABEL INSULATED FILES

*Presently Classified by U.L. as Class 350 Insulated Record Containers.

Federal Supply FSC Group 71, Part V, Section E

CONTRACT NO. GS-OOS-28334



**4 Drawer Legal
ITEM NO. 7110-242-47**

PRICES, TERMS AND CONDITIONS

All prices are F.O.B. factory or delivered on a zone basis.

All merchandise is carefully packed for shipment and undergoes Government Inspection at our factory. Carefully inspect all shipments for evidence of damage or shortage before accepting them. Where damage or shortage occurs, refuse to accept the shipment until the transportation agent endorses the extent of the damage or shortage. Return shipments will not be accepted unless authorized by us.

Contractor Diebold, Inc. - Hamilton Plant
Contract No. GS-OOS-28334
Period: June 1, 1974 thru May 31, 1975
General Services Administration
Federal Supply Service

As contracted through the General Services Administration
Federal Supply Service, Washington, D.C. 20406

This price list is used by U.S. and
District of Columbia governments only

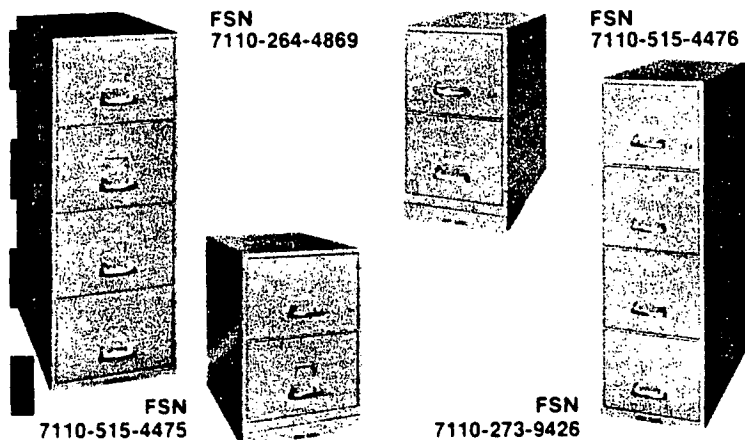
SEND ORDERS TO:

DIEBOLD, INC.
1550 Grand Boulevard
Hamilton, Ohio 45011

DIEBOLD
INCORPORATED
HAMILTON, OHIO

TERMS: Net 30 days. Maximum Order Limitation: \$25,000.00
DELIVERY REQUIREMENTS: 1-150 days after receipt of purchase order

DELIVERED PRICES ARE APPLICABLE TO DESTINATIONS WITHIN THE FEDERAL GOVERNMENT CONTRACT ZONE AREAS LISTED BELOW.



Federal Zone Area Code

States Comprising Zone Area

ZONE 1	Alabama, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Mississippi, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, Wisconsin and District of Columbia.
ZONE 2	Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota and Texas
ZONE 3	Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington and Wyoming

REVISED PRICES EFFECTIVE OCTOBER 1, 1974

4-DRAWER LEGAL

MODEL NO.	COLOR	ZONE	PRICE
FSN 7110-264-4869	Gray	Hamilton	\$279.00
242-41*	Gold	Zone 1	279.00
242-42*	Sand	Zone 1	279.00
242-43*	Red	Zone 2	279.00
242-44*	Yellow	Zone 3	279.00
242-45*	Olive	Zone 3	279.00
242-46*	Navy	Zone 3	279.00
242-47*	Blue	Zone 3	279.00
242-48*	Brown	Level	
242-49*	Black	B Pack	\$ 15.00
242-50*	Parchment		
Shipping Weight			660 lbs.

4-DRAWER LETTER

MODEL NO.	COLOR	ZONE	PRICE
FSN 7110-273-9426	Gray	Hamilton	\$367.20
242-61*	Gold	Zone 1	367.20
242-62*	Sand	Zone 1	367.20
242-63*	Red	Zone 2	367.20
242-64*	Yellow	Zone 3	367.20
242-65*	Olive	Zone 3	367.20
242-66*	Navy	Zone 3	367.20
242-67*	Blue	Zone 3	367.20
242-68*	Brown	Level	
242-69*	Black	B Pack	15.00
242-70*	Parchment		
Shipping Weight			580 lbs.

2-DRAWER LEGAL

MODEL NO.	COLOR	ZONE	PRICE
FSN 7110-515-4475	Gray	Hamilton	\$234.00
242-31*	Gold	Zone 1	234.00
242-32*	Sand	Zone 1	234.00
242-33*	Red	Zone 2	234.00
242-34*	Yellow	Zone 3	234.00
242-35*	Olive	Zone 3	234.00
242-36*	Navy	Zone 3	234.00
242-37*	Blue	Zone 3	234.00
242-38*	Brown	Level	
242-39*	Black	B Pack	10.00
242-40*	Parchment		
Shipping Weight			385 lbs.

2-DRAWER LETTER

MODEL NO.	COLOR	ZONE	PRICE
FSN 7110-515-4476	Gray	Hamilton	\$228.00
242-51*	Gold	Zone 1	228.00
242-52*	Sand	Zone 1	228.00
242-53*	Red	Zone 2	228.00
242-54*	Yellow	Zone 3	228.00
242-55*	Olive	Zone 3	228.00
242-56*	Navy	Zone 3	228.00
242-57*	Blue	Zone 3	228.00
242-58*	Brown	Level	
242-59*	Black	B Pack	10.00
242-60*	Parchment		
Shipping Weight			320 lbs.

TEMPORARY STOCK NUMBERS - These prices are provided unofficially for your convenience. The only official price list is Part V of the Federal Supply Schedule.

DIEBOLD[®]
INCORPORATED

Service Available in all principal cities.

