

# APPENDIX QQ – Preparation Guidelines for Survey File

## Table of Contents

<b>APPENDIX QQ – Preparation Guidelines for Survey Files .....</b>	<b>3</b>
<b>CHAPTER 1 Overview.....</b>	<b>3</b>
<b>CHAPTER 2 Guidelines for Compiling Survey Files .....</b>	<b>6</b>
ARTICLE 1 General .....	6
ARTICLE 2 Information Referenced in the Survey File Checklist .....	6
ARTICLE 3 Datum Listing.....	13
ARTICLE 4 Project Reference List .....	14
ARTICLE 5 Additional Instructions .....	15
ARTICLE 6 Verification of Survey File Delivery .....	15
<b>CHAPTER 3 Templates .....</b>	<b>18</b>
ARTICLE 1 Template for the Survey File Checklist.....	18
ARTICLE 2 Template for the Datum Listing .....	21
ARTICLE 3 Template for the Project Reference List.....	22
ARTICLE 4 Template for Additional Instructions .....	24
ARTICLE 5 Template for Verification of Survey File Delivery .....	25



# APPENDIX QQ – Preparation Guidelines for Survey Files

## CHAPTER 1 Overview

This appendix contains guidance for the preparation of the survey file on all projects implemented by Caltrans. These guidelines provide information to be used with the policies and procedures described in [Chapters 3](#) and [15](#) of this manual.

### Survey File

The **survey file** is a component of the design package when surveying efforts are required for the construction of a project. The survey file contains all of the data necessary for the project surveyor to meet the needs of the resident engineer's staking requests in a timely and effective manner. The project engineer transmits the survey file to the survey unit by the ready to list (RTL) date. The survey file must be developed in accordance with Chapter 3.6 of the [CADD Users Manual](#) and Chapter 12 of the [Surveys Manual](#). The **survey file checklist** shown in Chapter 3 of this appendix identifies items that are typical survey file deliverables. The information, in both hardcopy and electronic format, are critical to the construction of a project.

At the beginning of the project the project engineer should verify if surveying efforts are or are not required for the construction of a project. The scope of the project should be reviewed with the project surveyor to determine the surveying needs. If a survey file is needed for the project, include the surveyor as part of the project team. For projects that do not require the delivery of a survey file, e.g. a CAPM project, the project surveyor and the project engineer shall sign the verification of survey file delivery form as "survey file not required."

Different project types may not require all of the deliverables listed in the survey file checklist. The project surveyor is responsible for determining the level of information that will be used for construction stakeout. The project engineer should solicit input from the project surveyor in a focused project team meeting to identify the required submittals on the survey file checklist as soon as the scope of the project is well defined. This meeting should occur no later than the initial constructability review phase or as soon as possible for projects that do not require a constructability review, e.g. minor projects. If the scope of the project changes additional input may be required. The survey file checklist should be used to ensure that the items required for construction are provided.

Build the survey file as you design the project. The survey file is comprised of components developed by the roadway design software and must contain data that accurately represents the contract plans. It is important to note that data contained in the

survey file may also be transferred to the contractor for use in machine guidance applications.

Provide interim survey files to the project team as a part of the constructability review. Update survey files to reflect design changes made as a result of each constructability review. This will ensure that the survey file is complete and accurate at the time of its final transmittal by RTL. Interim files should also be provided for projects that do not require a constructability review, e.g. minor projects, throughout the development of the project. The major benefit is that errors or omissions can be identified at an early stage and not under the pressure of construction or after the mistake is built. Errors discovered during construction could require costly change orders.

The final complete package should be delivered no later than RTL unless an alternate delivery schedule has been arranged. If mutually agreed upon by the project engineer and project surveyor, a submittal date after RTL but before advertisement may be identified for items not available at RTL.

The delivery of the survey file is identified as a performance indicator in the PS&E submittal memorandum found in the [Ready to List and Construction Contract Award Guide](#). The final delivery date shall be documented in the memorandum and the “Verification of Survey File Delivery” form, shown in Chapter 3 of this appendix, shall be completed and submitted to the district office engineer as a deliverable required to obtain the project’s RTL status.

If revisions are made to the project after delivery of the survey file, all of the affected items should be resubmitted to the project surveyor.

The survey file checklist templates, shown in Chapter 3 of this appendix, provide a listing of the survey support information that may be required for the project and are to be used as an aid in developing the survey file.

