Microfilming and Digital Imaging of Public Records: A Procedural Guide

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1.0 Introduction

The Kentucky Department for Libraries and Archives (KDLA), through its Archives and Records Management Division (ARM), is required by KRS 171.450 (1)(c) to establish standards and procedures for recording public records and for the reproduction of those records. Under KRS 171.410-740, KDLA is specifically charged with the management and preservation of public records, regardless of format.

As part of an efficient records management program and for reasons of security, many public agencies choose to convert paper records to a microform or digitized optical image format.

Quality Assurance Specialists from ARM's Local Records Branch inspect the silver halide master of all microfilmed Kentucky public records submitted for secure storage at KDLA. Once approved, these silver halide masters will be stored in KDLA's secure and environmentally controlled vault. Microfilm that fails to meet an acceptable standard will be rejected, and the material must be refilmed until it meets that standard.

1.1 Definitions

Agency: Kentucky state or local government body that produces and manages public records according to state law outlined in the retention schedules.

Aperture Card: A card with a rectangular opening(s) specifically prepared for the mounting or insertion of microfilm. It is a machine-processable card of standard dimensions into which microfilm frames can be inserted.

Blip: Image mark placed under an image; can be one of three different sizes.

Certification: Authorization by KDLA and as recognized by the State Libraries, Archives, and Records Commission to create microfilm of Kentucky public records.

Density: The measure of film opacity or degree of gray.

Density Target: Blank pages used to test that the density of a roll of microfilm meets the standardized range.

Filing Unit: The logical grouping of a set of similar records in the same series, such as case files, deed books, bundles, etc.

Film Format:

Cine Mode: Images arranged on microfilm with bottom of one image above the top of the next.
Comic Mode: Images arranged on microfilm from left to right, as in a comic strip.

Film Type:

16mm: Microfilm which is 16mm in width is commonly used to film documents up to 8½ x 14.
35mm: Microfilm which is 35mm in width is commonly used to film documents larger than 8½ x 14.

Flow Camera: Rotary camera.

Microfilm: Transparent film in roll format that contains highly reduced micro-images in a linear arrangement. A reliable, long-term, standardized form of preserving public records.

Microfiche: A transparent sheet of film on which micro-images are arranged in a grid pattern. A heading and number large enough to be read without magnification normally appear at the top of the microfiche in a space reserved for this purpose.

Planetary Camera: One in which the film plane and base are stationary.

Quality Control: The act of checking microfilm to ensure that it conforms to standards in this procedural guide.

Technical: Reading of density, resolution, residual thiosulfate, and checking for any other abnormalities apparent on the film.
Informational: Checking to ensure that information on the title target matches the record filmed and that the records transmittal is accurate.

Records Retention Schedule: A schedule is a list of each record type, or "record series," created by a public agency, representing a comprehensive inventory of the information holdings of a publicly funded agency.

Record series: A record series is either a document or set of documents maintained together because they relate to a particular subject or function, result from the same activity, take the same form, or because of some other relationship arising out of their creation, receipt or use.

Reduction ratio: The number of times a document is reduced in size during microfilming.

Regional Administrator (RA): An employee of KDLA's Local Records Branch, who provides professional records management guidance and consultation to local public agencies.

Resolution: The clarity or clearness of film, used to determine the ability of the micro-photographic system to record fine detail.

Resolution Target/Test Chart: Used to read resolution of each roll of microfilm.

Rotary Camera: One in which the microfilm and documents are in motion when the image is captured.

Splice: A joint made by welding two pieces of microfilm together so they will function as a single piece when passing through a microfilm reader. Splicing is used to correct errors and should only be done in the clear leader at the beginning of the roll of microfilm.

Targets: Used to identify and clearly convey descriptive information to the user about the roll and record microfilmed.

Thiosulfate: A chemical used in developing microfilm.

Transmittal: A transfer document that contains information about what was filmed, where the records are from, and where and for how long the film is stored.

Vendor: any creator of security microfilm copies, digital scans, and/or indexes of public records.

2.0 Micrographics Laboratory Certification Requirements

Microfilm vendors who consistently adhere to state requirements and strict national standards from the Association for Information and Image Management (AIIM), the National Institute of Standards and Technology (NIST), and the American National Standards Institute (ANSI) are certified each year by KDLA and recognized by the State Libraries, Archives, and Records Commission. Certification is for a one-year period and is automatically renewed annually as long as vendors remain in compliance with the following requirements. ARM evaluates each certified laboratory in the following areas:

1. Compliance with ARM standards for film formatting, including the proper use of microfilm targets and splicing.
2. Compliance with ARM requirements that the original silver halide master of all microfilm produced be deposited with ARM.
3. Compliance with appropriate procedures to ensure microfilm quality evaluation, including:
   A. Compliance with accepted standards for film resolution and density.
   B. Compliance with accepted standards assuring minimal thiosulfate.
   C. Compliance with ARM procedures for the transfer and evaluation of public records.

