

Office of the Secretary of the State
30 Trinity St.
Hartford CT 06106

NOTICE OF NO AWARD
Date: 5/10/2006

Bid Number: SOS 0506 0001, Digital to Microfilm Conversion

NO AWARD WILL BE ISSUED FOR THE FOLLOWING BID.

Bid invitation # SOS 0506 0001

In the future, it may be rebid with specification modifications, or may be issued as an RFP.

Office of the Secretary of the State
30 Trinity St.
Hartford CT 06106

ADDENDUM #1
Date: 3/29/2006

Bid Number: SOS 0506 0001, Digital to Microfilm Conversion

Regarding: 1) **EXTENSION OF DUE DATE and TIME**
2) **VENDOR QUESTIONS AND ANSWERS**
3) **VENDOR ACKNOWLEDGEMENT OF ADDENDUM**

1. EXTENSION OF DUE DATE AND TIME

The due date and time for responses to this bid solicitation have been extended to April 12, 2006 at 4:30 PM in order to allow bidders to review the following vendor questions and answers.

2. VENDOR QUESTIONS AND ANSWERS:

We have received a number of questions regarding the specification, which we are documenting below.

PLEASE NOTE THE WINDOW OF OPPORTUNITY TO ASK FURTHER QUESTIONS IS CLOSED EFFECTIVE Tuesday, April 5, 2006 at 4:30 PM.

Q: Where should our response and sample film be sent?

A: Bid responses and sample films should be sent to the following:

Secretary of the State
30 Trinity St.
Hartford, CT 06106
ATTN: Management & Support Services

Q: Is price the criteria in evaluating responses?

A: All responses will be reviewed and evaluated based on factors such as adherence to bid specifications, quality of required samples, delivery, vendor ability to provide required quantities, and completeness of bid response, as well as pricing. Basis of the contract award will be made in the best interest of the State based on the factors that will be considered in evaluating all bid responses.

Q: Is this a sealed bid?

A: This is a request for quotation.

Q: Will you consider lower than 400 dpi film output resolution (for example, 200 dpi or 240 dpi)?

A: No. Film output resolution must be 400 dpi.

Q: Will you consider film output reduction ratio higher than 24x?

A: No. Film output reduction ratio must be 24x. The *only* exception considered will be as stated in subsection (b) of section 4 of the specifications, which indicates as follows: “Images of legal size documents, scanned in portrait orientation, may be rotated to output in cine (landscape) orientation at 24x, at 400 dpi; or the reduction ratio for *legal size documents* may be scaled higher to fit the legal size page to comic (portrait) orientation at 400 dpi.” (Emphasis added.)

Q: Will you consider outputting one 3,700 page CD on two 100 foot rolls of film rather than one 215’ roll?

A: No. In order to enable use with our document indexing system, one 3,700 page CD must be output on one 215’ roll of film.

Q: Will you consider film output on 4 mil film?

A: No. Film must be thin-base and 215’.

Q: We cannot single blip film output from multipage TIFF files. Will you consider other blipping schemes?

A: Film output must be single blipped.

Q: How do you define “defective images” as stated in Subsection (i) of Section 4 of the specifications? Does this refer to defective scans or defective film output?

A: Defective images, as indicated in section 4(i) of the specification, refers to image defects such as fogging, overwriting, and overlapping of film images caused during processing of the film or during writing of images to film. This does not refer to defective scanned images.

Q: Do you need quality inspection of scanned images prior to them being shot to film?

A: No. Scanned images will be reviewed page by page by the Office of the Secretary of the State, then copied to CD for shipment to the vendor.

IMPORTANT ADDITIONAL SECTION ON NEXT PAGE

Please see next page

3. VENDOR ACKNOWLEDGEMENT OF RECEIPT OF ADDENDUM #1

(Bid Number: SOS 0506 0001, Digital to Microfilm Conversion)

This addendum should be signed & returned with your bid as acknowledgment of its receipt.

If you have already submitted a bid response, please sign and return this addendum in a sealed envelope, marked with the bid number (SOS 0506 0001) to the address indicated above by 4:30 PM, on April 12, 2006.

If bidder fails to submit signed addendum, bidder will still be responsible for adhering to its content.

Signature: _____ Date: _____

Company
Name: _____

Phone: _____

Digital to Microfilm Conversion Specification

1. Contract period:

From award through December 31, 2006

2. Required services:

- (a) Initial conversion of approximately 74,000 digital images (bitonal, multi-page TIFF, Group IV compression, 400 dpi) on 20 CDs, to 20 rolls of 16 mm, thin-base microfilm (open reel) at 400 dpi.¹
- (b) Subsequent conversion of approximately 7,400 to 11,100 images per week for approximately 25 weeks.

3. Definition:

The term “contractor” as used throughout this specification is understood to mean “awarded contractor.”

4. Technical specifications:

- (a) Microfilm must be silver halide, processed for archival storage according to standards established for public records by the State of Connecticut, Office of the Public Records Administrator, (see Attachment B) and all applicable ANSI/AIIM Standards for LE 500 microfilm.
- (b) Microfilm output must be negative-appearing, simplex, 24x, comic (portrait) orientation and film output resolution must be 400 dpi. Exception: Images of legal size documents, scanned in portrait orientation, may be rotated to output in cine (landscape) orientation at 24x, at 400 dpi; or the reduction ratio for legal size documents may be scaled higher to fit the legal size page to comic (portrait) orientation at 400 dpi.
- (c) Bidder must provide with its response, a copy of the manufacturer’s technical information for the bidder’s film-writing system, which information documents the system’s ability to produce film output resolution of **400 dpi** at 24x for bitonal images. (This does not require the bidder to submit a copy of an entire system manual, but only relevant information to establish that the film-writing system can output film at 400 dpi for bitonal images at 24x.)
- (d) Microfilm output must be single blipped. No frame numbers or file numbers are required.