HAMILTON PLANT:

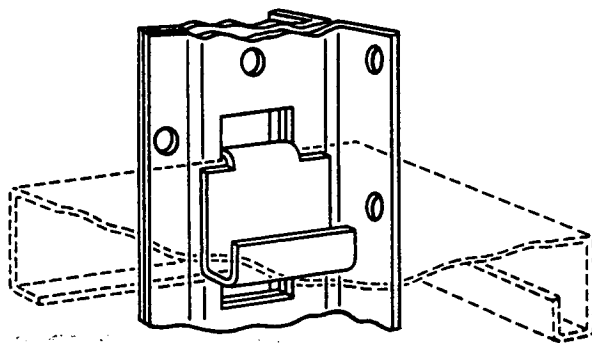
1550 Grand Boulevard, Hamilton, Ohio 45011 • Phone: (513) 863-5900

**UNITED STATES
DEPARTMENT OF THE INTERIOR
REQUISITION**

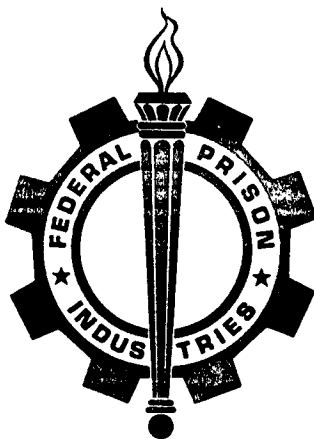
To _____ Appropriation and Allotment or Project No. _____	Bureau or Office _____ Charge shipping costs to _____	Requisition Number _____ Date _____
Vendor U.S. Department of Justice Federal Prison Industries, Inc. Washington, D.C.	Deliver to Springfield Armory	

ITEM OR FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1.	Clip-type steel storage shelving				
	T-Post #7125-FP1-7151 = 87" 7.3 lb.	200	ea.	3.10	620.
	7152 = 111" 9.3 lbs.	150	ea.	4.20	630.
	End panels #7125-FP1-7153 = 12" x 87" 8.7	90	ea.	4.05	364.
	7157 = 12" x 111" 11.3	10	ea.	5.40	54.
	7160 = 30"x111" 28.7	40	ea.	11.65	466.
	Back Panels #7125-FP1-7161 = 87"x36" 26.7	110	ea.	9.85	1,083.
	7165 = 111"x42" 40.2	30	ea.	15.70	471.
	Shelf, Class II #7125-FP1-7179 36"x12" 12.2	800	ea.	5.35	4,280.
	7186 42"x30" 24.4	400	ea.	9.35	3,740.
	Back cross brace 7125-FP1-7192 42" 6.8	50	ea.	3.10	155.
	Side cross brace 7125-FP1-7197 30" 5.0	50	ea.	2.60	130.
	Additional clips	300	ea.	.20	60.
					\$12,091.
	Confirm current prices: Ronald Franklin & prices for installation on site - Labor costs 8/724-3019				
2.	Shipping charges as additional item 30,000 lbs.				

<p align="center">For Use When Additional Approval Is Required</p> <hr/> Bureau Officer _____ _____ (Signature) (Date) _____ Title _____	Requisitioned by (Signature) _____ Title _____ Approved by (Signature) _____ Title _____
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CLIP-TYPE STEEL STORAGE SHELVING



U.S. DEPARTMENT OF JUSTICE
FEDERAL PRISON INDUSTRIES, INC.
WASHINGTON, D.C. 20534

SCHEDULE OF PRODUCTS
REPORT LETTER NUMBER 203

CLIP-TYPE STEEL STORAGE SHELVING

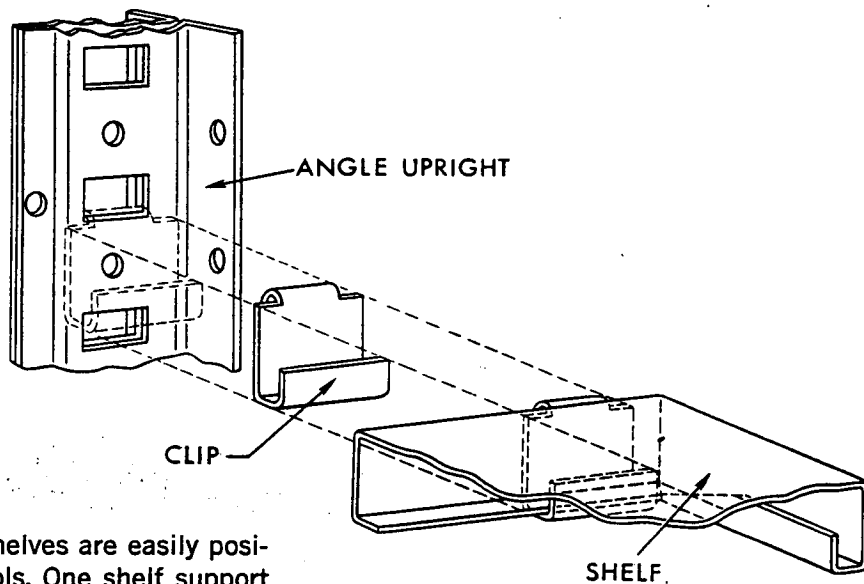
FEDERAL PRISON INDUSTRIES, INC. manufactures clip-type steel storage shelving in a series of standardized units, in accordance with Federal Specification AA-S-1048, covering requirements for storage and display shelving fabricated from steel, with vertically adjustable shelves secured by means of clips.

This shelving is shipped knockdown, complete with all required clips and fasteners, and instructions for erection.

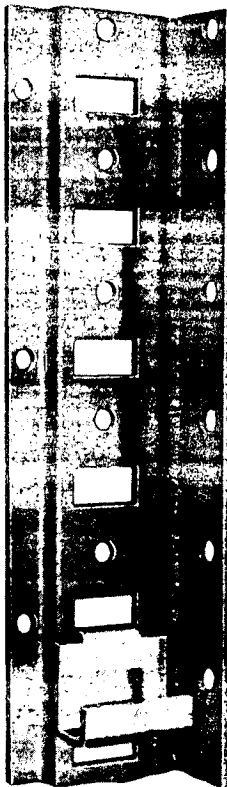
If unable to determine your shelving requirements, or if standard units are unsuitable, send a floor plan if available and/or a full description of requirements so sketches and estimates can be prepared to meet specific needs. No charge will be made for this service.

ORDERS AND INQUIRIES should be sent in duplicate to Federal Prison Industries, Inc., U.S. Department of Justice, Washington, D.C. 20534. See Introductory Section, Page B, of Schedule of Products for ordering instructions and shipping information. Prices are FOB Factory, and are subject to change without notice. Price disputes are subject to arbitration (C. G. 18:391).

CLEARANCES: Federal Prison Industries, Inc. is equipped to manufacture all types of steel storage shelving. Accordingly, the mandatory provisions under Section 4124 of Title 18, United States Code apply to all steel shelving except rotary and library shelving. Clearances cannot be issued by reason of lower commercial prices. Clearance will be given promptly for the purchase from other sources of all items whenever customer requirements cannot be met. It is suggested that no invitations be issued for procurement from other sources until advice has been received from the Corporation.



