

PHOTOGRAMMETRY

Aerial Photo Index Guide

May 2013

The purpose of this *Index Guide* is to provide an easy-to-understand description of the various requirements to produce a digital aerial index for Caltrans. This guide was developed as a digital *e-Book* with built in bookmarks and web-links. Paper copies are not advisable for distribution. Questions concerning this guide can be directed to Young.Lee@dot.ca.gov

State of California

Department of Transportation

Division of Engineering Services

Office of Photogrammetry & Preliminary Investigations

<http://www.dot.ca.gov/hq/esc/photogrammetry/>

Contents:

<u>Introduction of Aerial Photo Index</u>	3
• Index Overview	
• Significant changes from the 2010 Index Guide	
<u>Index Standards and Specifications</u>	5
• File Format and Layers	
• Image Reduction Size and Scan Resolution	
• Order Letter with Index Instructions	
• Title Block Content	
• Raster Image Lay-Down and Text Labels	
• Deliverables	
<u>Appendix and Resources</u>	13
• Master template for photo index and various samples	
• Sample Order Letter	
• Sample Scale Bars	
• Caltrans Standard Quality Control Check List	
• List of County Abbreviations	
• List of Caltrans District Offices	
• Office of Photogrammetry contact telephone list	
• How to look up County – Route – Postmile locations	

Introduction of Aerial Photo Index

Index Overview

Viewing a photo index is a quick easy method to identifying images on a roll of film. Caltrans maintains a historic aerial film library of the State transportation system dating back to the 1950s. The library is located at 1727 30th Street, Sacramento, CA. and currently holds over 3,000 film canisters and 32,000 photo indexes.



Private aerial photogrammetric companies produce photo indexes after they fly a photo mission for the Department. The purpose of the index is to identify the location and limits of each mission for future use. Indexes are made available for public viewing at 1727 30th Street, Sacramento, CA, as well as [12 District Offices throughout the State.](#)

[See Sample Index](#)

[RETURN to Table of Contents](#)

Significant Changes from the 2010 Index Guide

The 2013 Index Guide contains many changes, but the most significant changes are:

- In 2010, indexes could either be made photographically with a large format copy camera or by digitally scanning the 9” by 9” aerial images. The large format copy camera method is no longer acceptable and all indexes shall be made digitally.
- Image resolution has been reduced from 600 DPI to 300 DPI.
- Two graphic file formats are now acceptable for digital indexes: Corel Paint Shop Pro and Adobe Photoshop. All text shall be vector format stored on separate layers or levels to allow for future text editing if needed.

[See Sample Index](#)

[RETURN to Table of Contents](#)

Index Standards and Specifications

File Format and Layers

File format shall be either Corel Paint Shop Pro (.pspimage file format) or Adobe Photoshop (.psd file format). A minimum of two layers shall be utilized to separate the photo image data from text data. All scanned images shall be raster based and stored separately on image layers. All text shall be vector based and stored on un-flattened text layers so that the text can be edited in the future if necessary.

Image Reduction Size and Scan Resolution

After scanning a standard large format aerial photograph (9" by 9") the image is then reduced three times in size to 3" by 3" and positioned onto the standard (20" by 24" photo index sheet. The minimum resolution of raster image scan shall be 300 DPI.

Image reduction is utilized to maximize the number of exposures that could easily fit onto an index sheet. Image reduction is not required on small projects containing only a few images if the standard size can fit onto a single index sheet.

Order Letter with Index Instructions

Contract order letters are issued by the Office of Photogrammetry and/or [Caltrans District Photogrammetry Coordinator](#) for each flight mission requested. The order letter will contain film ASC number assigned to the project and index instructions.