To receive certification, a vendor must consistently produce microfilm of an archival standard and adhere to the following requirements:

The vendor's laboratory must send a formal letter applying for Certification to the KDLA Local Records Branch to:

300 Coffee Tree Rd,
Frankfort, KY 40601
attn: Local Records Branch.

This letter should include the name of the laboratory the date the laboratory will begin to send testing proofs, and the name of a laboratory contact person.

Microfilm strips must be sent and must pass all tests for six consecutive months before certification will be awarded:

Microfilm strips submitted for testing include:

A. One 8-inch film strip clear of images or fog
B. One film strip with the following images appearing:
   - Resolution chart
   - Density Target
   - Camera operator's target or laboratory l etterhead sheet providing laboratory name, date film was processed, reduction ratio used to film the test strip, and name of laboratory contact person
C. Test results verifying that the testing proofs have been processed so that the residual thiosulfate ion concentration does not exceed 1.4 grams per square centimeter in a clear area when using methylene blue test methods.

The test strips and thiosulfate results should be mailed as soon as possible, after processing occurs.

The testing proofs must be sent to the ARM Division by the 15th of each month or the next business day.

The film strips must pass the following three tests in order to meet certification requirements:

2.1 Thiosulfate residue content

When thiosulfate residue is not completely removed by washing during processing, such residue can consume the film's emulsion and result in permanent damage. Archival microfilm must be free of this harmful chemical residue to ensure the microfilm's longevity and to avoid deterioration of the microfilm. Microfilms shall be processed so that the residual thiosulfate ion concentration will not exceed 1.4 grams per square centimeter in a clear area when using methylene blue test methods. This test is performed at the laboratory, and the results are sent to KDLA with the test strips.

2.2 Density

Measurements are taken to ensure proper densities of micro-images in readers or for making subsequent generations of microfilm. If the image density is too light or too dark, the microfilm cannot be duplicated at a readable level. Background density is tested on the resolution chart and white clear area of targets. The acceptable density range for this test is from .70 to 1.30. A reading outside of this range is unable to be viewed on a standard microfilm reader and will not meet ARM requirements.

2.3 Resolution

The original microfilm must meet resolution standards, because microfilm loses at least 12% of its clarity with each duplication. Resolution tests shall be performed using the NIST "1010a Microcopy Resolution Test Chart" or equivalent. Resolution Test Charts degrade over time and must be replaced. If the Quality Assurance Specialist encounters a degraded chart in the course of quality assurance procedures, the specialist will advise certified laboratories that their charts need to be replaced. The resolution reading is obtained using the line direction method with a 100x magnification microscope after distinguishing the smallest pattern block that can be resolved for each pattern on the chart. All readings are added together, the total divided by the number of patterns, then multiplied by the camera reduction used. The acceptable minimum is 100 lines per millimeter (lpm).

When all requirements listed above are met, the laboratory's official certification will be presented at the next quarterly meeting of the Commission. If certification is completed prior to the scheduled Commission meeting, a formal letter will be sent to the laboratory stating that it has met all requirements and is certified.

To maintain certification, the test strips must be sent each month and must pass the thiosulfate, density, and resolution tests. If a laboratory, once certified, will be inactive for one month, a letter stating that the laboratory was not active for that particular month must be sent to the ARM Division. This must be done each month the laboratory is inactive.

Revocation of a laboratory's certification will occur under any of the following conditions:

- Laboratory is inactive for more than 90 consecutive days.
- Laboratory submits two consecutive failures of any of the test criteria.
- Laboratory submits three failed test strips in any 12-month period.
- Laboratory fails to submit any strips for testing over any 60 consecutive days.
- ARM reserves the right to revoke certification for failure to comply with any portion of this procedure guide.

Under these conditions ARM will rescind the certification of the laboratory and notify the State Libraries, Archives, and Records Commission. Written notification will be mailed to the laboratory.

After 30 days a laboratory may start the certification process anew.

3.0 Security Storage of Microfilm

ARM provides free storage in its specially equipped, climate-controlled vault to ensure that information contained on archival film will remain permanently preserved.

The original silver halide master microfilm (negative or positive) must be provided to ARM at no cost for security storage. Only wet process silver halide film will be accepted for storage.

ARM will test the security copy of the film for resolution and density. If the film is in microfiche format, it must be provided in archival storage boxes; if filmed in 35mm or 16mm roll format, it must be provided in inert plastic boxes, with labels affixed to the outside. ARM will randomly inspect security film every two years for mold, spots, or other evidence of deterioration.

