



# **Caltrans Review Process For Consultant Photogrammetric Mapping**

## *Frequently Asked Questions (FAQs)*

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

“Caltrans improves mobility across California”

## ***Why does Caltrans review Consultant photogrammetric mapping?***

State Senate Bill 45 significantly changed the way projects are funded for the State Transportation Improvement Program (STIP). Local and regional agencies have greater access to Federal and State transportation funding and often utilize these funds to contract out mapping and other services. Caltrans, in an effort to fulfill its duty as owner/operator of the State Highway System (SHS) provide oversight activities as a service to local or regional agencies without photogrammetric staff. Caltrans quality management activities are defined in Deputy Directive -90 (DD-90) entitled “*Funding of Quality Management Work on the State Highway Projects*”. For a copy of DD-90, see Appendix A.

## ***When is it a requirement?***

Caltrans oversight activities are required whenever improvements or changes are made to the SHS by others. Caltrans District personnel perform these activities within their local District. If the project includes photogrammetric mapping, Caltrans Office of Photogrammetry will provide oversight activities when requested by the District. Mapping standards and specifications are typically described in the inter-agency cooperative agreement as well as the professional service contract between the Consultant and the contracting agency.

## ***What is the Office of Photogrammetry looking for in their map review?***

The Office of Photogrammetry reviews Consultant mapping to ensure that Department standards have been met. Review of various mapping products will occur at each of these three critical milestones:

- A) Before the flight
- B) After Aerotriangulation
- C) After map compilation

The process is explained in more detail in the document entitled “*Required Materials to Review Consultant Photogrammetric Mapping*”

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

## ***Will these reviews adversely impact the project delivery schedule?***

No. After materials have been submitted at each milestone, the Consultant is not required to wait for Caltrans approval before proceeding with the project. Project schedule will not be compromised.

## ***How much will the review cost?***

DD-90 states that the cost of Quality Management is the responsibility of the implementing Project Sponsor. Most local transportation projects have a built-in 10% reserve for Caltrans oversight activities. Staff time will be charged to the project expenditure authorization (EA) code. The average time to review photogrammetric mapping varies depending on the size of the project. A typical work-estimating norm for 1"=50' scale mapping is approximately:

SMALL: -	4 mile project	24 stereo neat models	2.5 hrs/model
MEDIUM: -	8 mile project	48 stereo neat models	1.5 hrs/model
LARGE: -	16 mile project	96 stereo neat models	1.0 hrs/model

To convert hours to dollars, assume a loaded hourly rate of \$80/hr. If the project does not have sufficient funds for oversight activities, Caltrans will provide the review at their own expense.

## ***Can Local Contracting Agencies perform mapping Quality Assurance (QA)?***

Yes. Ideally they would perform QA activities to ensure that mapping products conform to Department standards. Typically the professional service contract would require the submittal and approval of a Quality Control Plan before work begins and a Quality Control Report after completion. When mapping QA activities are performed by the contracting agency, the Office of Photogrammetry's responsibility would be limited to that of Independent Quality Assurance as defined in DD-90.

## ***Does the Office of Photogrammetry perform mapping QA for Local Agencies?***

Yes. Many local agencies do not have photogrammetry staff to perform QA activities. As a result, local agencies will often ask Caltrans to perform QA for them.

## ***What if the professional service contract does not require a QC Plan and QC Report?***

The Office of Photogrammetry will continue to provide oversight map activities as a service to Districts that request it. Independent Quality Assurance will include the review of various mapping products delivered by the Consultant as outlined in the document “*Required Materials to Review Consultant Photogrammetric Mapping*”.

## ***What would happen if mapping was NOT reviewed?***

Caltrans would not be fulfilling its responsibility as owner/operator of work being performed within the SHS. Also, the Office of Photogrammetry will not be able to provide recommendations to the Project Sponsor that the Consultant mapping followed Departmental standards. Non-standard mapping may cause project delays with other project team members during later phases of the project.

## ***Who reviews Consultant photogrammetric mapping?***

Caltrans lead facilitator is the District Photogrammetry Coordinator (DPC). The DPCs work in the local District Survey Office. All mapping materials are submitted to the DPC and then routed to Caltrans staff. Most of the technical review is performed in Caltrans Office of Photogrammetry. A current list of DPCs and Office of Photogrammetry key staff can be found at the following web site.

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

## ***Where can I find Caltrans photogrammetric mapping standards?***

Mapping standards can be found on the Contractor Resources page of the Office of Photogrammetry web site including:

- MicroStation English and Metric design plane seed files
- MicroStation cell library, color table, custom line style, and font resources
- Caltrans Standards and Symbols for Photogrammetric Mapping (SSPM)
- Caltrans photogrammetric map examples

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

## ***Are AutoCAD files acceptable for review?***

No. MicroStation is the Department CAD standard. Local agencies and/or their Consultant may require AutoCAD however it does not meet Caltrans standards.