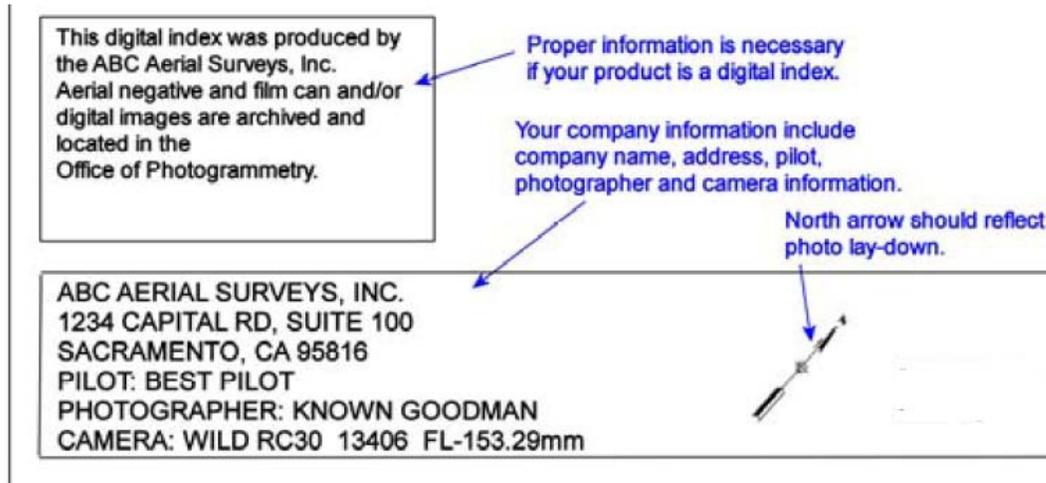
Proposed Postmile limits on the order letter may be different than actual Postmiles flown. The index shall reflect actual Postmile limits. To aid in the proper identification of Postmiles, Caltrans will provide to the Contractor a list of Postmile feature locations to be used on the index when requested. See [Sample Order Letter](#) and [How to look up County – Route – Postmile locations](#).

[See Sample Index](#)

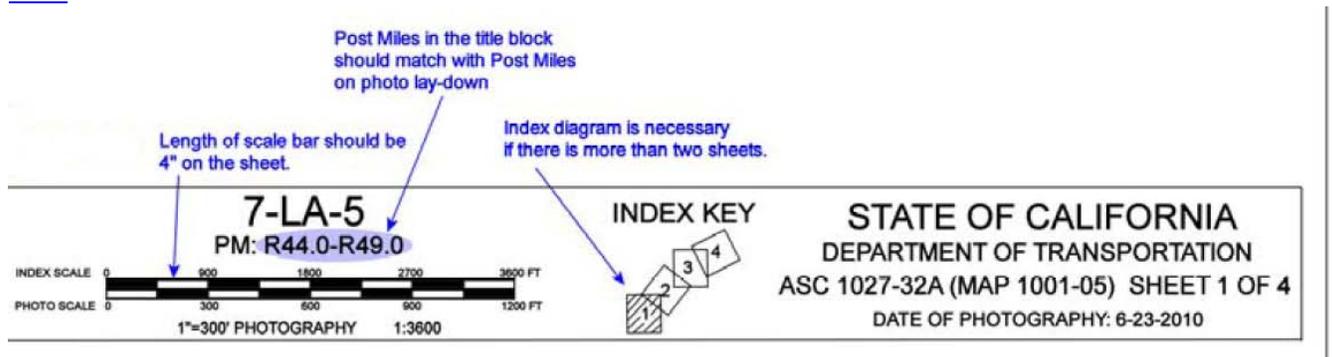
[RETURN to Table of Contents](#)

Title Block Content

Font style, color and size are provided on the [Master Template](#) and shall not be altered other than the text content as needed. North arrow and company name information is placed on the left side of the title block.