The preservation microfilm will not be used as an access copy. An access copy may be produced from the microfilm if an agency grants permission. Preservation microfilm might also be used for duplication when an access [~~a work~~] copy is lost or damaged. In cases where duplicate copies of the same microfilm are required more than once, a master silver halide duplicate will be made and all subsequent copies will be made from this version [~~duping master~~].

In testing microfilm stored in the security vault, ARM will follow ANSI standards.

4.0 Micrographics Procedural Requirements

Microfilm submitted to KDLA is evaluated for quality in density, resolution, chemical residue, and format. A random check of the density is made throughout each roll of film. Images that do not meet the density requirement may cause the entire roll to fail quality evaluation or to require retakes. The resolution, as read from both the front and end charts, should meet the 100 lpm requirement.

4.1 Targeting

Proper identification targets must appear on each roll of film. Standard targets ensure ready access to information contained on the film and that filmed information is reliable.

Responsibilities for targets are as follows:

1. All title targets must be completed and provided by ARM personnel and are not available without contacting ARM. Use of title targets that have not been provided by ARM will be cause for automatic rejection.
2. All resolution test chart targets must be obtained by the Vendors, at their own expense.
3. Remaining targets may be found on the KDLA website. They should not be altered in any way.

Target 1 – Resolution Test Chart
The Resolution Test Chart can be purchased from AIIM.

Target 2 – Density Target
Blank pages used to test that the density of a roll of microfilm meets the standardized range.

Target 3 – Camera Operator's Certificate and Certificate of Authenticity
Identifies the agency for which filming is being done, the certified laboratory doing the filming, date of filming, reduction ratio, and camera operator's printed name and signature, which certifies that the micro-photographs on the film are true and accurate reproductions of the original records.

Target 3 – Title Target
All title targets must be completed and provided by ARM personnel and are not available without contacting ARM. Use of title targets that have not been provided by ARM will be cause for automatic rejection. Title target will include name of agency whose records are being filmed, exact title of record (with any variant title on second line) as listed in the agency's Records Retention Schedule, series number, inclusive dates, index information, and filming arrangement (information on the sequence in which materials were filmed, i.e., chronological, numerical, alphabetical by first letter of last name, etc.). The Comments section should include notes on anything unusual or different about the record being filmed, or anything that might set it apart and that needs to be brought to the attention of the reader of the film.

Target 4 – Begin and Roll No.
The roll number is assigned by the camera operator.

Target 5 – Continued and Roll No.
Used instead of the Begin and Roll No. Target (Target 5) when a roll begins in the middle of a case file. The roll number is assigned by the camera operator.

Target 6 – End of Book
Used at the end of each book filmed.

Target 7 – End of Roll
Used at the end of each roll filmed.

Target 8 – To be Continued
Used when a file or book is not completed on one roll. The End of Roll Target (Target 8) is filmed after this target.

NOTE: If retakes, records additions, or corrections are necessary, the following ARM targets must be used:

Target 9 – Start of Retake
Includes roll number, title of record series, date, signature of camera operator, and laboratory doing filming.

Target 10 – End of Retake
Used at the end of the retake.

Target 11 – Start of Records Additions
Includes roll number, title of records being added to roll, date, signature of camera operator, and laboratory doing filming.

Target 12 – End of Records Addition
Used at the end of the records addition.

Target 13 – Correction
This target should be filmed immediately following a filming mistake or a possible filming mistake, followed by the proper filming. (See Section 4 – 4.1 – C Additional Targets)

A. Required targets

The following targets are always necessary on each roll. Additional targets may be necessary in filming some records. These targets must be in the proper order (although they may be filmed side by side, two to a frame, on 35mm film). Each is followed by the page number of the sample target.

1. Resolution Test Chart – Planetary or Rotary
2. Density Target – blank pages for a density test to be performed.
3. Camera Operator's Certificate and Certificate of Authenticity
4. Title Target
5. Begin and Roll No. or Continued and Roll No., if appropriate
6. End of Roll or To be Continued, if appropriate
7. Density Target – blank pages for a density test to be performed.
8. Resolution Test Chart – Planetary or Rotary

B. Local Records targets

For Local Records Program Grant projects, roll numbers are assigned by the vendor and should begin with number 1 and continue sequentially through the project. (Do not start over with number 1 when the series changes.) more than one book is contained on a roll, additional Title Targets (Target 4) and End of Book Targets (Target 7) are necessary for each book; no other targets should be repeated.