## **Survey File Preparation**

### **Project Engineer Roles**

As noted in [Chapter 2](#) of this manual, the project engineer is in “responsible charge” of preparation of appropriate project development documents (PSR, project report, etc.) and the project design effort. When projects do not require an engineer, i.e. highway planting projects, the person responsible for the project will be considered the project engineer.

The project engineer is responsible for including the project surveyor in any pertinent meetings, communications, and e-mails pertaining to the constructability of the project. When the scope of the project is well defined, the project engineer should meet with the project surveyor, no later than the initial constructability review phase, to identify the required submittals and preferred electronic formats on the survey file checklist. A preliminary survey file should be prepared at the 60% constructability stage and the project engineer will meet with the project surveyor for this review. An updated survey

file should be compiled according to the survey file checklist for review at the 95% constructability stage. The project engineer should work with the project team to address constructability concerns before delivering the final survey file at RTL.

### **Project Surveyor Roles**

The project surveyor represents the surveying function on the project team and is responsible for participating in the constructability review and the preparation of the data required for construction.

When the scope of the project is well defined, the project surveyor should meet with the project engineer, no later than the initial constructability review phase, to identify the required submittals and preferred electronic formats on the survey file checklist. Specific needs for the project should be discussed throughout the constructability review process and should be noted on the survey file checklist or the Additional Instructions form shown in Chapter 3 of this appendix. The project surveyor is responsible for reviewing the data furnished by the project engineer throughout the constructability review process for completeness and discrepancies, advising the project engineer of all discovered survey constructability issues. A review will be made of the final survey file delivered at RTL in preparation for construction.

### **Survey File Delivery**

The project engineer and project surveyor should mutually agree upon an appropriate method for delivery of the electronic deliverables. Electronic data can be delivered by e-mail, on a CD or placed in a directory accessible by both parties. If the files are to be placed on a server, the network path should be noted on the project reference list provided in Article 3 of Chapter 3 of this appendix. The project surveyor should be notified when the files are in place.

The designated number of requested hardcopies, if any, should be sent to the project surveyor.

## CHAPTER 2 Guidelines for Compiling Survey Files

### ARTICLE 1 General

See [Chapter 15](#) of this manual, Chapter 2 of the [Plans Preparation Manual](#), Chapter 3 of the [CADD Users Manual](#), and the Project Development Workflow Tasks (PDWT) for more information about the requested items and electronic formats.

The templates included in Chapter 3 of this appendix identify items that are typical survey file deliverables. The rows designated as “Other” on the survey file checklist and the Additional Instructions form should be used to identify items that are not listed on the forms, but are specific to the project. These items should be discussed, clarified, and documented early in the constructability review process.

#### **Electronic Format of Project Deliverables**

All deliverables shall be in electronic format unless specified otherwise as “hardcopy”. The project surveyor and the project engineer should mutually agree upon formats known to be compatible with the current Caltrans design software. Chapter 3 of the [CADD Users Manual](#) lists the possible electronic formats for each of the project deliverables. The agreed upon format should be noted on the survey file checklist.

Alternate electronic formats are not recommended, but the project engineer may discuss the possibility with the project surveyor prior to the constructability review process. If acceptable, the alternate format should be noted on the checklist.

### ARTICLE 2 Information Referenced in the Survey File Checklist

The survey file checklist template is provided in Article 1 of Chapter 3 of this appendix.

#### **Project Information**

##### **District-County-Route-Post Mile-EA**

The post mile should be given to the nearest 0.1 mile.

##### **Project Engineer**

Provide the project engineer’s contact information.

**Engineer Preparing Survey File**

The engineer compiling the survey file should provide contact information in case the project surveyor has any questions about the deliverables.

**Project Surveyor**

Provide the project surveyor's contact information.

**Structures Engineer**

Provide the structures engineer's contact information.

**Construction Area Engineer**

Provide the construction area engineer's contact information.

**1. Attachments**

The contact list, datum listing, and project reference list are required components of the survey file. The "Additional Instructions" form should only be included when necessary.

**Contact List**

A copy of the contact list prepared for the resident engineer file is a required component of the survey file.

**Datum Listing**

A completed datum listing is a required component of the survey file. See Article 3 of this chapter for more information about completing the template.

**Project Reference List**

A completed project reference list is a required component of the survey file. See Article 4 of this chapter for more information about completing the template.

**Additional Instructions**

See Article 5 of this chapter for more information about completing the template.