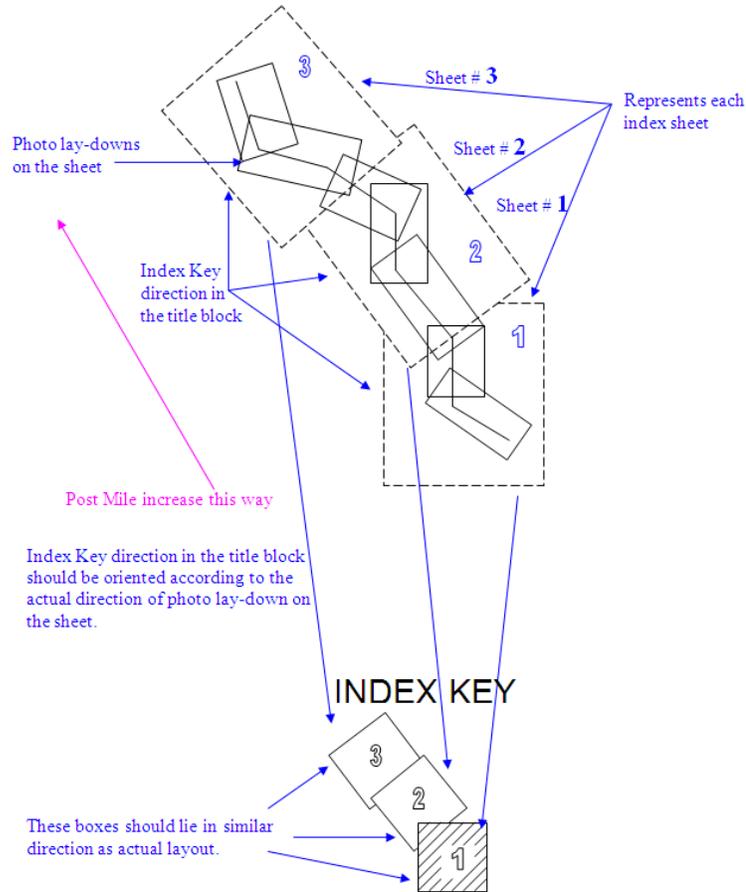
The index key and project ASC number is located on the right side of the title block. The scale bar and index identification (Dist-Co-Rte) and postmile information are located in the middle. The most common aerial photography scale is 1" = 300'. For other scales see [Sample Scale Bars](#).



[See Sample Index](#)

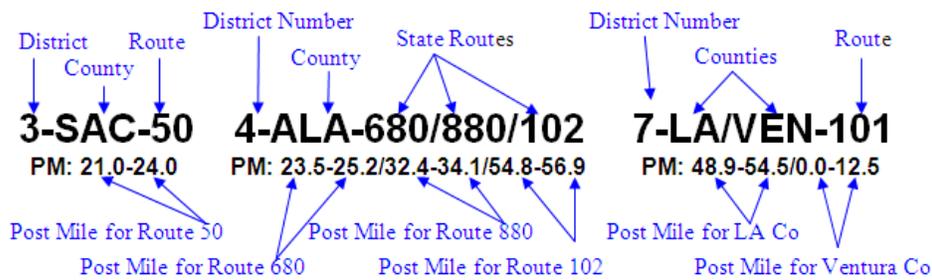
[RETURN to Table of Contents](#)

Example of typical index key diagram layout



Here are three examples of typical index identification (Dist- Co-Rte) and postmile.

1. Single Route
2. Multiple Routes
3. Multiple Counties



[See Sample Index](#)

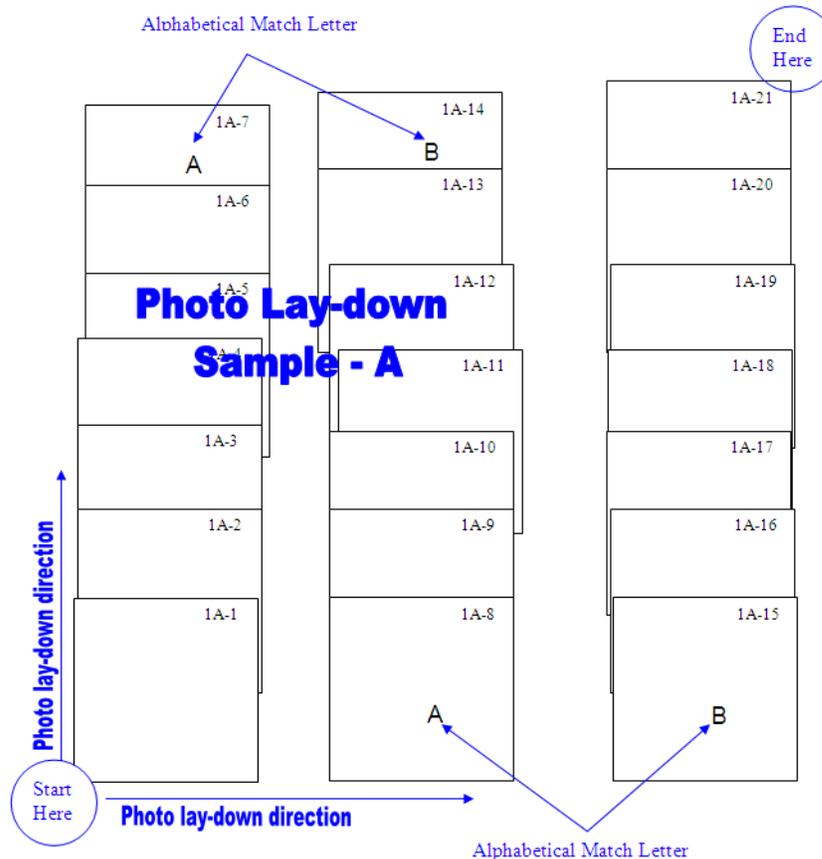
[RETURN to Table of Contents](#)