The required targets for more than one book on a roll or filming loose documents are:

Bound Book Filming	**Loose Document / Case File Filming**
1. Resolution Test Chart	1. Resolution Test Chart
2. Density Target	2. Density Target
3. Camera Operator's Certificate and Certificate of Authenticity	3. Camera Operator's Certificate and Certificate of Authenticity
4. Begin and Roll No. Target	4. Begin and Roll No. Target
5. Title Target	5. Title Target
6. End of Book	6. End of Roll
7. Title Target	7. Density Target
8. End of Book	8. Resolution Test Chart
9. Title Target	
10. End of Book	
11. End of Roll	
12. Density Target	
13. Resolution Test Chart	

C. Additional Targets

The only other targets that may be used are Correction Targets, Side Targets or Filming Notes, Retake Targets, Records Additions Targets, and Continuation Targets. Every use of an additional target requires corresponding notation on the transmittal.

Correction Target
This target should be filmed immediately following a filming mistake, or a possible filming mistake, and followed by the proper filming. The correction targets should not be filmed on top of the original documents. Either remove the

original or use white paper to cover the original. For example, this target should be used when:

- an object covered the item to be filmed in whole or in part
- the wrong page was filmed
- a page was filmed out of focus, or
- a page was filmed upside down

Side Targets or Filming Notes

These targets are used to explain any abnormality on any specific page in the record being filmed. They should only be used on a page where a particular problem exists, not as a default target on every page. They indicate to the user that the problem is with the record, not the camera, film, or camera operator. Side targets are the responsibility of the laboratory. Laboratories may choose side target formats to best communicate irregularities. If filming on a planetary camera, a small side target (approximately 1" x 2"), or filming note reflecting the condition of the record, should be filmed on the periphery of the image containing the record on which an abnormality occurs, preferably parallel to the writing on the record. These targets should not cover any of the document itself. If records are being filmed on a rotary camera, print the target on a white sheet of paper and film it in front of the page to which it pertains. Examples of notes in these types of targets are:

Ink Spots	Damaged Record	Photostatic Copy Present
Blurred Record	Faded Record	Original Features Cut Text
Insert Affixed to Page	Book Bound too Tightly	

When pages of a book are missing or numbered incorrectly, a target made by the laboratory should be filmed where the problem occurs. This target should be filmed between pages of the document (not at the bottom of a page) and may be up to the size of the record pages being filmed. For example, these targets might read:

- Pages 10 – 20 Missing
- Pages Numbered 10 – 20 Are Out of Order
- Pages 45 – 51 Misnumbered
- Pages 405 – 450 Are Blank
- Pages 25 – 26 Are Glued Together

This indicates that the pages are filmed in the order in which they appear in the book. Use of these side targets or filming notes will avert the need for ARM to request unnecessary retakes.

Continuation Targets

These targets can only be used when filming one record (book, folder, etc.) that is too long to fit on one roll of film. In such a case, the To be Continued Target (Target 9) replaces the End of Roll Target (Target 8) on the first roll and the Continued and Roll No. Target (Target 6) replaces the Begin and Roll No. Target (Target 5) on the second roll. All other targets remain the same

Records Additions Targets

These targets are used when additional information, which formed part of the original record, but was not filmed with that record, is located. For local records microfilming, the part being added must be less than one whole book. These targets, the Start of Records Additions and the End of Records Additions, are furnished by ARM and completed by the camera operator. The records additions may be filmed at the end of the corresponding roll if they are discovered before the roll is removed from the camera. It is more often the case that they are filmed on a separate roll and spliced to the original. A record addition or retake must be able to fit on the reel to which it will be spliced. Roll numbers for both records additions and retakes must be the same as the original roll to which they will be spliced. The information and target order is the same for retakes. (Note that the roll number is at the top of the target.)

Retake Targets

The Start of Retake Target and End of Retake Target are used in refilming images on the original roll, for example, illegible images or missed pages. These targets are furnished by ARM and completed by the camera operator. The following information must be entered on the Start of Retake Target:

1. Roll Number (to which the retake will be spliced)
2. Title of Record Series
3. Date
4. Signature of Camera Operator
5. Name of Micrographics Laboratory doing filming

A Resolution Chart and Density Target must follow the Start of Retake Target.

The End of Retake Target should be filmed after the last document being refilmed.

In the case of multiple books from the same roll that require retakes, all retakes must be refilmed on the same roll to eliminate multiple splices. Refilmed images should be added to the end of the original roll.

4.2 Filming Requirements

Reduction Ratio
If a reduction ratio is greater than 35X the film will not be accepted.

Photostats
All photostats require a minimum of two (2) varying exposures to compensate for inconsistencies in copy quality and to capture any information written in the margin, such as marginal releases.

Splitting Books
Records must be filmed as they are targeted. A book will not be split between rolls unless it is too long to fit on a single roll (See Continuation Targets).

Filming Order
Laboratories shall ensure that records are filmed in the proper (original) order. Any deviations from standard recording practices, filing order, arrangement, or other special conditions will be described on the Title Target as provided by ARM. These notes will be transcribed onto the catalog/transmittal documents.