¹ Each CD contains a “document volume” of approximately 3,700 images—scanned from paper documents—grouped into thirty-seven multipage TIFF files of approximately 100 pages each. In addition, each CD has two 4-page files containing starting and ending informational and technical targets. In other words, there are a total of 39 multipage TIFF files on each CD. Original paper documents are primarily letter size (8½ x 11 inches), with some legal size documents (<1% of total documents are legal size).

- (e) Film may not be spliced and all 3,700 images must appear on one reel of 215' film.
- (f) Scanned document pages are self-indexed by page number. Microfilm output must maintain the page number order. No additional indexing is required.
- (g) Film is to be returned open spool in polypropylene plastic film boxes. Contractor will label the outside of each film box with the corresponding CD "Volume Number." Reels must be non-corroding inert plastic reels as specified in ANSI/AIIM MS34.
- (h) Contractor shall provide a minimum of two density and resolution readings for each film produced (beginning and end of film), and shall inspect each film on a light box for image defects caused by conversion or processing. Density, resolution and other inspection results shall be reported in writing to the Office of the Secretary of the State.
- (i) Contractor shall provide a written per image credit for defective images, equal to the per image cost of producing images (as specified in the pricing schedule). Defective images will **not** be re-output and spliced into the roll. The Office of the Secretary of the State will re-index the original pages associated with the defective images, and pages will be re-scanned on another document volume. Excessive numbers of defective images (>10 per roll) shall require that the film be completely re-output at contractor's expense.
- (j) Targets.
- i. **Secretary of the State supplied targets:** The Office of the Secretary of the State will provide digitized "Start" and "End" targets on each CD submitted for conversion to microfilm.
 - ii. **Contractor supplied targets.** At the time of conversion of each individual CD, the contractor shall complete and output two targets: 1) a target supplied or approved by the Office of the Secretary of the State indicating the contractor's name, equipment operator's signature, date of conversion, reduction ratio, film output resolution, and the film-writing system used to convert the images to microfilm; and 2) a resolution target (provided by the film-writing system manufacturer for use in monitoring system performance or equivalent), and shall include an evaluation of such resolution target in its inspection report (see section 4(h) above). Contractor supplied targets shall be exposed both at the beginning and end of each film, preceding and following, respectively, the "Start" and "End" targets supplied by the Office of the Secretary of the State.
- (k) Contractor must conduct at least **weekly** residual thiosulfate (methylene blue) testing on any processor used for this project and must provide a copy of each weekly test report to the Office of the Secretary of the State. (A third party vendor may be used for residual thiosulfate testing.) If the contractor is not currently conducting at least weekly residual thiosulfate tests, the cost of providing such testing must *either* be quoted separately on the pricing schedule, or factored into the per image conversion pricing. Failure of the contractor to provide required copies of weekly residual thiosulfate test reports shall be grounds for contract termination by the Office of the Secretary of the State.

(1) Bidder must certify that its operation meets the microfilming standards of the State of Connecticut, Office of the Public Records Administrator, and must include signed certification statement (see Attachment A) with its bid.

5. Shipment:

(a) Completed jobs may be returned by U.S. Mail or third party mail service to the Office of the Secretary of the State, 30 Trinity St., Hartford CT, 06106 to the attention of Barbara Sladek. Courier delivery by the contractor is an option but is not required.

(b) Each shipment or delivery shall include 1) a detailed packing slip, 2) a photocopy of the contractor's most recent weekly residual thiosulfate test result report, and 3) a copy of the contractor's film inspection report for each roll of film included in the shipment (see section 4(h) above).

(c) Shipments must be insured for replacement costs, payable to the contractor.

6. Sample film:

(a) Bidder shall prepare, and submit with its response, a test film of approximately 210 images (images to be supplied by the Office of the Secretary of the State) in order to insure that film output will meet Secretary of the State operating needs. The test film shall be output on thin base film, and shall include a trailer that brings the total film length to at least 50' to facilitate evaluation (viewing, printing and duplication) by the Office of the Secretary of the State.

(b) A CD of test images may be obtained by contacting Barbara Sladek, Records and Legislative Services Assistant Coordinator at 860-509-6147 or by email at barbara.sladek@po.state.ct.us.

(c) Sample films will not be returned unless the bidder requests return at the time it submits its response.

7. Pricing and Quantities:

(a) Bid prices shall remain firm for the length of the contract award.

(b) Bid prices shall include all set up, shipping and handling charges.

(c) Quantities are estimated. Contractor will provide services regardless of quantity actually needed.

- (d) Initial conversion request may exceed 74,000 images by up to 10%.
- (e) Subsequent weekly conversion requests will be on an “as needed” basis and are estimated at 7,400 to 11,100 images per week. There is no guaranteed weekly service request level.
- (f) If the vendor has a required minimum order for jobs submitted, it must be clearly stated in the bid response.