Clip-type adjustable shelves are easily positioned without any tools. One shelf support bracket or clip is hooked into each corner T-post, and first one side and then the other side of the flanged shelf is tilted into place.



T-POST OR UPRIGHT: Made from 14-gauge steel, with rectangular mounting holes the entire length of the post to receive shelf clips, permitting adjustment of shelf height in 1½" increments. Additional holes are provided as may be required for attachment of all other component parts of shelving units whenever such components attach to posts.

Additional Clips

\$.20 each

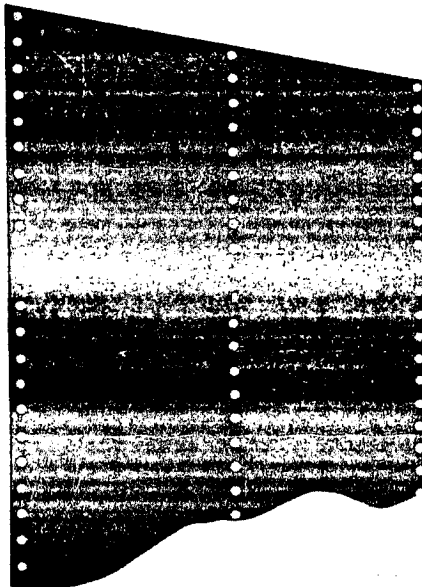
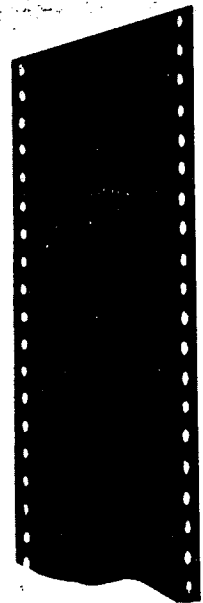
T-POST OR UPRIGHT

STOCK NUMBER	DIMENSIONS	PRICE EACH	SHIPPING WEIGHT
7125-FPI-7151	87" x 2-1/4" x 2"	\$3.10	7.3 lbs.
7125-FPI-7152	111" x 2-1/4" x 2"	4.20	9.3 lbs.

END PANEL: Made from 20-gauge steel, with mounting holes spaced on 1" centers to match mating holes in posts, and extending to floor to enclose the base at this point.

END PANEL

STOCK NUMBER	DIMENSIONS	PRICE EACH	SHIPPING WEIGHT
7125-FPI-7153	87" x 12"	\$ 4.05	8.7 lbs.
7125-FPI-7154	87" x 18"	5.45	12.9 lbs.
7125-FPI-7155	87" x 24"	7.00	18.0 lbs.
7125-FPI-7156	87" x 30"	8.40	22.3 lbs.
7125-FPI-7157	111" x 12"	5.40	11.3 lbs.
7125-FPI-7158	111" x 18"	7.60	16.7 lbs.
7125-FPI-7159	111" x 24"	9.60	23.0 lbs.
7125-FPI-7160	111" x 30"	11.65	28.7 lbs.



BACK PANEL: Same specifications as End Panel but with additional vertical row of holes in center for attachment to shelves. Panels extend to floor to inclose the base at this point.

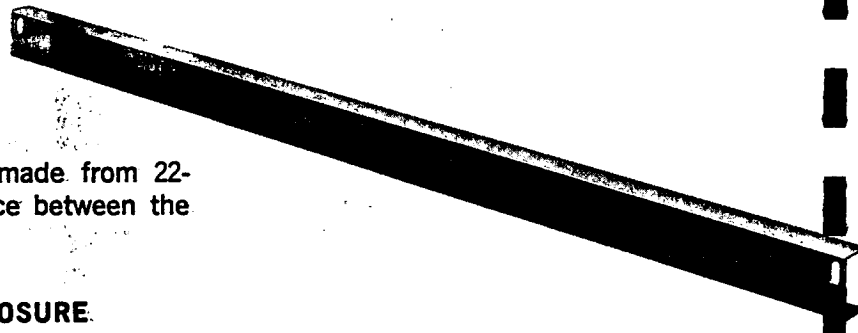
BACK PANEL

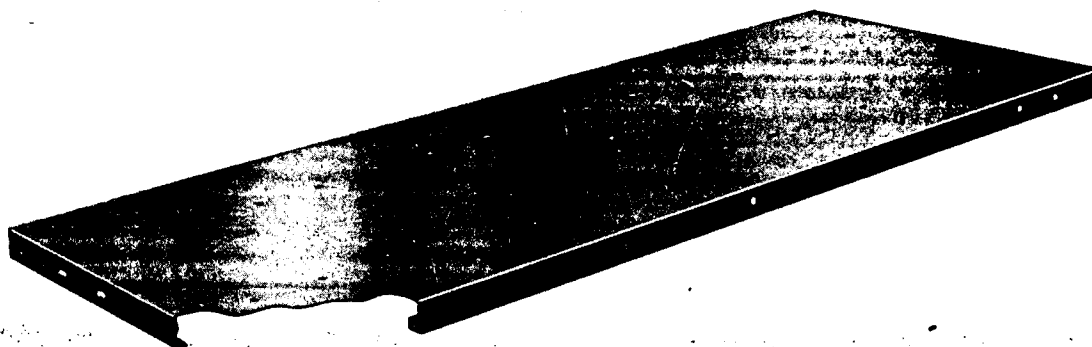
STOCK NUMBER	DIMENSIONS	PRICE EACH	SHIPPING WEIGHT
7125-FPI-7161	87" x 36"	\$ 9.85	26.7 lbs.
7125-FPI-7162	87" x 42"	11.80	31.4 lbs.
7125-FPI-7164	111" x 36"	13.80	34.3 lbs.
7125-FPI-7165	111" x 42"	15.70	40.2 lbs.

BASE CLOSURE: Channel-shaped, made from 22-gauge steel, to close any open space between the bottom shelf and floor.

BASE CLOSURE

STOCK NUMBER	DIMENSIONS	PRICE EACH	SHIPPING WEIGHT
7125-FPI-7198	36" x 1-1/2" high	\$.85	1.4 lbs.
7125-FPI-7199	42" x 1-1/2" high	.95	1.6 lbs.