Raster Image Lay-Down and Text Labels

Font style, color and size are provided on the [Master Template](#) and shall not be altered other than the text content as needed. All individual photo images should be un-flattened separate layers.

Image lay-down begins with the lowest PM value in the lower left of the index body and progresses up the sheet as PM values increase. If multiple rows of images are needed, use a MATCH letter to indicate where the 1st row stops and the 2nd begins. Rows increase left to right as PM values increase. When overlapping images, ensure that the exposure number is visible. Text identifying significant feature shall be used to aid the identification of major land marks such as rivers, county lines, or other routes or highways crossed. Refer to [Sample How To Lay-Down](#) as a reference guide.

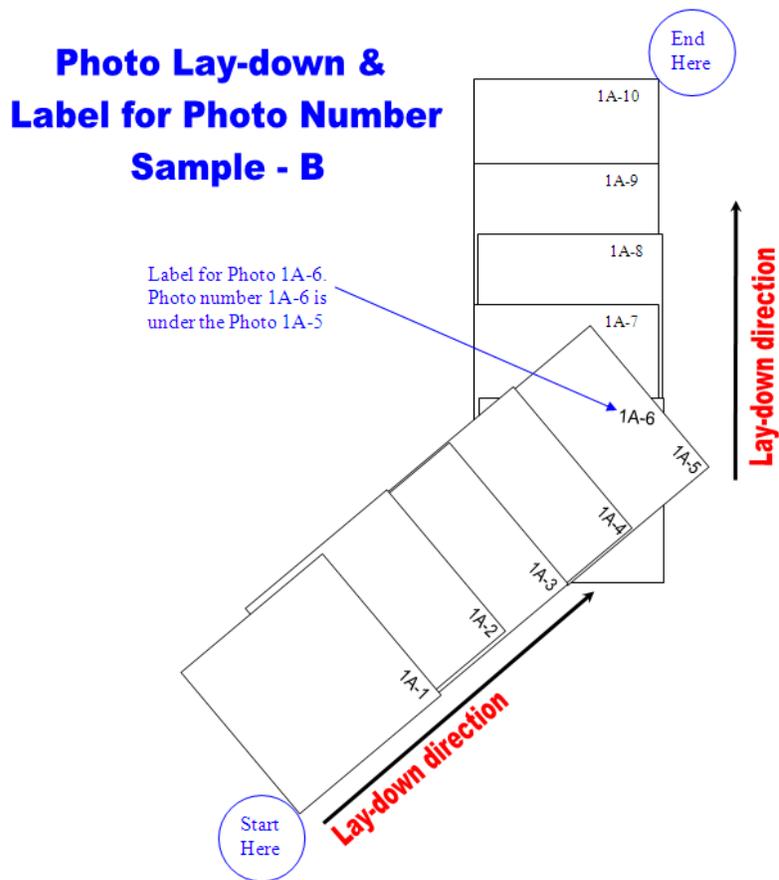
Example of photo lay-down – Sample A



[See Sample Index](#)

[RETURN to Table of Contents](#)