8. Additional provisions:

- (a) All data and disks submitted for conversion under any contract awarded are the property of the Office of the Secretary of the State of Connecticut and may not be further reproduced or distributed by the contractor. CDs are to be returned by the contractor with the corresponding microfilm output.
- (b) The Office of the Secretary of the State reserves the right to cancel or amend this solicitation, to award in part, to reject any and all bids in whole or in part, to make no award, and to waive or decline to waive technical defects, irregularities and omissions when it determines that it is in its best interest to do so.
- (c) The Office of the Secretary of the State reserves the right to correct inaccurate awards resulting from its clerical errors.

See next page for pricing schedule

Pricing Schedule

Item	Description of Service and Quantity	Cost (indicate N/A if you do not provide the listed service.) <i>Prices must include all set up, shipping and handling charges</i>
1.	<p>INITIAL CONVERSION of approximately 74,000 digital images to archival quality 16mm microfilm (Conversion of approximately twenty CDs containing 400 dpi bitonal, multipage TIFF file scans, to twenty 215' 16mm, thin base open reel films, at a resolution of 400 dpi at 24x)</p>	<p>\$ _____ per image</p> <p>If you cannot return the initial conversion within 14 calendar days, please provide estimated turn around time here: _____</p>
2.	<p>WEEKLY CONVERSION of approximately 7,400 to 11,100 digital images to archival quality 16mm microfilm (Conversion of approximately two/three CDs containing 400 dpi bitonal, multipage TIFF file scans, to two/three 215' 16mm, thin base open reel films, at a resolution of 400 dpi at 24x)</p>	<p>\$ _____ per image</p> <p>If you cannot return weekly conversions within 7 calendar days, please provide estimated turn around time here: _____</p>
3.	<p>Do you have a required minimum order (i.e., do you require individual weekly service requests to meet a minimum dollar or image amount)?</p>	<p>___ no</p> <p>___ yes, indicate minimum here: _____</p>
4.	<p>For the per image prices quoted above, what methods can you use to output legal size pages? (check all that apply)</p>	<p>_____ can rotate from portrait orientation to landscape orientation at 24x</p> <p>_____ can scale reduction to fit portrait orientation at _____X (indicate reduction ratio for legal size pages output in portrait orientation)</p>

Item	Description of Service and Quantity	Cost (indicate N/A if you do not provide the listed service.) <i>Prices must include all set up, shipping and handling charges</i>
5.	<p>Weekly residual thiosulfate test. (Indicate N/A if you have factored the cost of such testing into the per image pricing quoted in numbers 1 and 2 above.) The awarded vendor will be <i>required</i> to submit copies of each weekly residual thiosulfate test report to the Office of the Secretary of the State.)</p>	<p>_____ each</p>
6.	<p>Indicate the brand and model of film-writing equipment you use to convert digital images to microfilm, and attach a copy of the system manufacturer's technical information documenting the film-writing system's ability to produce film output resolution of 400 dpi at 24x for bitonal images:</p> <hr/>	
7.	<p>Complete indicated sections on <u>ATTACHMENT A</u> (see following page) after reviewing <u>ATTACHMENT B</u>, and return with your bid response.</p>	
8.	<p>Do you want the sample film you have submitted to be returned?</p>	<p>_____ yes _____ no</p>

Attachment A
Certificate Of Compliance

Microfilming Standards For Public Records

BIDDERS: PLEASE COMPLETE SECTIONS MARKED BY “” AND RETURN SIGNED CERTIFICATE WITH YOUR BID RESPONSE**

We certify that we meet the microfilming requirements established by the Office of the Public Records Administrator as specified in General Letter #96-2.

Secretary of the State of Connecticut
Name and address of State Agency

** _____
Name and Address of Microfilming Vendor Company

We have reviewed General Letter #96-2 and our contract meets the standards and specifications in accordance with the provisions of the above referenced General Letter.

Signature of Records Custodian of Municipality/Records Management Liaison Officer (RMLO) of State Agency

Printed or typed name

(Date)

**** We have reviewed General Letter #96-2 and our microfilming operation meets the standards and specifications in accordance with the provisions of the General Letter.**

** _____
Authorizing Vendor Signature

** _____
Printed or typed name

** _____
(Date)

Approved by Public Records Administrator

Signature Date

Prepared by the Office of the Public Records Administrator, Connecticut State Library.

Attachment B

(this document may be viewed online at <http://www.cslib.org/micro.htm>)

General Letter 96-2 (revised)

Required Minimum Microfilming Standards for Public Records; Disposition of Original Records:

**Policy Statement
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To: Administrative Heads Of State Agencies; State Agency Records Management Liaison Officers; Administrative Heads Of Municipalities; Town Clerks; All Other State Agency and Municipal Records Custodians and Records Management Personnel

From: Eunice G. DiBella, Public Records Administrator

Date: March 1, 1999

Re: Required Minimum Microfilming Standards for Public Records; Disposition of Original Records.

Part 1: Introduction

- **Authority**
The Office of the Public Records Administrator and State Archives issues this Statement under authority granted it by **Sections [11-8](#), [11-8a](#) and [7-109](#) of the [Connecticut General Statutes \(CGS\)](#)**. The following provides a policy on standards/quality control, storage of microfilm and proper documentation.
- **Legal Admissibility**
[Section 52-180](#) (c) of the Connecticut General Statutes - "Admissibility of Business Entries and Photographic Copies" allows for properly certified microfilm and other photographically reproduced records to be entered as evidence in court. The statute states:

" If any person in the regular course of business has kept or recorded any memorandum, writing, entry, print, representation or combination thereof, of any act, transaction, occurrence or event, and in the regular course of business has caused any or all of them to be recorded, copied or reproduced by any photographic, photostatic, microfilm, microcard, miniature photographic or other process which accurately reproduces or forms a durable medium for so reproducing the original, the original may be destroyed in the regular course of business unless its preservation is otherwise required by statute. The reproduction, when satisfactorily identified, shall be as admissible in evidence as the original in any judicial or administrative proceeding, whether the original is in existence or not "

Other pertinent sections of the **Connecticut General Statutes** are as follows:
CGS 1-17 ---

"Such . . . microphotographs . . . shall for all purposes be considered the same as the original records a transcript, exemplification or certified copy thereof shall for all purposes be deemed to be a transcript, exemplification or certified copy of the original." (Emphasis added)"

CGS 1-18 ---

"The original records, papers or documents so reproduced may be disposed of in such manner as may meet the approval of the head of the political subdivision in charge thereof . . . with the approval of the public records administrator."