**2. Project Deliverables**

The deliverables must accurately represent information depicted on the final contract plans to prevent delays and costly mistakes. Different project types may not require all of the deliverables listed in the survey file checklist. The project surveyor should indicate with a checkmark in "Requested by Surveys" all requested items. The project engineer should indicate with a checkmark in "Included" those items prepared and delivered. The project engineer should indicate with a checkmark in "Confirmed" when they have verified the delivery of an item.

### **Contract Plans**

The project engineer shall provide a copy of the PS&E plans to the project surveyor at the time of submittal to the district office engineer. The final set of plans that are available at advertisement should also be transmitted to the project surveyor. To ensure the transmittal of the final plans, the project engineer should include the project surveyor in the distribution list. The project engineer should communicate with the project surveyor to verify delivery of the plans.

Note: After the project is awarded, the project engineer should provide any addendums and revisions made to the plans, as well as an updated survey file if necessary.

Chapter 2 of the [Plans Preparation Manual](#) contains standards and guidance for the development of the contract plans.

### **Project Control**

The surveyor performing the preliminary survey work is responsible for establishing and documenting the control used during the collection of the topographic data and any additional control required. The control must be documented in accordance with Section 2-2.4 of the [Plans Preparation Manual](#) and Chapter 9 of the [Surveys Manual](#). This control should subsequently be used for construction staking.

This data is typically readily available to the project surveyor. In the event of brokered or consultant work, the project surveyor may not have access to this data. If requested, the project engineer is responsible for the transmittal of the requested deliverables from the responsible surveyor or contract manager.

### **Topography**

The surveyor performing the preliminary survey work is responsible for collecting and compiling the topographic data in accordance with Caltrans' standards.

This data is typically readily available to the project surveyor. In the event of brokered or consultant work, the project surveyor may not have access to this data. If requested, the project engineer shall be responsible for the transmittal of the requested deliverables from the responsible surveyor or contract manager.

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for the development of topographic data.

### **Base Map**

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for developing base maps.



### **Alignments**

Alignments are an integral part of the design and construction staking processes. All roadway alignments depicted on the contract plans should be included in the survey file.

In addition to roadways, other alignments that may be requested include:

- Flow line of curb returns and islands.
- Pullouts that are not parallel with roadway alignments.
- Ditches not depicted in cross sections or slope stake listings.
- Earthwork and limits not referenced to roadway alignments (such as clearing and grubbing or environmentally sensitive areas).
- Curves connecting two alignments which cannot be staked completely from both alignments.
- Fence lines not controlled by right of way.

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for the development of alignments.

### **Profiles**

Profiles are an integral part of the design and construction staking processes. All roadway profiles depicted on the contract plans should be included in the survey file.

In addition to roadways, other profiles that may be requested include:

- Flow line of curb returns and islands.
- Pullouts that are not parallel with roadway alignments.
- Ditches not depicted in cross sections or slope stake listings.
- Bridges.
- Grade at base of concrete barriers.
- Retaining walls and sound walls.

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for the development of profiles.

### **Cross Sections**

Final cross sections should be delivered to the survey unit as part of the survey file checklist, no later than RTL.

It is important that the final cross sections are developed from identical data depicted on the contract plans. Cross sections are an integral part of the design and construction staking processes. They assist the designer in developing the most efficient way to handle earthwork items and can be utilized to identify conflicts. Surveyors utilize the cross sections to construct the project as designed.

The project engineer should provide cross sections for interim construction phases when projects with stage construction require partial fills, cuts, or detour work.

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for the development of cross sections.

### **Slope Stake Listings**

Slope stake listings are an integral part of the construction staking process. Surveyors utilize the slope stake listings to construct the area as designed. It is important that the slope stake listings are developed from the final cross sections of the area.

The project engineer should provide slope stake listings for interim construction phases when projects with stage construction require partial fills, cuts, or detour work.

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for the development of slope stake listings.

### **Right of Way**

The coordinate geometry defining the R/W layout is required prior to construction to ensure that the work is contained within the appropriate areas. It will be used after construction to monument new lines of ownership in accordance with Chapter 10 of the [Surveys Manual](#).

Existing monumentation that will be destroyed during construction must be properly documented and perpetuated in accordance with State law and Chapter 10 of the [Surveys Manual](#). If the contractor is required to perpetuate the monumentation, the monuments should be included on the project control sheet in the contract plans.