SHELF, CLASS I: Made from 18-gauge steel, flanged down on all sides 1-3/16". Shelves are provided with holes on 2" centers for attachment of bin dividers. All holes which may be required to complete the assembly of shelving are provided in each shelf, so no further drilling is necessary.

SHELF, CLASS I

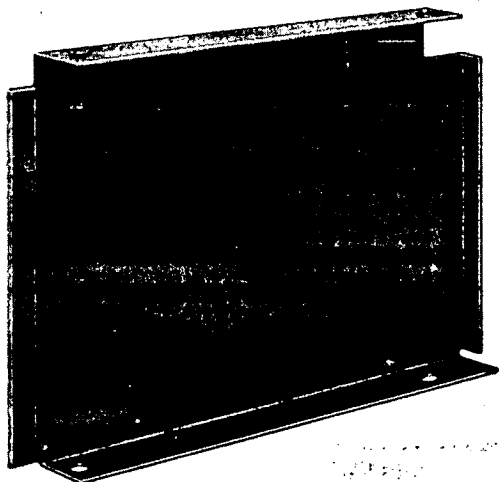
STOCK NUMBER	DIMENSIONS	PRICE EACH*	SHIPPING WEIGHT
7152-FPI-7167	36" x 12" x 1-3/16"	\$ 3.25	8.2 lbs.
7125-FPI-7168	36" x 18" x 1-3/16"	4.30	11.4 lbs.
7125-FPI-7169	36" x 24" x 1-3/16"	5.20	14.6 lbs.
7125-FPI-7170	36" x 30" x 1-3/16"	6.50	17.8 lbs.
7125-FPI-7171	42" x 12" x 1-3/16"	3.80	9.0 lbs.
7125-FPI-7172	42" x 18" x 1-3/16"	4.85	12.8 lbs.
7125-FPI-7173	42" x 24" x 1-3/16"	6.00	16.6 lbs.
7125-FPI-7174	42" x 30" x 1-3/16"	7.20	20.4 lbs.

SHELF, CLASS II: Same specifications as Class I shelves, but with 1" x 1/8" reinforcing bars attached lengthwise front and rear.

SHELF, CLASS II

STOCK NUMBER	DIMENSIONS	PRICE EACH*	SHIPPING WEIGHT
7125-FPI-7179	36" x 12" x 1-3/16"	\$ 5.35	12.2 lbs.
7125-FPI-7180	36" x 18" x 1-3/16"	6.40	15.4 lbs.
7125-FPI-7181	36" x 24" x 1-3/16"	7.25	18.6 lbs.
7125-FPI-7182	36" x 30" x 1-3/16"	8.60	21.8 lbs.
7125-FPI-7183	42" x 12" x 1-3/16"	6.00	13.0 lbs.
7125-FPI-7184	42" x 18" x 1-3/16"	7.10	16.8 lbs.
7125-FPI-7185	42" x 24" x 1-3/16"	8.20	20.6 lbs.
7125-FPI-7186	42" x 30" x 1-3/16"	9.35	24.4 lbs.

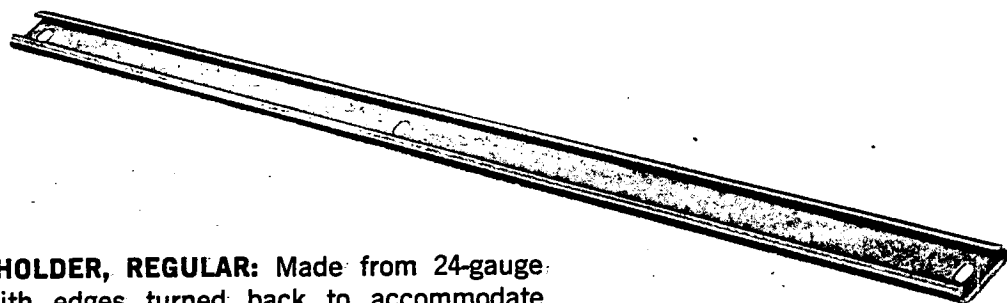
*The price shown includes the shelf and four clips.



SHELF OR BIN DIVIDER: Flanged type, made from 20-gauge steel, with matching holes in flanges for securing to shelf bin divider holes, top and bottom. For 9" heights front edges are folded back. Heights from 12" to 18" have the front edge formed into a bead; rear edges are flanged $\frac{1}{2}$ " at right angles.

SHELF OR BIN DIVIDER

STOCK NUMBER	DIMENSIONS	PRICE EACH	SHIPPING WEIGHT
7125-FPI-7207	6" high x 12" deep	\$.60	0.9 lbs.
7125-FPI-7208	9" high x 12" deep	.80	1.4 lbs.
7125-FPI-7209	12" high x 12" deep	.90	1.9 lbs.
7125-FPI-7210	6" high x 18" deep	.80	1.5 lbs.
7125-FPI-7211	9" high x 18" deep	1.00	2.2 lbs.
7125-FPI-7212	12" high x 18" deep	1.20	2.7 lbs.
7125-FPI-7213	15" high x 18" deep	1.40	2.9 lbs.
7125-FPI-7214	9" high x 24" deep	1.45	3.0 lbs.
7125-FPI-7215	12" high x 24" deep	1.70	4.5 lbs.
7125-FPI-7216	15" high x 24" deep	2.40	5.6 lbs.
7125-FPI-7217	18" high x 24" deep	2.15	6.7 lbs.
7125-FPI-7218	9" high x 30" deep	1.90	3.7 lbs.
7125-FPI-7219	12" high x 30" deep	2.10	4.3 lbs.
7125-FPI-7220	15" high x 30" deep	2.70	5.3 lbs.
7125-FPI-7221	18" high x 30" deep	2.80	6.4 lbs.



LABEL HOLDER, REGULAR: Made from 24-gauge steel, with edges turned back to accommodate 15/16" label; two holes at each end and one hole in center for fastening to shelf face.

LABEL HOLDER

STOCK NUMBER	DIMENSIONS	PRICE EACH	SHIPPING WEIGHT
7125-FPI-7201	36" x 1"	\$.40	0.5 lbs.
7125-FPI-7202	42" x 1"	.45	0.6 lbs.

BACK CROSS BRACE: Made from 1" x 1/8" rolled edge steel strip, with rounded ends, holes for fasteners in each end and center.