CGS 1-7 ---

"When any officer . . . department, agent or employee of the state is required or authorized by law . . . to . . . copy any document . . . paper or instrument of writing, such recording or copying may be done by any photographic process, approved by the public records administrator, which clearly and accurately copies, photographs or reproduces the original document, . . . paper or instrument of writing. **Properly certified photographic copies of any record** made under the provisions of this section **shall be admissible in evidence in the same manner and entitled to the same weight as copies made and certified from the original.** ' (Emphasis added)"

An Attorney General's opinion of February 9, 1983 written by Assistant Attorney General Michael J. Lombardo addresses microfilming original records and destruction of said records.

"Please note that the statutes dictate that the retention, photographic copying, and destruction of public documents must be approved by the public records administrator as provided in Section 11-8 of the Statutes."

- **Records Disposition/Certificate Of Compliance (Appendix A)**

This Office of the Public Records Administrator will approve disposal authorizations for original public records that have been microfilmed in accordance with the standards outlined in this General Letter subject to the following conditions:

- Public records to be microfilmed must first be on a current records retention/disposition schedule. Retention periods are determined by the Office of the Public Records Administrator and the State Archives. The film must be retained for the retention period prescribed on the Retention Schedule.
- The microfilming operation must be approved by the Public Records Administrator, and must conform to the quality standards issued by this office.
- To ensure that a microcopy of public records is an authentic copy of an original, **a certificate of authenticity must appear on each roll of microfilm.**

Please note that there is a separate certification form for municipal land records on page 19. The certificate of authenticity must conform and contain certain information prescribed by the Office of the Public Records Administrator. See Appendix B.

- The destruction of any public record after filming must be authorized by the Office of the Public Records Administrator and State Archives.

An agency or municipality must sign the attached "Certificate of Compliance" which states that all provisions of the General Letter are complied with and then must submit

this agreement to the Public Records Administrator along with the appropriate records disposal authorization form (RC-075 municipality, RC-108 state agency). The microfilming procedures and specifications from the vendor must be attached for review by this office. Properly certified microfilm that accurately reproduces the original record is admissible in any judicial or administrative proceeding in lieu of the original record.

Part 2: Microfilming Public Records

- **Feasibility Study**

Agencies or municipalities considering use of micrographic applications, as well as other technological alternatives, should conduct a feasibility study. The feasibility study would include the following:

- A comparative cost analyses of records use, dissemination, and storage in both paper and microform. Estimating the full cost of a microfilm system is a complex task. The fault of most cost estimates is that they do not reflect the full operating cost, but overlook major cost components. The major components that should be included are:
 - Supply costs - camera film, copy film chemicals, microform carriers, expendables (processor chemicals, ammonia, paper stock, printing chemicals), replacement lamps (camera lamps, reader bulbs), forms (targets, control forms), and other miscellaneous supplies.
 - Labor costs
 - Equipment costs - purchase (or lease) of equipment and necessary accessories, including workstations, maintenance costs, parts, repairs, etc.;
 - Document preparation cost
 - Miscellaneous costs - darkroom, air conditioning, etc.;
 - Service bureau costs
 - Increased work load cost, inflation trends, and technological change.
- The use of other technology such as electronic or optical disk systems should be compared to the use of microform.
- The condition of the original records. If the originals are in poor condition, microfilming may not be cost effective. Microfilming can be an effective preservation tool, but the condition of the original records will determine whether film is readable, and therefore, whether microfilming is feasible. (See B6 on page 5).
- A proper indexing system is essential.
- A plan must be devised for meeting all immediate and long term plans. An agency or municipality should consider filming long-term retention data (more than 10 years), filming records that are not updateable, and filming records having a large quantity of data.

The feasibility study may disclose problems with current paper record keeping systems that should be corrected whether or not the agency/municipality decides to convert to a microform.

- **Record Management Benefits Of The Micrographic Format**

- **Storage Space Reduction**

Records reduced to microfilm occupy as little as 2% of space required for the original paper documents. A space savings of 98% could be realized through microfilming.
- **File Integrity/Control**

Once a file has been filmed, its constituent records are locked in place in the order and condition in which they were sent to the camera. Alteration of the file is difficult and the retention of a master film copy at an offsite location acts as a backup ensuring that any tampering will be detected. The built-in protection against misfiling can be a standard feature of any microfilm system.
- **Security of Information**

The most certain way to ensure the physical security of vital or archival information is to duplicate the source record and store a copy at a secure remote site. If microfilm is designed for long-term retention, the security copy or camera master must be on a polyester based film with a silver gelatin emulsion film and stored under strict security and environmental conditions to ensure preservation and continued usefulness.
- **Ease and Speed of Retrieval**