Filming Inserts and Oversize Pages
All inserts and oversized pages must be filmed in their original place and sequence within a record. When possible, a plain white sheet of paper should be placed behind the insert being filmed. Anything under or on the back of inserts should also be filmed. Oversize pages and foldouts, such as maps and plats, should be filmed using multiple shots, when necessary, to capture the entire page. A slight overlap of shots should be used to aid in comprehension and reconstruction. When filming an insert, use a side target to indicate the special character of the record being filmed.

Blips or Image Location Marks
A blip, also known as an image location mark or document mark, is an optical mark, usually rectangular, within the recording area below or above the image on a roll of microfilm. It is used for counting images or frames automatically.

5.0 Microfilm Formats

The formats described in ANSI Standard ANSI/AIIM MS23-2004, Specifications for 16mm and 35mm Microfilms in Roll Form, shall be used for microfilming source documents on roll film.

5.1 Microfiche

Standards for computer output microfiche are outlined in ANSI/AIIM MS23-2004, Production, Inspection, and Quality Assurance of First-Generation, Silver Microforms of Documents and ANSI-NMA MS2-1978, Format and Coding for Computer Output Microfilm (COM).

Dry silver COM are not approved as archival and will not be accepted for security storage.

All permanent public records should be filmed on wet process, silver halide film. ARM will accept silver halide copy film produced from the original dry silver COM as a permanent record. If the processing is of the reversal type, it

must be full photographic reversal, i.e., develop, bleach, expose, redevelop, fix, and wash.

For each record series being filmed, the fiche heading strip should display a consecutive fiche number. This number should be left-justified on the heading strip.

Microfiche from hardcopy records

A. The agency may use a preferred arrangement on the eye readable title.
B. The first frame (row one, column one) of each fiche must be the ARM supplied Title Target filled out appropriately.
C. The second frame (row one, column two) must be a Resolution Test Chart (NB1010 or equal).
D. The last fiche produced in a production run must have a Title Target, Camera Operator's Certificate and Certificate of Authenticity, a target attesting to the date span, and a target showing the inclusive fiche numbers of this particular run.
E. The ARM target fiche will be filed with the original fiche in the microfilm storage vault and used to authenticate the fiche, in case of any legal question.

COM generated Microfiche

NOTE: Since there is no method for putting an ARM Title Target on this film, a target is not required to be filmed.

A. An ARM Title Target will be filled out and shipped with the fiche when it is sent to ARM for storage.
B. The person who requested the fiche must be the individual who signs the Microfilm Quality Evaluation form that attests that all the records were filmed in their entirety.
C. These two forms will remain with the transmittal throughout its life.
D. These two forms will be used to attest to the legality and completeness of the microfiche in case it would ever come into question.

Microfiche is not used in any roll format and it is not stored in ARM's security vault in a roll format. All fiche are cut into individual segments, which are normally 4" x 6" and stored in metal cabinets in the vault. No Begin and Roll No. and End Targets are necessary on microfiche.

5.2 Aperture cards

Aperture cards in their original form are not archival. The card stock is acidic and will eventually deteriorate. The glue, which holds the film chips in the card, is also acidic. It will eventually ruin the original film, and can lose its adhesiveness, causing the film to become separated from the card, jeopardizing file integrity. The file integrity of an aperture card system is hard to maintain since a lost or stolen card destroys the validity of the file.

This medium must be reformatted before it can be stored in an archival environment. When dealing with a project involving aperture cards, please contact ARM for the latest requirements for reformatting.

5.3 Blips or image location marks

All images on 16mm film should be blipped with at least a single-level blip. Blips must conform to size and placement standards explained in ANSI/NMA MS8-1979, Revision of ANSI PH5.20-1974, NMA NS8-1974. The relative position of the blip to the document must be consistent throughout a roll.

1. Place all blips at the leading edge of the image/frame in the lower left blip channel.
2. The blip channel must be free of all other images.
3. The retrieval scheme will be explained in the agreement and must be adhered to or the film will not be accepted.

For large planetary filming (such as that done for KDLA Local Records grant projects), the second-level blip will be exactly twice as wide as the single-level blip on the film; the tri-level blip, if needed, will be three times as wide as the single-level blip. On rotary cameras and newer small tabletop planetary cameras, the equipment automatically calibrates the blip size.

Prior to filming in 16mm format, the size, number, and placement of the blips on the film will be determined according to the retrieval scheme required. Once the placement (the relative position of the blip to the document) is

determined, it must be consistent throughout the roll. If the leading edge is the chosen blip position, all blips must be in that location. Operators shall not alternate blip locations between the leading and trailing edge.