BACK CROSS BRACE

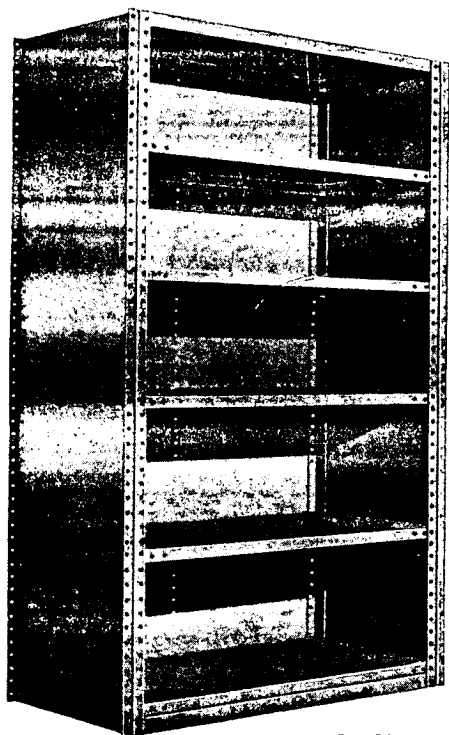
STOCK NUMBER	DIMENSIONS	PRICE PER PAIR	SHIPPING WEIGHT
7125-FPI-7191	36" x 1" x 1/8"	\$ 2.75	5.8 lbs.
7125-FPI-7192	42" x 1" x 1/8"	3.10	6.8 lbs.
7125-FPI-7193	48" x 1" x 1/8"	3.60	7.8 lbs.

SIDE CROSS BRACE: Same specifications as Back Cross Brace.

SIDE CROSS BRACE

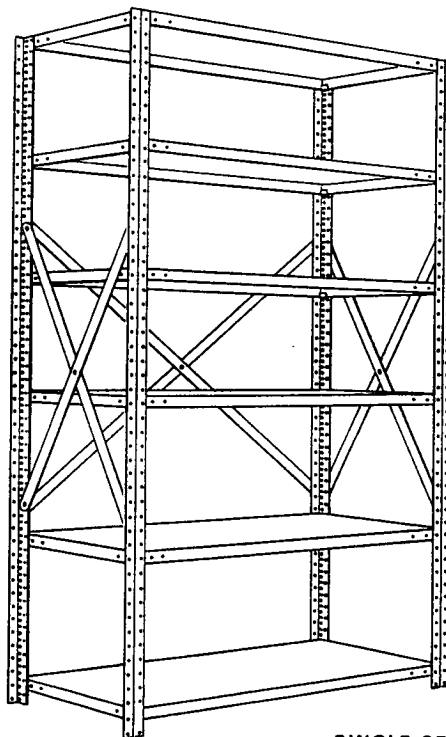
STOCK NUMBER	DIMENSIONS	PRICE PER PAIR	SHIPPING WEIGHT
7125-FPI-7194	12" x 1" x 1/8"	\$ 1.85	4.0 lbs.
7125-FPI-7195	18" x 1" x 1/8"	2.10	4.4 lbs.
7125-FPI-7196	24" x 1" x 1/8"	2.35	5.0 lbs.
7125-FPI-7197	30" x 1" x 1/8"	2.60	5.0 lbs.

CLOSED SHELVING WITH BACK



SINGLE OR
STARTING UNIT

OPEN SHELVING



SINGLE OR
STARTING UNIT

A P P E N D I X 6

C O N S E R V E O G R A M S

CONSERVATION TREATMENT OF IRON OBJECTS BY MECHANICAL MEANS

One of the first considerations that must be made when deciding about treating your museum specimens is whether or not the object is durable and strong enough to endure treatment. If there is any doubt, then don't work on the specimen. This paper is intended to help field personnel perform necessary but routine conservation treatment on the most plentiful and durable kinds of iron objects: e.g. cannon balls, iron tubes, spikes, etc. Many of these items are rusting away in park collections, a condition which could be reversed with careful work on the part of the park staff.

The process of "stopping the clock" on deterioration of iron is basically a simple one: remove active corrosive products, thoroughly dry, and apply barrier. Rust forms as a result of oxygen and moisture reacting with iron. In the presence of chlorides (like those in salt water) this process speeds up. In many excavated metallic specimens there is nothing left of the original object but the products of corrosion. In such cases consolidation of the remaining oxides is all that can be saved. At least in this way a record of the size and shape of the original object can be saved, but such specialized work should only be done by experienced laboratory personnel in the conservation laboratory.

Once the object has been selected for treatment, one must be sure the iron is free from chlorides. If it is not, no matter what treatment you give it, rust will rapidly reappear. To test for chloride you must soak the object in distilled water (rain water will do) for about 48 hours, and then drip a few drops of 2% solution of silver nitrate into the water. If any cloudiness of the water occurs, then this indicates there was chloride in the rust coating. The remedy for this situation is to continue changing the water for several 2-day soaks until such time that no cloudy precipitate forms when the silver nitrate is added. Sometimes, if the history of the object clearly indicates that it has never been exposed to a marine environment, this process may be bypassed.

After clearing the rust coating of chlorides, the problem is now to remove this covering of active corrosion products. Tools which are used in this process are a wire brush wheel mounted on an electric motor, small chipping hammer, hand brushes with wire bristles (stainless steel bristles especially good), dental picks or needle, and steel wool (emery cloth not recommended). The chipping hammer is used on bulky, solid iron objects by gently striking the object with oblique blows to remove thick encrustations of rust scale. The wire wheel and hand brushes are used to remove loosened scale and rust. Final removal of rust from pockets or depressions in the pocked surface can be achieved by use of the dentist pick or needle. Steel wool provides final step in cleaning object. Safety glasses should be worn while doing this.

When object is cleaned it is wise to wear cotton gloves to avoid contaminating the surface of the cleaned metal with the highly corrosive acids found on one's hands. If these body acids get on the cleaned metal, rust will form even after the following steps.

The next step is to remove all moisture from the object. To do this, place the object in an oven (definitely not recommended for live rounds of ammunition) at about 300° for several hours. The bulkier the object, the longer the time

required to drive away all the moisture that may be deep within the microscopic pores of an iron object. The same effect can be achieved on large objects by prolonged periods of dry days in sunlight or by the use of sun lamps and electric heaters.