Miniaturized information can easily be stored in the working office and can be accessed faster by microfilming than by most other methods such as accessing paper stored in filerooms or stored off-site. Digital readers allow the retrieved image to be directly faxed to an off site recipient or distributed to one or more desk tops through the organization's area network.
- **Cost Savings**

Microfilming could yield significant savings in reduced on-site and off-site storage costs for records having a long term retention of more than ten years, or records having high retrieval activity. These considerations must be factored into the feasibility study listed in Part 2A. Other cost savings include reduced storage equipment requirements, enhanced file and record security, and increased flexibility and productivity in office arrangement and information management.
- **More Durable than Original Document**

Prior to implementing the program, the records selected for filming need to be examined and evaluated. The questions that need to be asked are "What are the size, condition, and color of the documents, and how well will they reproduce?" Documents that are in poor condition may be reproduced on microfilm to preserve the original documents. Two questions that need to be asked are "Do the records need to be repaired?" and "Can microfilm be considered?" These points must also be included in the feasibility study.
- **Disadvantages Of Microfilming To Consider**
 - Microfilming can be very expensive. Labor, equipment, and supply costs must be evaluated against long term storage and retrieval costs of the original documents.
 - Once the medium is adopted, it may be difficult to change to a new system.
 - Delays and other disadvantages are inherent in the serial document-sequence of micrographics. Each microfilming application should be preceded by analysis to determine if there is good reason to film.

Part 3: Microfilming Standards

- **Integrity of Records**

The integrity of the original records authorized for microfilming shall be maintained by insuring that the microfilm copies are adequate substitutes for the original records and serve the purposes for which such records are created or maintained. The following measures and any other method found necessary shall be observed in any state or municipal project to insure preservation of the integrity of the records:

- Copies shall contain all information shown on the originals.
- Copies of the records shall be so arranged, identified, and indexed so that any individual document or component of the records can be located easily.

For microfilm to be "LE-500" (Life Expectancy 500 Years), it must meet the national standards established by the American National Standards Institute (ANSI). Density, Resolution, and Residual Thiosulfate are the three major elements that must be measured against established standards.

- **Density**

Density is the light-absorbing or light-reflecting quality of microimages. Density readings should not deviate more than 0.15 across a frame and not more than 0.20 for the entire roll of film. If very dissimilar documents are filmed on the same reel, densities should be set for the worst case scenario. Base plus fog density of unexposed, processed films should not exceed 0.10.

Background density is the density level of the area of the microform not containing information. Where possible, background densities for images shall be between .80 and 1.5 depending on the contrast of the original material. Please refer to **ANSI/AIIM MS 23-1991 - Practice for Operational Procedures/Inspection and Quality Control of First -Generation, Silver Microfilm of Documents, section 5.1.4** (Background density) and **8.3.5** (Density).

The inspector should be alert for density readings that vary from frame to frame, a problem caused by incorrectly exposing the document to the cameras. Varying densities are not caused by processing problems. If there is a problem in processing, the densities will either be uniformly light due to exhausted chemistry or low temperature, or uniformly high due to high temperature. Refer to Appendix C for a list of five groups of documents along with the density ranges at which the documents can be microfilmed successfully.

- **Resolution**

Resolution is the ability of a film to record fine details. For planetary cameras, NARA micrographic regulations (**36 CFR 1230.14**) require the use of **NIST-SRM 1010a, Microcopy Resolution Test Chart (ISO Test Chart No. 2)**, which is certified by the National Institute of Standards and Technology. This is specified in ISO 3334:1991, the standard practice for using the test chart.

For rotary cameras, use the AIIM Standard Test Chart. Agencies or municipalities should also consider following the standards in **ANSI/AIIM MS17-1992, Rotary (Flow) Microfilm Camera Test Chart and Test Target-Descriptions and Use.**

The resolution charts measure the performance of the equipment and the method and quality of film processing. The reduction ratio multiplied by the number of the smallest pattern clearly distinguished equals the resolution in terms of lines per millimeter.

The standard resolution for the film produced on a planetary camera should be 100 lines per millimeter, and film produced on a rotary camera should have a resolution of 86 or more lines per millimeter. Proper resolution is a significant factor in the production of high quality film. Each time that the film is duplicated, it loses at least 12% of its clarity.

A loss of no more than one pattern on the resolution target is acceptable for each generation of preservation microfilm produced. This represents a resolution loss of 10 percent.

Resolution is measured in one of two ways, either quality index or systems resolution. Quality Index is used for printed text. Systems resolution is used for handwritten material or non-western languages where quality index cannot be used. Refer to **ANSI/AIIM MS23-1991, Practice for Operational Procedures/Inspection and Quality Control of First-generation, Silver Microfilm of Documents pages 46-48, Section 8.3.7 - 8.3.7.3.4** for the method of determining quality index. A Quality Index of five is required at the third generation level. A Quality Index of 8.0 must be attained over three generations of film for preservation microfilming.

Systems resolution requires a minimum of 120 lines per mm. The minimum allowable pattern is found by dividing 120 by the reduction ratio used for filming. If the quotient falls between two patterns on the test chart use the higher number (smaller pattern).

- **Residual Thiosulfate**

Residual thiosulfate, referred to as "hypo", is the principal residual chemical from film processing which can impair image permanence. A salt is used as a fixing agent, which makes the developed image stable. When dissolved in water, it removes the silver halide remaining in film after development. Refer to **ANSI/NAPM IT9.1-1996 and ANSI/AIIM MS23-1991** for processing standards.