6.0 Microfilm Quality Control Inspection

Every roll of film is inspected by the Micrographics Quality Assurance staff for technical and informational quality control. Film must meet all requirements listed in this section in order to pass quality inspection. Any roll that fails will result in KDLA issuing a written explanation for the failure and must be refilmed. Film is also rejected if the correct procedures for transmittals, shipping, and boxes are not followed. A written notice of acceptance will be sent from ARM after a complete project passes all tests.

Reasons for Failure to Pass Microfilm Quality Control:

**Applies only to LRPG

FORMATING	
Density (permissible range - .70 to 1.30) • Missing density targets • Page out of range • Extreme uneven density on a page	**Resolution** (minimum allowed – 100 lpm) • Target not filmed at front and end • Front or end target below standard • Wrong resolution test chart (rotary/planetary)
Film Size and Format** • Wrong film size according to grant • Wrong format according to grant	**Blips (Image Location Marks)**** • Not as specified in grant or other instructions • Wrong size • Incorrect placement • Extra / missing blips

TARGETS	
Camera Operator's Certificate and Certificate of Authenticity • Target missing • Missing information on target • Non-ARM target • Target filmed out of order	**Title Target** • Missing any title target • Missing or incorrect information on title target • Non-ARM target
Begin and Roll No. / End Targets • Target missing • Non-ARM target • Target filmed out of order	**Continued and Roll No. / To be Continued Targets** • Used incorrectly
Start / End of Retake Targets • Either target missing • Incorrect target used • Incorrect or missing information	**Start / End of Records Additions Targets** • Either target missing • Incorrect target used • Missing or incorrect information
Side Targets or Filming Notes • Used incorrectly	**Correction Target** • Used incorrectly

DOCUMENT / FILMING

Damaged Film
- Chemical or water spots on film
- Holes, tears, severe creases
- Emulsion scratches
- Redox spots

Foreign Objects Filmed
(ex: dirt, hands, paper, keys, bugs, clips, etc.)
- Objects possibly obscuring information
- Not obscuring information, but excessive or distracting

Documents Filmed Contents
- Blurred (any portion)
- Not completely filmed (out of frame, covered, folded, document image cut off, wrinkled, etc.)
- Illegibility as a result of scanning
- Missing pages
- Filmed out of order
- Light / dark streaks
- Upside down

Photostat Documents
- Less than 2 shots of each page
- No exposure adjustment evident between the 2 shots
- Has 2 shots but too dark / light or illegible

Grant Evaluation**
- Doesn't match records filmed
- All listed records weren't filmed

Other
- Not silver halide original film
- More than one record series filmed on one roll
- One book partially filmed on two rolls
- Wrong documents filmed (according to title target)
- Wrong documents filmed (according to grant)**
- Books filmed out of order
- Excessive duplication of content

SHIPPING AND FORMS

Transmittals
- Missing with submission to KDLA
- Not typed
- Information doesn't match film
- Information out of order
- Information missing
- Notes about abnormality of records missing (ex: no book J, etc.)
- More than one record series on a page
- More than one front page per record series per project

Shipping Statement**
- Missing with submission to KDLA
- Doesn't match shipment
- Missing information

Box Labels
- Missing
- Not typed
- Missing information
- Extra information (ex: filming date)**

Explanations of Reasons for Failure to Pass Microfilm:

Emulsion Scratches
Physical removal of blips using a razor blade (or other abrasive object) will render the roll unacceptable. Emulsion scratches that might call into question the information on the film will require retakes.

Miscellaneous Requirements
Foreign objects, including light streaks, other pages appearing in the frame, (especially when obscuring information), and illegible images may cause rejection of the film or require retakes. The film should be rolled on the reel with the emulsion side on the inside. When unwound, the blips should be on the inside face of the film.

Roll Boxes
All microfilm rolls must be sent in individual boxes that meet best archival practice standards.

All boxes, including those for retakes and records additions, must have labels with the following identifying information typed on them. (This information should match that on the Title Target and transmittal exactly.)

The label should include:
1. Roll Number
2. Agency Name
3. Series Title/Unit Identifiers (book numbers, letters, etc.)
4. Year Span of Records on Roll

SAMPLE TOP LABEL

Franklin County Roll No. 12345 Deed Books A - C 1850 - 1875

Appropriate size labels should be used. Labels should not exceed the size of the top of the microfilm roll box. Labels should not be used to tape the box closed or inhibit its opening. These labels must use permanent adhesive. Rolls without labels will not pass quality control inspection.

Transmittal forms are furnished by ARM and completed by the vendor. Transmittals must be typed. For the most up to date transmittal and instruction refer to the KDLA website.

Shipping Film to ARM
All film from one project should be shipped at one time, unless ARM is notified in advance that the project is large and will be sent in partial shipments. All shipments of microfilm should be sent to ARM with a shipping statement, completed transmittals, and, when the shipment is complete, a copy of the invoice (Transmittals are not shipping statements). Rolls and transmittals should be packed in sequential order.