This data is typically readily available to the project surveyor from right of way engineering. In the event of brokered or consultant work, the project surveyor may not have access to this data. If requested, the project engineer should gather and confirm the transmittal of the requested deliverables from the responsible surveyor or contract Manager.

Chapter 3 of the [CADD Users Manual](#) contains formats and guidance for the development of right of way coordinate geometry.

### **Structural Systems – District**

Structural systems included in this category are those designed under the guidance of the project engineer. These systems are typically those identified in the Standard Plans. Examples of such systems include:

- Standard retaining walls.
- Standard sound walls.

When structural layout lines (LOL's) are not parallel with or controlled by an alignment provided with the survey file, a layout line of the structure is required.

Chapter 2 of the [Plans Preparation Manual](#) contains requirements and Chapter 3 of the [CADD Users Manual](#) contains formats and guidance for the development of structural systems deliverables that are designed by the District.

### **Structural Systems – Structures**

Structural systems included in this category are those designed under the guidance of the structures design unit. This includes bridge facilities and structural systems that require special design due to foundation bearing capacity concerns or those that are not specified in the Standard Plans. Examples of such systems include:

- Non-standard and standard retaining walls.
- Non-standard sound walls.
- Non-standard culverts and channels.
- Bridge facilities.
- Buildings.

When structural LOL's are not parallel with or controlled by an alignment provided with the survey file, a layout line of the structure is required. Major structures of the bridge facility must be staked in accordance with Chapter 12 of the [Surveys Manual](#). In situations where the system cannot be staked out by station and offset relative to an alignment provided with the survey file, the coordinate geometry defining these systems should be provided.

The project engineer should direct the project surveyor to the responsible structures engineer for coordinating the transmittal of the requested deliverables. The project engineer should communicate with the project surveyor to verify delivery of the data.

### **Drainage Systems**

Surveyors use the coordinate geometry defining the centerline of pipes, culverts, and in-stream and channel facilities during the construction staking process. Typically this is generated from the stations, offsets, and elevations on the Drainage Plan and Profile Sheets. In situations where the system cannot be staked out by station and offset relative to an alignment provided with the survey file, an alignment of the drainage system will be requested.

Chapter 2 of the [Plans Preparation Manual](#) contains standards and Chapter 3 of the [CADD Users Manual](#) contains requirements, formats, and guidance for the development of drainage systems deliverables.

### **Digital Design Model**

Because of new roadway design software capabilities, the project engineer should be taking a modular design approach for defining the design finish grade. The end result will be a digital terrain model of the roadway design, referred to as a digital design model (DDM), which can be used for calculations, quality control and in the construction process.

New surveying and construction technology provides a method of stakeout and inspection with the use of a digital terrain model. Construction equipment with machine guidance technology relies on the DDM to guide the operator instead of construction stakes. Requests for this deliverable will be dependant upon the contractor's capabilities. The project engineer should expect requests for DDMs to become more frequent as the technology becomes more prevalent. The DDM should be the final model of the project, generated from the final alignments, profiles, etc.

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for the development of DDMs.

### **Miscellaneous Facilities**

Some planned facilities require alternate design methods to develop information needed by the surveyor for construction staking. The project engineer and project surveyor should meet and decide on the appropriate delivery format. Identify the facility in the row marked "Other" for all of the appropriate deliverables on the survey file checklist.

Examples of such facilities include:

- Bridge-fill cone areas.
- Intersections with multiple layout lines that require more detailed information than slope stake listings.
- Building pads.
- Retention ponds.
- Berms, dikes & levees.
- Stockpiles & borrow pits.
- General landscaping and contour grading.
- Parks.
- Parking lots.

Chapter 3 of the [CADD Users Manual](#) contains standards, formats, and guidance for the development of facilities using alternate design methods.

## ARTICLE 3 Datum Listing

The Datum Listing template is provided in Article 2 of Chapter 3 of this appendix to document the datums used in the design process and the method used to generate existing alignments. See example of completed form in the Project Development Workflow Tasks (PDWT).

It is important that the project surveyor work closely with the project engineer, completing the datum listing as appropriate, early in the design process to ensure all alignments, profiles, elevations, and control are on the appropriate California coordinate system (CCS) and epoch date.

### 1. Project Information

#### District-County-Route-Post Mile-EA

The post mile should be given to the nearest 0.1 mile.