The methylene blue test is used to check for residual thiosulfate which may impair the permanence of silver halide films. This test should be performed in accordance with **ANSI/NAPM IT9.1-1996 and ANSI/NAPM IT9.17-1993**. For preservation microfilming, the test should be performed whenever the chemicals are changed, no less than weekly, and if more than five reels of microfilm are processed per day, then daily testing is required. Microforms should be processed so that the residual thiosulfate concentration does not exceed one microgram of sodium thiosulfate per square centimeter. **The methylene blue test must be performed within two weeks of processing, or the film cannot qualify as an archival microform.**

Municipalities or state agencies conducting their own microfilming program may determine whether their processed film meets this requirement by performing the tests specified in **ANSI/NAPM IT9.17-1993: Determination of Residual Thiosulfate and Other Related Chemicals in Processed Photographic Materials.**

Documentation of these test results should be requested in writing when contracting with outside vendors.

Part 4: Assuring Integrity And Authenticity Of The Original Records

- **Proper Documentation**

Targets are part of the technical and bibliographic control. They are simple pieces of paper with information concerning either the material filmed, or the method of filming. Targets should be produced on a computer and printed with a laser printer or high quality ink jet printer for best legibility. Targets should be replaced on a routine basis because they become soiled. The following list identifies commonly used targets:

- Roll Number - Identifies the roll.
- Start, End and Defect targets - Should be eye-legible on the film without magnification.
- Credit - Should have the name and address of the state and local agency producing or sponsoring the film.
- Title page - Should identify the record series being filmed. A record series is a grouping of records physically because they relate to a particular function, such as case files, vouchers, or employee personnel files.
- Resolution target - Is important in measuring the quality of the system used to produce the film. It consists of five 1010A resolution charts mounted on a large support in accordance with *ANSI/AIIM MS111-1994*. Prepared targets are also available from several suppliers. Photocopies of the technical target must never be used.
- Uniform density target - Required in preservation microfilming. It is a clean, uncreased, white bond paper or posterboard large enough to fill the frame for whichever reduction is being used. It is used to ensure that the density is uniform across a frame.
- Certificate of Authenticity - Should state that the records contained on the roll of films are exact copies of the original records and are complete. A signature of the appropriate authority must be included. This documentation is necessary for legal verification. See Appendix B for municipal or state agency certificate of authenticity target. There is a separate target for municipal land records.
- Flash - Allows the viewer to scan the film and easily locate a specific file by alerting that the next target will contain the specific file title.
- Secondary title - Should identify the specific file, volume, or data span that is to be filmed. In the case of personnel files an example would be the "File of Jones, John."
- Documents - Should be followed by a flash and a secondary title for each new file or volume filmed within the roll.

To ease roll identification, it is recommended that the title target be refilmed at the end of the roll of film. Each roll of film should also have a minimum of eighteen inches of blank leader and trailer for convenience in duplicating and threading the microfilm reader.

- **Inspection**

The final step in assuring the integrity of a film is to perform a frame by frame inspection for visual defects and missing targets. It is important to determine that each document is legible and nothing is missing prior to destroying the original documents. For large volume applications, frame by frame inspections may not be possible. A sampling strategy must be developed, i.e. inspect every ten frames for non permanent records and conduct a frame by frame inspection for permanent records.

- **Retakes And Splicing**

- When retakes are required, a certification target must be filmed before the records that are to be taken and must be eye-legible on the film. There should be a target at the beginning and end of the retakes.
- Splicing must also meet stringent standards to insure the legal status of the microfilm as an official copy of the original records. There should be no more than eight splices or four spliced segments on a roll of film. Refer to **ANSI/AIIM MS18-1992 (R1998) Micrographics - Splices for Imaged Microfilm- Dimensions and Operational Constraints.**

- **Microfilm System**

- The photographic images at the beginning of each roll of microfilm shall include information identifying the agency and subordinate organizational units whose records it covers; the title of the records (with identification of contents if not evident from series title); the microfilm roll number; indication of restrictions, if any; and to the extent possible, the inclusive dates, names, or other data identifying the first and last records on the roll.
- Any indexes, registers, or other findings aids shall be microfilmed at the beginning of the records to which they relate.
- Microfilming systems shall be so designed and implemented so that the microfilm is an accurate representation of the original records.
- Any indexes, registers, or other research guides shall be microfilmed and located in a readily identifiable place within the collection of microfilmed records.

Part 5: Microfilm Stock

The film stock used to make photographic or microphotographic copies of permanent records shall be safety-based permanent record film as specified in American National Standards Institute **ANSI/NAPM IT9.6-1991 (R1996), Specifications for Safety Photographic Film; ANSI/NAPM IT9.10-1996, Imaging Materials - Photographic Film and Paper - Determination of Curl; ANSI/NAPM IT9.8-1994, Imaging materials Photographic Film - Determination of Folding Endurance. Only polyester-based silver gelatin type film is acceptable for preservation filming that conforms to ANSI/NAPM IT9.1-1996, Imaging Materials - Processed Silver-Gelatin Type**

Black and White Film - Specifications for Stability. A master negative on other types of film will not be considered LE-500 (archival).

Part 6: Standards For Storing & Handling Microfilm Copies Of Permanent Records

This section prescribes standards required for storing and handling silver original microfilm copies, silver duplicate negative or silver master positive copies of permanent records.