Shipping statements should include the following information:
1. Vendor Name
2. County or City Name (agency that created the records)
3. Total Number of Original Rolls
4. Total Number of Retake and/or Records Additions Rolls
5. Titles and Book Numbers (ex: Deed Books A-Z, Will Books A-M)
6. Partial or Complete Shipment

All projects should use the following shipping address:

Micrographics Quality Assurance
Kentucky Department for Libraries and Archives
300 Coffee Tree Rd.
Frankfort KY, 40601

Payment Release **
A written statement of approval authorizing payment for film contracted by a local government agency will be issued by the Local Records Branch, ARM, only after the security microfilm is received by ARM, passes quality control, and is accepted for storage.

7.0 Digital Imaging

These guidelines for digital imaging are based on, and supported by, Policy Memorandum 99-1, Standards for Conversion of Digital Images to Microfilm Format; and Policy Memorandum 2023-01 Storage of Public Records as Scanned Images.

State or local government agencies that use digital imaging systems to maintain records that are scheduled as permanent, according to the Commission's approved Records Retention Schedules, must comply with the KDLA Policy Memorandum on the Storage of Public Records as Scanned Images, 2023-01 This Policy Memorandum states that "public records scheduled as permanent must have manual, eye-readable counterparts" namely paper or microfilm. Note that this requirement does not apply to "born digital" images.

KDLA recommends the production of security microfilm of permanent records from local agencies for records born digitally. This microfilm must be produced according to the guidelines in this procedural guide. The silver halide master will be maintained by KDLA in security storage.

Microfilm may be produced from the paper record or from digital images.

7.1 Formatting files

The required format for the files is a standard Tagged Image File Format (.tif extension). These can be compressed using CCIT Group compression (standard fax compression) only. Multi-page tifs are not acceptable. TIFF files should be in black and white or grayscale format.

All files from one series should be segregated from other series for placement on separate rolls of film. The files should be organized (foldered and in order) as they appear on film. The folder level and the file level will have blips according to their hierarchical level.

Example: The files for deed books or other logical units should be placed in separate folders by book or other unit to indicate a beginning and ending point for that unit on the film. This will facilitate retrieval from the film.

Folder names must be in lower case. If not in lower case, the sorting order will be compromised when transferring to microfilm. Example: doe, jane.tif

The tif files, particularly those produced from paper larger than 8.5 by 11, must be formatted in portrait rather than landscape orientation (vertical rather than horizontal).

Image file size that exceeds 550 KB for individual pages can impede file transfer to film.

When digitizing photostatic copies or other negative images (white text on black background), the vendor will reverse the image to a positive image (black text on white background).

Scanned images are to be 300 dpi or greater.

Enhancement technique standard
An agency may employ a digitized record enhancement technique which is commonly used in scanning software, including but not limited to deskew, despeckle, crop, and rotate. An agency may not use an enhancement technique which alters content that exists in an original record

7.2 Indexing files

All digitized images must be accompanied by the corresponding general index. This index will be sent to KDLA in

the tif format.

7.3 Verification of files

The vendors are required to verify each image and inform KDLA of all poor quality (illegible) images. This includes rips, folds, missing and/or obscured text, overlaps, etc. Book and page numbers of the poor-quality documents will be provided to KDLA by the vendor on the transmittal forms.

7.4 Transfer of files

KDLA will accept image files via File Transfer Protocol (FTP) through secure link provided by the ARM upon request. KDLA will also accept portable hard-drives and jump-drives containing the images in the required format and organization detailed in the section 7.1. Further details for this transfer will be provided in the contract for the work.

Hard-drives should be labeled and include:

- Agency Name (Grant # included if applicable)
- Vendor Name
- Series Title/Unit Identifiers (book numbers, letters, etc.)

7.5 Targets and charts

The following charts and targets should be used for microfilm produced from electronic images:

- Resolution Test Chart
- Density Target
- Camera Operator's Certificate and Certificate of Authenticity
- Title Target
- Begin and Roll No.
- End of Roll

7.6 Imaging procedures

It is critical that vendors have proper scanning procedures in place in order to create an accurate and acceptable microfilmed image and to have the copies accepted as valid documentation of agency transactions. Vendors should incorporate the following elements in their imaging procedures:

A. Accuracy and completeness of records

A process of inspection must be in place to confirm that imaged documents are legible and that no corners of the original documents were folded or obscured during scanning. This process should include systematic quality control and audit procedures, as well as operational oversight by staff with detailed knowledge of the process or system used to produce the records. Resolution and use of gray scale should be appropriate to capture all needed detail within documents. Similarly, scanned images must capture all colors represented in the original documents when needed to interpret or understand the meaning of the original. The accuracy of the indexing process must also be assured through procedures that visually verify indexes after they have been keyed or created through optical character recognition.