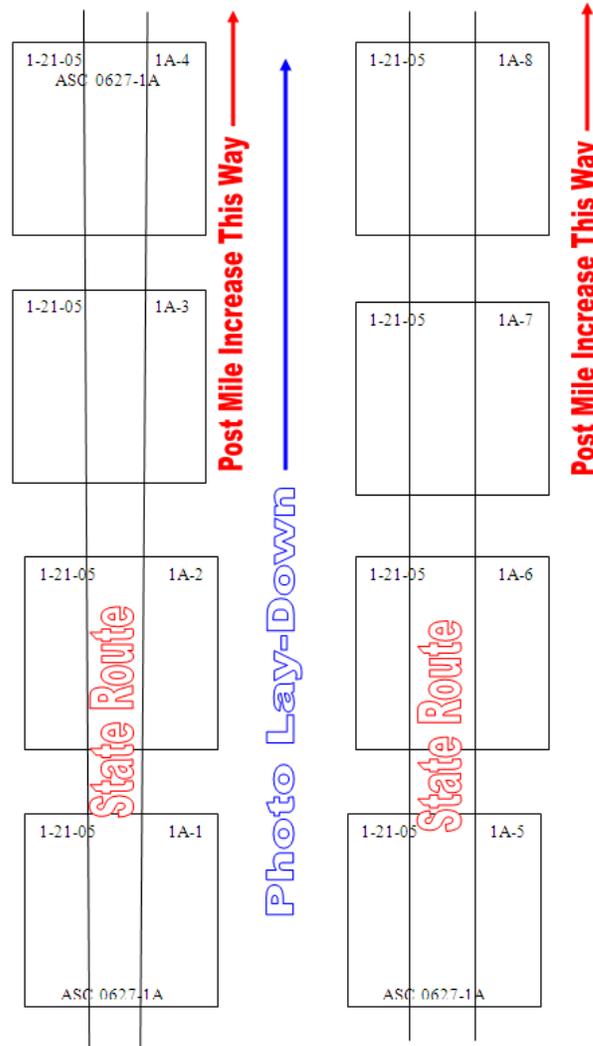
Example of photo lay-down – Sample B



[See Sample Index](#)

[RETURN to Table of Contents](#)