## ***Are digital ortho-photographs required for Caltrans review?***

No. Digital ortho-photography is often utilized as a planning tool to convey information about a project for public meetings. Ortho-photography is not considered by Caltrans to be acceptable for design purposes and they should not be used as a substitute to MicroStation topographic map files. Since this tool is not used for design, it is not necessary to include them as part of the review process.

## ***Why is there no digital terrain model (DTM) to review?***

Caltrans utilizes CAiCE for their Design/DTM software. Consultants may utilize a variety of Design/DTM systems. Ground elevations used in the creation of a DTM are typically captured during the photogrammetric mapping process. As long as Caltrans can ensure that elevations used for the map meet accuracy standards, a separate DTM review is not required.

## ***Who keeps the original large format aerial film?***

Caltrans maintains a large format aerial film library at 1727 30<sup>th</sup> St., in Sacramento CA. Caltrans routinely archives Federal or State funded aerial film at no cost to the Consultant. The originating aerial photography vendor may chose to retain film at their physical plant; however, in doing so, the film must be made available to the State as needed.

APPENDIX A - Deputy Directive -90 (DD-90)

## *Deputy Directive*

<i>Number:</i>	DD-90
<i>Refer to Director's Policy:</i>	DP - 03 – Safety and Health DP - 06 - Partnerships DP - 07 - Project Delivery DP - 08 – Freeway System  Management DP - 10 – Commitments DP - 14 – Quality in Caltrans
<i>Effective Date:</i>	December 2006
<i>Supersedes:</i>	NEW

*TITLE* Funding of Quality Management Work on State Highway Projects

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*POLICY*

The California Department of Transportation (Department) will perform the quality management work needed to fulfill its owner/operator responsibilities for projects on or proposed for the State Highway System (SHS). If a government agency is the project sponsor, this work will be at State expense because it provides a benefit to the State. Otherwise, it will be at the expense of the project sponsor. The work at State expense consists of:

- Quality control and quality assurance for each project component for which the Department is the Implementing Agency, and
- Independent quality assurance for all projects on or proposed for the SHS.

*DEFINITIONS*

Quality Management consists of discrete activities that establish the quality objectives, policies and responsibilities within the project delivery process, and the implementation of these activities.

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- **Quality Control** – The operational processes, practices and activities performed at the project team level during the project delivery process to ensure that the product meets the project’s purpose and need and fulfills established quality requirements.
- **Quality Assurance** – The activities performed within the Implementing Agency during the project delivery process that provide the confidence that the project team is fulfilling established project requirements and expectations.
- **Independent Quality Assurance** – The activities performed by the Department at a project level to ensure that the Implementing Agency’s quality assurance activities result in projects being developed in accordance with Department standards, policies and practices and the Quality Control plan provided by the Project Sponsor.

Owner/Operator is that entity ultimately responsible for the operation, maintenance and tort liability of a facility. Per Government Code (GC) 14520.3 (b), the Department is the owner/operator of the SHS.

Project Sponsors secure funding for projects and serve as project advocates. The sponsor chooses an Implementing Agency and is the customer of the Implementing Agency. The Department is the sponsor for all projects funded from the State Highway Operation and Protection Program and most Interregional Improvement Program projects.

State Expense refers to funds appropriated to the Department by the Legislature from sources other than reimbursements.

The Implementing Agency is the entity charged with the successful completion of each project component as defined in GC Section 14529 (b):

- Project Initiation Document<sup>1</sup>
- Completion of all permits and environmental studies.
- Preparation of plans, specifications, and estimates.
- The acquisition of right-of-ways, including, but not limited to, support activities.
- Construction, construction management, and engineering; including surveys and inspection.

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<sup>1</sup> Although the Project Initiation Document is not listed as a project component in GC 14529 (b), it is required in GC 14526 (b) and 14527 (g) before the start of the components in 14529 (b). This implies the Project Initiation Document is an additional component.

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There could be a different Implementing Agency for each component of a project. To ensure clear lines of responsibility, only one agency can be the Implementing Agency for a single component.

The Implementing Agency should not be confused with Lead Agency as defined under California Environmental Quality Act and National Environmental Policy Act.

## *RESPONSIBILITIES*

### District Directors:

- Develop and implement District or Region Quality Management Plans, identify, request and assign the resources needed to perform quality management as part of the annual budget process.

### Division Chiefs:

- For their respective functions, provide guidance on what work is included in quality control, quality assurance, and independent quality assurance.
- Implement performance measures related to compliance.

### Managers, Project Managers, Functional Managers, Supervisors, Public Information Officers and Employees:

- Provide quality and timely products, services and information.
- Communicate to impacted persons any changes or problems that could impact the timely, efficient delivery of a project or project component

## *APPLICABILITY*

All employees involved with the delivery of State Highway projects.

*Original Signed By*

*December 20, 2006*

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RANDELL H. IWASAKI  
Chief Deputy Director

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Date Signed