B. Audit trails and security

Audit trails documenting who accessed or used the system, when they used it, and what the results of use were must be maintained. Security measures consistent with guidelines and standards provided in Enterprise Architecture and Kentucky Information Technology Standards (KITS) should be adopted and applied.

C. Equipment maintenance

An effective maintenance program ensuring that scanners, disks, and other storage devices are properly housed and regularly maintained must be in place. Equipment maintenance logs should be kept to document the occurrence of regular maintenance.

D. Compression algorithms

All images should be stored in or converted to compression formats identified in KITS. Currently, the standard requires use of, or an ability to convert to, (formerly CCIT) Group IV .tif.

7.7 Review of systems by ARM staff

Agencies should review imaging system requirements and contents with appropriate ARM staff. Staff will examine all elements of scanning procedures and the scheduled records series maintained in the system. Records maintained on the imaging system should follow retentions on an appropriate Commission–approved Records Retention Schedule. ARM staff will work to facilitate this review through distribution of a form to be completed by the agency on a regular basis.

7.8 Waiver of eye-readable requirement

State and local agencies may request to maintain permanent records as digital images without eye-readable backup by petitioning the State Archivist for a waiver of that requirement. The request must include a list of records series, as found on the applicable Commission approved Records Retention Schedule, for which the waiver is being sought. ARM will work with agency staff to review both the elements of the agency's image viewing system, per Policy Memorandum 2010-01, and the nature of the records in question. The State Archivist may provide written authorization if the system and the records are acceptable. This authorization will require the agency staff to review the imaging system and its contents on a regular basis with ARM.

Appendix A: Sample targets

OPERATOR'S CERTIFICATE
&
CERTIFICATE OF AUTHENTICITY

THESE RECORDS WERE FILMED FOR

THESE RECORDS WERE FILMED BY

DATE OF FILMING **REDUCTION**

CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE MICROGRAPHICS APPEARING ON THIS ROLL OF MICROFILM ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORGINAL RECORDS.

THESE RECORDS WERE PRODUCED FROM IMAGED FILES SCANNED BY [Name of local government agency/vendor]

_____ _____

PRINTED NAME OF SCANNER/INDEXER **SIGNATURE OF SCANNER/INDEXER**

START OF RETAKE

ROLL NO.: _____

TITLE OF RECORD SERIES: _____

_____

THE IMAGES **APPEARING** BETWEEN THIS POINT AND "END OF RETAKE" ARE MICROPHOTOGRAPHS OF RECORDS THAT WERE ILLEGIBLE OR OTHERWISE UNSATISFACTORY ON INSPECTION OF THE ORIGINAL MICROFILM.

CERTIFICATE OF AUTHENTICITY

THE SECTION OF FILM BETWEEN "START OF RETAKE" AND "END OF RETAKE" TARGETS IS A TRUE AND ACCURATE REPRODUCTION OF THE ORIGINAL RECORDS.

DATE _____

SIGNATURE OF CAMERA OPERATOR _____

NAME OF MICROGRAPHICS LABORATORY DOING FILMING _____

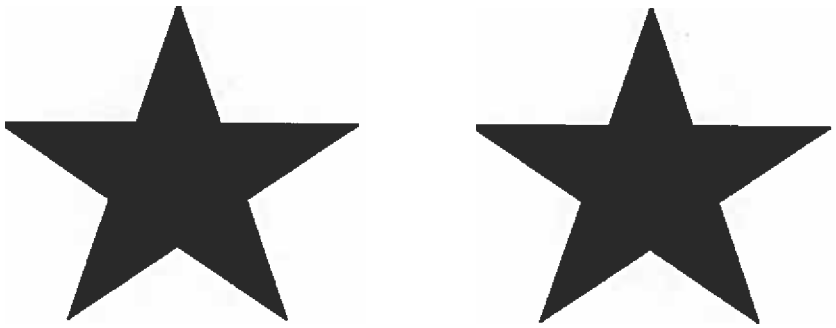
Archives and Records Management Division

CONTINUED

ROLL NO: _____

IF RETAKES ARE NECESSARY, THEY WILL BE SPLICED AT THE END OF THIS ROLL.

CORRECTION



PRECEDING IMAGE HAS BEEN REFILMED TO ASSURE LEGIBILITY OR TO CORRECT A POSSIBLE ERROR

END

END
OF
BOOK

END OF RECORDS ADDITION

END
OF
ROLL

BEGIN

ROLL NO. _____

IF RETAKES ARE NECESSARY, THEY WILL BE SPLICED AT END OF ROLL