Example of multi oblique lay-down

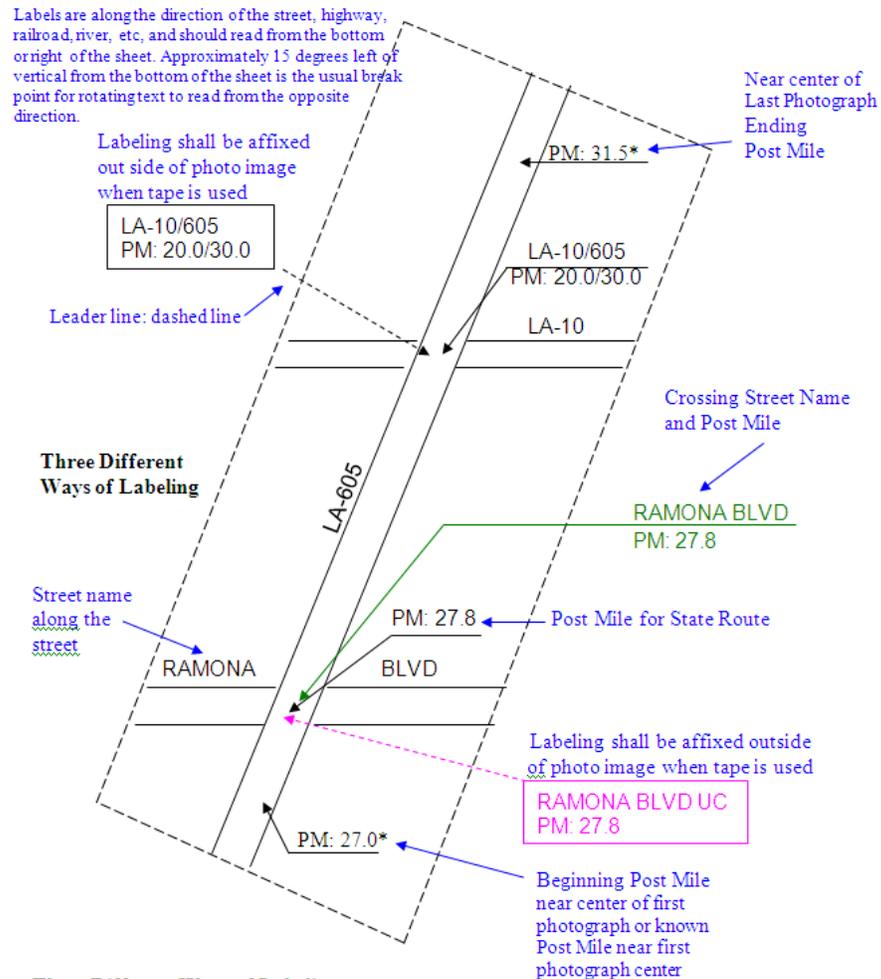


- Photo editing direction should be same as increasing Post Mile.
- Photo lay-down should begin at left bottom corner on the sheet starting with lowest Post Mile.

[See Sample Index](#)

[RETURN to Table of Contents](#)

Example to text labels



Three Different Ways of Labeling:

- Label street name along the street and post mile on the image with solid leader line.
- Label using tape, located outside of image with dashed leader line.
- Label street name and post mile outside of image with solid leader line.

Use an "*" only with INTERPOLATED (calculated) POST MILES(S).

[See Sample Index](#)

[RETURN to Table of Contents](#)

Deliverables

Two graphic file formats are now acceptable for digital indexes: Corel Paint Shop Pro and Adobe Photoshop. All text shall be vector format stored separately on layers or levels to allow for future text editing if needed. Each photo raster image shall be stored on a separate layer.

Prior to creating any final deliverables, it is advisable to submit a preliminary draft index for review. Files may be submitted via FTP or emailed to:

Young.Lee@dot.ca.gov

After the review is completed, notification will be returned indicating required edits and/or revisions to the final digital file. This process will greatly increase the likelihood of final approval of the products submitted.

Final products:

- One CD or DVD shall be submitted containing the digital index in the native Corel Paint Shop Pro or Adobe Photoshop file format along with a copy of the index in either a .JPG or .PDF file format.
- One hardcopy index shall be plotted on satin or semi-gloss HP (C series) Photo Imaging quality paper. Alternate plot paper may be considered, but first must be pre-approved by sending a test sample to the Office of Photogrammetry. The plotted indexes shall be trimmed to measure 20 inches by 24 inches.

The CD / DVD shall be properly labeled to easily identify the project. Minimum label information shall include:

Company name	Project ASC number	Dist.-Co.-Rte. & PM
Date of photography	Date of index production	File format & name

Final products shall be mailed to:

Dept of Transportation
Photogrammetry, MS-35
1820 Alhambra Blvd.
Sacramento, CA. 95816

[See Sample Index](#)

[RETURN to Table of Contents](#)

Appendix and Resources

[Master template for photo index and various samples](#)

[Sample Order Letter](#)

[Sample Scale Bars](#)

[Caltrans Standard Quality Control Check List](#)

[List of County Abbreviations](#)

[List of Caltrans District Offices](#)

[Office of Photogrammetry contact telephone list](#)

How to look up County – Route – Postmile locations

Caltrans uses a linear reference system to locate features along a State Route. As the route crosses into a new county, the postmile (PM) value is set to zero. PM values are determined as a function of distance (in miles) from the county line. Any feature along the linear reference system can be identified by knowing its unique County, Route, & Postmile (Co, Rte, PM) value.

Caltrans provides a convenient way to look up Co, Rte, PM data by using search tools on an interactive web map called Caltrans Earth.

<http://earth.dot.ca.gov/>

To use the **Postmile Lookup** tool, click on the box under **Map Tools** located near the upper right corner and follow the directions.

Some postmile labels contain an alphabetical prefix before the number. For example, the first realignment along a route may look like this **R27.2**. Always show the alpha prefix when it is used. To aid in the proper identification of Postmiles, Caltrans will provide to the Contractor a list of Postmile feature locations to be used on the index when requested.

[See Sample Index](#)

[RETURN to Table of Contents](#)