Finally, the object is ready for the application of a barrier. For objects displayed or stored inside, a microcrystalline wax is recommended. The wax can be put into a liquid by adding a petroleum distillate so that it can be spread by brush. At any rate the wax should be applied all over while the object is quite warm, but not so warm that the wax smokes. This allows the wax to penetrate as deeply as possible. Wax is preferred because it does not chip or crack. For objects which are displayed outside, Rustoleum and paint of a proper color is acceptable. After the wax has cooled, a luster may be attained by using a shoe brush or clean rag.

Ed Brown

PACKING SPECIMENS FOR SHIPMENT

CONSERVE O GRAM

The handling and packing of museum specimens requires special considerations and procedures. All specimens, regardless of their monetary value, deserve the same careful attention. The most important guideline to remember is that the fewer times an artifact is handled, the greater chance it has for survival.

Each artifact should be wrapped separately so that direct contact with other objects is avoided. This practice keeps objects from rubbing against each other causing damage and provides additional cushioning against shock and vibration. The wrapping also prevents loss of pieces if the object is broken during shipment.

Each wrapped object should be marked on the exterior with some type of identification such as the catalogue number or the name of the artifact. This facilitates comparing the contents of a crate to the packing list and eliminates unnecessary unwrapping and handling of the artifacts.

If artifacts are being sent to an area where the humidity is high or if the humidity is high when the artifacts are packed, a few packets of silica gel should be put in the box. Silica gel absorbs moisture and will help to maintain a constant humidity within the crate.

When a special crate is built for the shipment of specimens, the interior dimensions should be at least 5-6" larger on all sides than the material to be packed. This allows plenty of room for the packing material around the objects that help protect the specimens from some of the shock incurred during shipment. Crates should be nailed together on all sides except the top. Screws should be used on the top to eliminate the vibration caused when securing the top before shipment and prying a lid loose later. This way the hammer and nail is not used when artifacts are in the crate.

Whenever a special crate is designed and built to ship museum specimens, instructions for unpacking the crate should be placed on the top inside the crate. This is especially necessary for double crates and very fragile specimens.

In order that accurate records are kept at both the shipping and receiving ends, always enclose a complete inventory list. The term "an assortment of artifacts" is not adequate for accurate record keeping. The list should be placed inside the box at the top; the list should not be placed on the outside of the box. A list on the outside of the box advertises the contents and may tempt a would-be thief.

The outside of the box should be well marked with all necessary information. Labels should be readable from a distance of two feet. The top of the box should be marked with "top" and "this end up". "Fragile" and "handle with care" labels should be easily seen. The address should be centrally located on the top of the box. Be sure the address and the return address are correct and legible. Include the attention of a specific person in the address, if possible, to eliminate the opening of the box by others.

SHIPPING SPECIMENS TO HARPERS FERRY CENTER

The first step when planning to ship specimens to Harpers Ferry Center is to contact, by phone or memo, the Registrar in the Division of Museum Services well in advance of the shipping date and inform him of the shipment. This contact is necessary to allow him time to make arrangements to receive the shipment and prepare storage space.

Objects that are too large or too fragile to be sent through the mail can often be picked up by the Park Service truck. The Branch of Exhibit Production and the Division of Museum Services at Harpers Ferry Center maintain a truck and employ an experienced driver to pick up and deliver exhibits and specimens to Park Service areas. If you would like a shipment of artifacts to be made via this truck, initiate your request through the Registrar, Division of Museum Services. He will try to schedule a pick-up by the truck when it is in your geographical area. Specimens should be well packaged to protect them but don't need as much protection as those packages sent through the mail or by commercial transit.

When objects are sent by registered mail or shipped commercially to Harpers Ferry Center, always enclose, inside the crate, a shipping memo which indicates who is sending the package, to whom it is to be delivered, exactly what is in the shipment, and for what purpose it is being sent to Harpers Ferry. Whenever possible please enclose a copy of the object's catalogue card. It is very helpful to the Registrar and the conservators for reference purposes. All shipments should be addressed to the Registrar, Division of Museum Services, Harpers Ferry Center.

When specimens are hand-carried by National Park Service personnel or delivered in any way, the shipping memo is equally as important. Complete records of shipments should be kept at both the shipping and receiving ends.

David E. Warthen

18/07/75

LIGHT FILTERING SCREENS

Light damages organic materials. Thus any museum specimen which is organic and in light is damaged.

Our problem is to eliminate as much of the damaging light we can without eliminating too much of the light by which we see. Ultraviolet light is invisible, and can be eliminated by filters. Recently we have compiled information concerning devices which will screen ultraviolet rays. These devices fall into two categories: Sunlight screens, fluorescent bulb screens.

Sunlight screens:

Sheet plexiglas exists that has ultraviolet filtering chemicals scattered in it. It comes in several thicknesses and various colors. It has been used in place of glass or over glass (as in historic houses).

A type of "glass" exists which is ultraviolet filtering plexiglas sandwiched between two sheets of plate glass. This "glass" is practically shatterproof and vandal proof.

There are polyester plastic sheets which attach to the inside of windows, but are too reflective or mirror-like for most historic houses. This is the most effective screen, and new technology is reducing the objectionable mirror effect. One brand is available in do-it-yourself kits.

Another available product for sunlight filters is a liquid film applied by flowing onto the windows. The windows are masked and syrup liquid is flowed over the window and the excess is caught by a trough at the bottom. This appears to be especially good for historic houses where you don't want to disturb the fabric of the house or detract from the historic scene by modern intrusions. This flow-on material can be either clear or tinted.

There is a roll down blind type of polyester screen which can be purchased in many sizes and installed like window curatins.

Fluorescent bulb screens:

A thin plastic sleeve which wraps around the fluorescent bulbs is available. One advantage of this type is that you do not have to take the bulb out to get the ultraviolet screen in place.

Another type is an extruded ultraviolet plexiglas. Yes, this is plexiglas in the shape of a tube. You have to take the fluorescent bulb out to get this one on. We hear rumors that when the fluorescent bulbs burn out maintenance people throw sleeve and tube out; or forget to place the sleeve back on. One solution to this is a bulb with built-in ultraviolet shield - which also exists!

For more information about light filters, call the Division of Museum Services, Harpers Ferry Center.

Robert W. Olsen

21/07/75

ARCHIVAL PHOTOGRAPHS

STORAGE CABINETS AND STORAGE AREAS

Archival photographs and negatives are best stored in rust free metal containers constructed so that rodents cannot enter. Rust acts as a catalyst accelerating chemical breakdown. Cabinets made of wood and composition board are not recommended because such materials give off acidic fumes which degrade photographs.