- **Microfilm Copies**

The camera master should not be used for reference purposes. A printing master (second negative) should be produced from the camera master for making necessary additional copies. The camera master will be stored offsite at a secure, environmentally controlled vault or other facility approved by the Public Records Administrator. Third positive or third negative shall be used for reference purposes. When an agency or municipality finds that the reference copies are deteriorating, a copy should be made from the printing master (second negative).

- **Reels and Cores**

Microfilm stored in roll form shall be wound on cores or on reels of the type specified in **ANSI/AIIM MS34-1990, Dimensions for Reels Used for 16mm and 35 mm Microfilm**. The materials used for the cores and reels shall be non-corroding such as plastic compounds or non-ferrous metals. The use of steel core reels shall be permitted provided the reels are well protected by lacquer, enamel, tinning, or other corrosion-resistant finish. Plastics and lacquers that might give off reactive fumes or exhumations during storage shall not be used. The plastic materials must be free of peroxides. Paper strips or rubber bands shall not be used for fastening film on reels or cores. The materials used shall not ignite, decompose, or develop reactive fumes and vapors. Button and string ties, in accordance with **ANSI NAPM IT9.1-1996 and ANSI IT9.11-1993**, are standards for securing film on reels in preservation microfilming.

- **Storage Containers**

The microfilm shall be stored in a closed container made of such inert material as metal, plastic, or acid-free paper in accordance with **ANSI/NAPM IT9.2-1991 and ANSI/NAPM IT9.11-1993**. The container shall be sealed when necessary to maintain prescribed humidity limits or to protect the film against gaseous impurities. If proper temperature and humidity controls are maintained as prescribed in item #4 and if there is good ventilation and clean air in the storage area, the containers need not be sealed. Open containers such as folding cartons may be used only if it has been established that the container material will have no adverse effect on the film over long periods of time.

Storage containers should be properly identified by agency or town, record series, date filmed, and name of producer. This will help to identify films if problems develop later. All film boxes must have noted on them the reduction ratio, resolution, density, and base fog readings of the film contained therein.

- **Environmental Conditions**

The relative humidity of the facility or vault used to store microfilm shall not exceed 35 percent. Temperatures should not exceed 65° Fahrenheit. Rapid and wide-range cycling

of humidity or temperature shall be avoided and shall in no instance exceed plus/minus three percent relative humidity or plus/minus 5° Fahrenheit in a 24-hour period.

- **Protection against Impurities**

Adequate measures shall be taken to keep the original microfilm clean and free of scratches. The film should be free from fingerprints and other foreign materials. Gaseous impurities as sulfur dioxide and hydrogen sulfide that may cause deterioration of microfilm shall be removed from the air.

Solid particles that abrade film or react on the image shall be cleaned from the air supplied to microfilm storage and associated rooms by the use of dry media mechanical filters or electrostatic precipitators.

- **Microfilm Inspection**

At approximately 2-year intervals, a 1 percent sample of randomly selected rolls of microfilm shall be inspected. For each biennial inspection a different lot sample shall be chosen, allowing some overlapping of inspection to note any changes in previously inspected samples. An agency or municipality that stores film with a service bureau should request that reports be submitted to them that include (1) quantity of microfilm of permanent records on hand, i.e. number of rolls, microfiche, jackets, etc.; (2) quantity of microfilm inspected; (3) condition of the microfilm; and (4) corrective action required, if necessary.

Part 7: In-House Or Outsourcing

A variety of micrographics options are open to officials, but choices should only be made after careful analysis. The entire micrographics process can be outsourced, handled internally, or be a combination of in-house and vendor processing.

- In-house
 - Advantages
 - Security
 - Better access to records
 - Control
 - Cost Savings
 - Disadvantages
 - Equipment expense and maintenance
 - Expense for supplies
 - Lack of technical expertise
 - Lack of backup
 - Technical requirements
 - Space
- Outsourcing
 - Advantages
 - Flexibility
 - Available expertise
 - Equipment
 - Cost Savings

- Disadvantage
 - Control
 - Higher unit cost
 - Security
 - Potential for miscommunications

Once you have determined the relative advantages and disadvantages of outsourcing and internal operations, you should analyze your situation and choose your best options. The cost should be estimated over a three to five year period for filming in-house and then several service bureaus should be contacted for price estimates. When comparing costs, camera needs as well as the workload should be considered. This will ensure a good basis for making a decision.

A municipality or state agency that has decided to outsource the microfilming service must be aware of hidden fees within the microfilming contract and be willing to negotiate with vendors. When bidding on a contract, it is important to specify that the municipality/state agency has ownership of the film.

It is essential that all contracts must meet the microfilm standard and specifications in accordance with General Letter #96-2. For further discussion of how to develop a vendor contract refer to **Contract Considerations, of Managing Micrographic Records by the National Archives and Records Administration Instructional Guide Series** or refer to the sample Microfilming Contract in Appendix D.

Part 8: Recommendations For Selecting A Microfilming Vendor

- Inspect the vendor's facility before signing a contract.
- Inspect the film processing area. 1. Make sure that the vendor runs daily tests known as control strips and has a log for each microfilming processor. The control strips will ensure that each film processor is generating quality microfilm. 2. Inspect the control strip logs when you visit the facility.
- Make sure the vendor completes a Methylene Blue Test.
- Review vendors inspection reports. 1. Note cleanliness and make sure that there are no chemical odors.

Part 9: Conclusion

The Office of the Public Records Administrator and State Archives will communicate with public officials on any updates to the items listed on reference pages 37-39 of this document. Any questions regarding any of the issues discussed in the General Letter should be directed to the Office of the Public Records Administrator and State Archives.