Air contaminated with sulfur dioxide, hydrogen sulfide, nitrous oxide and/or dust is damaging to photographs. If air pollution is a problem in your storage area, you should consider having the appropriate filters installed in the heating and cooling system.

The storage cabinets should be away from excessive heat or rapidly fluctuating temperatures caused by strong light or proximity to vents or radiators. Excessive moisture or extreme fluctuations in humidity should be avoided. Ideally, a stable relative humidity should be maintained at 60% or below.

Each year much damage is caused to museum collections by unforeseen accidents such as condensation in air conditioning ducts, rupturing pipes, water dripping from rooms overhead or running along pipes and electrical conduits from one section of a building to another. Never put storage cabinets on a window sill. Temperature changes are too extreme and normally tight windows may leak during storms.

Try to foresee and prevent accidents by judicious placement of storage cabinets. As an added safety measure against damage by moisture, there should be at least six inches between the floor and the first drawer or shelf of cabinets situated on ground floors.

Janet L. Stone

26/11/75

CURATORIAL CONSERVATION

BIBLIOGRAPHY

GENERAL

- American Association for State and Local History, Technical Leaflets, Nashville. Looseleaf folder. Gives brief advice on specialized topics. Generally very useful in museum operations. Available through subscription to AASLH or can be purchased individually.
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- Lewis, Ralph H., Manual for Museums, G.P.O., Washington, DC, in print - 1976. Excellent guide for all phases of museum operations. Extensive bibliography at the end of each chapter.
- Organ, R. M., Design for Scientific Conservation of Antiquities, Smithsonian Institution Press, Washington, D.C., 1968. Important reference for those involved in the establishment of a conservation laboratory. Adaptive ideas for both large and small units.
- Pienderleith, H. J., and A. E. A. Werner, The Conservation of Antiquities and Works of Art, 2nd ed., Oxford University Press, London, 1974. Comprehensive and basic reference for any conservation problem. Essential guide for all personnel in contact with collections.
- U. S. Department of the Interior, National Park Service Museum Handbook, G. P. O., Washington, D. C. Guideline for all NPS museum operations. Consult this volume for standard Park Service procedures.
- UNESCO, The Conservation of Cultural Property with special reference to tropical conditions, Switzerland, 1968. Compilation of articles by specialists in the field is directed towards countries in the process of rapid development. This manual outlines simple and well-known conservation techniques.

PHILOSOPHY

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- Keck, Sheldon, "A Little Training Can Be A Dangerous Thing," Museum News, Vol. 52, No. 4, December 1973, pp. 40-42. Points out dangers of the untrained undertaking conservation duties. Advocates ongoing curatorial training programs.

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- Burns, Ned J., Field Manual for Museums, GPO, Washington, D.C., 1941. Basic reference in museum operations. Especially useful information on the care of natural history collections. Details preservation procedures for geological, zoological and botanical specimens.

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- Clapp, Anne F., Curatorial Care of Works of Art on Paper, 2nd rev. ed., Oberlin, Ohio, 1974.
Invaluable guide for all phases of paper conservation. Contains information on environmental control, conservation procedures, and storage planning.
- Cunha, George D. M. and Dorothy Grant Cunha, Conservation of Library Material, A Manual and Bibliography, 2nd ed., Vol. I & II, The Scarecrow Press, Inc., Metuchen, New Jersey, 1971.
Vol. I, Comprehensive guide covering historical background, environmental damage, preventive care, and restoration of library materials. Vol. II, An impressive bibliographic collection of all phases of paper conservation.
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- Stout, George L., The Care of Pictures, republication of 1948 Columbia University Press by Dover, Inc., New York, 1975.
Classic text on the conservation of art objects. Contains a section on the construction of paintings. Details proper storage, handling, and moving techniques.

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The relevant section on furniture discourages the practice of refinishing historic objects. Illustrates acceptable procedures in furniture conservation.

JOURNALS

American Association of Museums
2235 Wisconsin Avenue
Washington, D.C. 20007
Publishes: Museum News

American Association for State and Local History
1315 Eighth Avenue, South
Nashville, Tennessee 37203
Publishes: History News

International Institute for the Conservation
of Historic and Artistic Works
608 Grand Buildings, Trafalgar Square
London WC 2N, 5HN, England
Publishes: Studies in Conservation

International Congress of Museums
6, rue Franklin
Paris (16^e) France
Publishes: ICOM News

Most of the above references can be obtained through your local library. Ask your friendly librarian.

Sharon L. Sutton

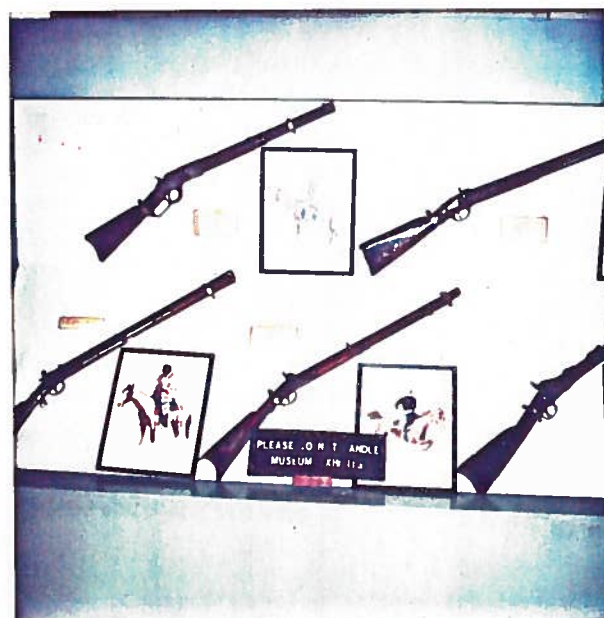
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APPENDIX 7

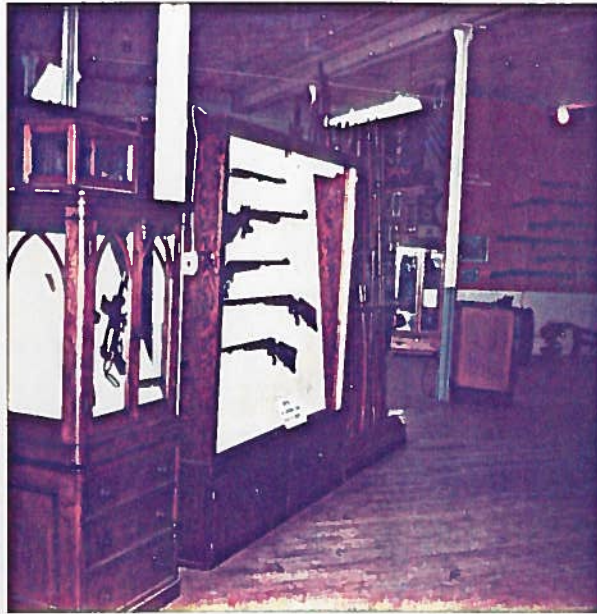
PHOTOGRAPHS



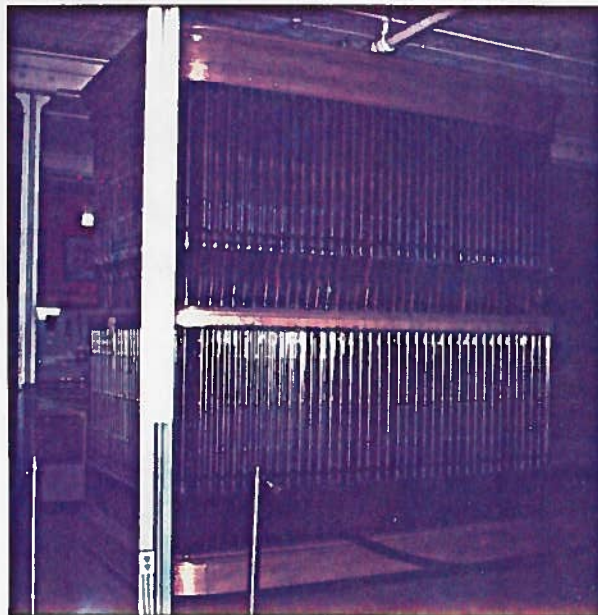
SOUTH EXHIBIT HALL
Crew served weapons



SOUTH EXHIBIT HALL
Firearms in open-front case
Notice Labeling



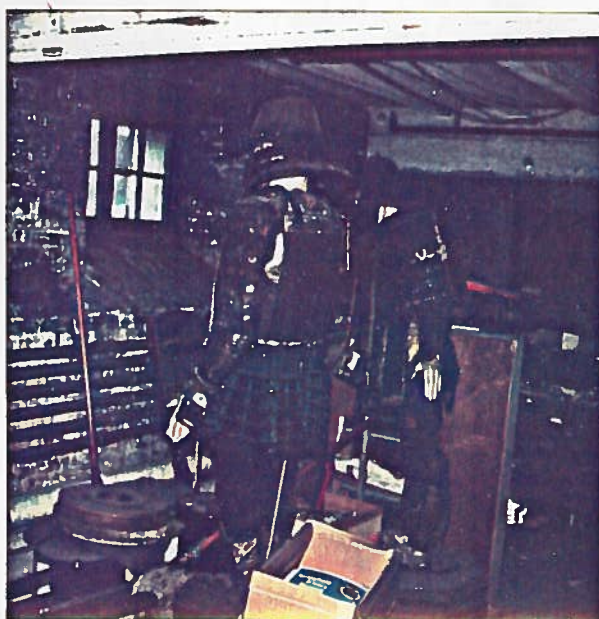
NORTH EXHIBIT HALL
Firearms in open-front case
Completely exposed spears



NORTH EXHIBIT HALL
"Organ of Guns"



BASEMENT STORAGE AREA
19th C. Storage Racks



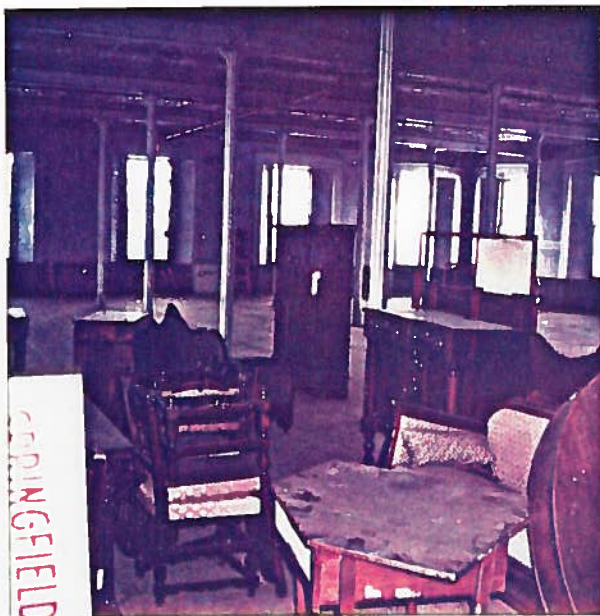
BASEMENT STORAGE AREA
Japanese Armor



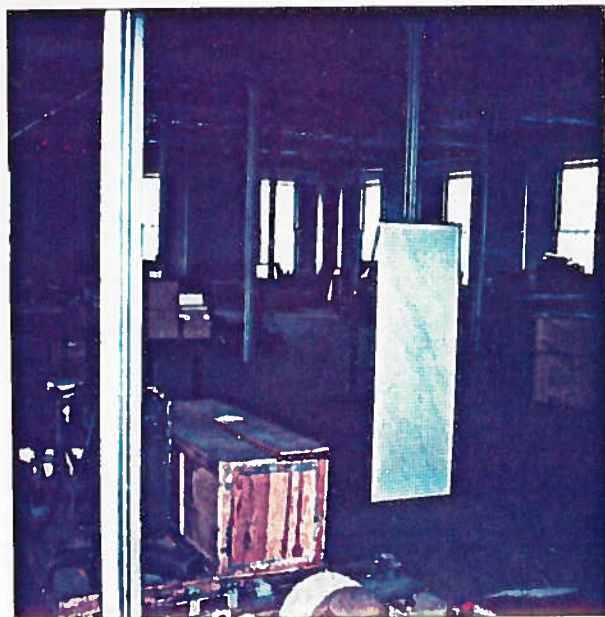
BASEMENT STORAGE AREA



BASEMENT STORAGE AREA



SECOND FLOOR
Furniture in the Collection



SECOND FLOOR
Proposed Storage Area