Prepared by the Office of the Public Records Administrator, Connecticut State Library.

Appendix A
Certificate Of Compliance

Microfilming Standards For Public Records

Signed certificate should be sent to:
Office of the Public Records Administrator
Connecticut State Library
231 Capitol Avenue
Hartford, CT 06106

We certify that we meet the microfilming requirements established by the Office of the Public Records Administrator as specified in General Letter #96-2.

Name and address of State Agency/Municipality

Name and Address of Microfilming Vendor Company/In-house Operation

We have reviewed General Letter #96-2 and our contract meets the standards and specifications in accordance with the provisions of the above referenced General Letter.

Signature of Records Custodian of Municipality/Records Management Liaison Officer (RMLO) of State Agency

Printed or typed name

(Date)

We have reviewed General Letter #96-2 and our microfilming operation meets the standards and specifications in accordance with the provisions of the General Letter.

Authorizing Vendor Signature/Authorized individual for in-house operation

Printed or typed name

(Date)

Approved by Public Records Administrator

Signature

Date

Prepared by the Office of the Public Records Administrator, Connecticut State Library

Appendix B

Records Certification

I, the undersigned, do certify that the microfilm images on this reel of microfilm are complete and accurate reproductions of the original records of

(Name of State Agency or Municipality)

as accumulated during the regular course of business. It is the established policy and practice of this agency to microfilm its records for permanent file and to dispose of the original records after microfilm reproductions have been made and assigned to the agency files. All public records are scheduled and disposed of in accordance with CGS 7-109, 11-8, 11-8a.

(Authorized Agency or Municipal Representative)

(Title)

(Date)

Connecticut State Library
Office of the Public Records Administrator and
State Archives

March 1999

Prepared by the Office of the Public Records Administrator, Connecticut State Library.

Appendix C

Listed below are five groups, or kinds, of documents along with the density ranges at which the documents can be microfilmed successfully.

Classification	Description of document	Background Density
Group 1	High-quality high-contrast printed books, periodicals, and black typing.	1.3-1.5
Group 2	Fine-line originals, black opaque pencil writing and documents with small, high-contrast print.	1.15-1.4
Group 3	Pencil and ink drawings, faded printing and very small printing, such as footnotes at the bottom of a printed page.	1.0-1.2
Group 4	Low-contrast manuscripts and drawings, graph paper with pale, fine-colored lines; letters typed with a worn ribbon; and poorly printed, faint documents.	0.8-1.0
Group 5	Poor-contrast documents.	0.7-0.85

Reference: ANSI/AIIM MS 23-1991, section 5.1.4, page 26.

Managing Micrographic Records, page 16.

Prepared by the Office of the Public Records Administrator, Connecticut State Library.

Standards

ANSI/AIIM MS14-1996. Specification for 16mm and 35mm Roll Microfilm. Corresponding International Standard ISO 6148:1993.

ANSI/AIIM MS17-1992. Test Chart for Rotary Microfilm Cameras.

ANSI/AIIM MS18-1992 (R1998). Micrographics - Splices for Imaged Film - Dimensions and Operational Constraints.

ANSI/AIIM MS23-1991. Practice for Operational Procedures/Inspection and Quality Control of First-generation, Silver Microfilm of Documents.

ANSI/AIIM MS29-1992. Micrographics - Cores and Spools for Microfilm Recording Equipment - Dimensions.

ANSI/AIIM MS34-1990. Dimensions for Reels Used for 16mm and 35 mm Microfilm. (Corresponding International standard ISO 1116:1995).

ANSI/AIIM MS45-1990. Information and Image Management - Recommended Proactive for Inspection of Stored Silver-Gelatin Type Microforms for Evidence of Deterioration.

ANSI/AIIM MS48-1990. Recommended Practice for Microfilming Public Records on Silver-Halide Film.

ANSI/AIIM MS51-1991. Micrographics - ISO Resolution Test Chart No. 2 - Description and Use. Corresponding International Standard ISO 3334:1991 (NIST-SRM 1010a)

ANSI/AIIM MS111-1994. Micrographics - Standard Recommended Practice for Microfilming Printed Newspapers on 35mm Roll Microfilm.

ANSI/NAPM IT9.1 - 1996. Imaging Materials - Processed Silver-Gelatin Type Black and White Film - Specifications for Stability. Corresponding International Standard ISO 10602:1995.

ANSI/NAPM IT9.2-1991. Photographic Processed Films, Plates, and Paper - Filing Enclosures and Storage Containers. Corresponding International Standard ISO 10214:1991.

ANSI/NAPM IT9.6-1991 (R1996). Imaging Materials - Photographic Films - Specifications for Safety Film. Corresponding International Standard ISO 543:1990.

ANSI/NAPM IT9.8-1994 (R1994). Imaging Materials Photographic Film - Determination of Folding Endurance.

ANSI/NAPM IT9.10-1996. Imaging Materials - Photographic Film and Paper - Determination of Curl. Corresponding International Standard ISO 4330:1994.

ANSI/NAPM IT9.11-1993. Processed Safety Photographic Materials - Storage Practices. Corresponding International Standard ISO 5466:1996.

ANSI/NAPM IT9.17-1993. Photography - Determination of Residual Thiosulfate and Other Related Residual Chemicals in Processed Photographic Materials - Iodine-Amylose, Methylene Blue, and Silver Sulfide Densitometric Methods. Corresponding International Standard ISO 417:1993.

Prepared by the Office of the Public Records Administrator, Connecticut State Library.