### 2. Horizontal Datum

Indicate the California coordinate system used in the design of the project. For example, "coordinates, bearings and grid distances are based on CCS83 (1991.35), Zone 3"

See Chapter 3 of the [CADD Manual](#) and Chapter 4 of the [Surveys Manual](#) for more information about the California coordinate systems. Chapter 2 of the Plans Preparation Manual contains datum terminology and notation specifications for the first sheet of the layouts of the contract plans.

### 3. Vertical Datum

Indicate the vertical datum used in the design of the project. For example, "elevations are based on NAVD88"

See Chapter 4 of the [Surveys Manual](#) for more information about the vertical datum. Chapter 2 of the [Plans Preparation Manual](#) contains datum terminology and notation specifications for the first sheet of the profiles of the contract plans.

### 4. Project Units

Indicate the units used in the design of the project.

### 5. Existing Alignment Information

Indicate how the existing alignments used in the design of the project were developed.

Existing alignments used in the design process can be established in a number of ways. This information is important to the project surveyor because the method used to develop alignments determines how the alignment can be used. If the project surveyor deems it necessary, the as-built documentation may be requested as a deliverable to clarify discrepancies. Chapter 3 of the [CADD Users Manual](#) contains guidance for the establishment of existing alignments.

## 6. Comments

Provide additional information regarding the design of the project that may be pertinent.

# ARTICLE 4 Project Reference List

The Project Reference List template is provided in Article 3 of Chapter 3 of this appendix to document and cross reference data included in the survey file. See example of completed form in the Project Development Workflow Tasks (PDWT).

## 1. Project Information

### District-County-Route-Post Mile-EA

The post mile should be given to the nearest 0.1 mile.

## 2. Path to electronic deliverables

Indicate the network path to the electronic deliverables. Confirm that the project surveyor has permission to copy all files in the referenced directory.

## 3. Design Software Used

Indicate the software used in the development of the electronic deliverables.

## 4. Base Map File Name(s)

Indicate the name(s) of the base map(s) when requested.

## 5. Alignment/Layout Line and Associated Design Elements

### Alignment/LOL - Plan Name/Description

Indicate the designation and description of the alignment or LOL as it is noted on the contract plans.

### Alignment/LOL - Chain Name

Indicate the designation of the alignment or LOL as it is labeled in the electronic deliverable.

### Profile(s) – Name(s)

Indicate the designation of the profile(s) associated to the alignment or LOL as it is labeled in the electronic deliverable. When possible name the profile the same as the associated alignment.

### Cross Section(s) – File Name(s)

Indicate the name(s) of the cross section(s) associated to the alignment or LOL as it is labeled in the electronic deliverable.

**Slope Stake Listing(s) – File Name(s)**

Indicate the name(s) of the slope stake listing(s) associated to the alignment or LOL as it is labeled in the electronic deliverable.

**Additional File(s)**

Indicate any additional file(s) associated to the alignment or LOL as it is labeled in the electronic deliverable.

**Comments**

Provide additional information regarding the deliverables.

## **ARTICLE 5                      Additional Instructions**

The project engineer should get input from the project surveyor, regularly throughout the project development process, to identify any odd-stations or unique submittals on the Additional Instructions form.

The Additional Instructions form is provided in Article 4 of Chapter 3 of this appendix to identify submittals not listed in the survey file checklist.

**1. Information****District-County-Route-Post Mile-EA**

The post mile should be given to the nearest 0.1 mile.

**2. Cross Sections and Slope Stake Listings**

Some projects may require the creation of cross sections at additional stations or may require the labeling of grade breaks that are not noted in Chapter 3 of the [CADD Users Manual](#). The project surveyor should discuss these needs with the project engineer and will include any special requests on the Additional Instructions form.

**3. Other Items Requested by Surveys**

The project surveyor should discuss any unforeseen needs with the project engineer and will include any special requests on the Additional Instructions form.

**4. Comments**

Provide additional information regarding the deliverables.

## **ARTICLE 6                      Verification of Survey File Delivery**

The district office engineer will verify the delivery of the survey file to the project surveyor upon submittal of a completed Verification of Survey File Delivery form. In the

event that the survey file is not required or an alternate delivery schedule has been agreed upon, the form should be signed appropriately. See the [Ready to List and Construction Contract Award Guide](#) for additional information.

The form is provided in Article 5 of Chapter 3 of this appendix. See example of completed form in the Project Development Workflow Tasks (PDWT).

**1. Project Information**

**District-County-Route-Post Mile-EA**

The post mile should be given to the nearest 0.1 mile.

**2. Complete or partial submittal on or before RTL**

Indicate with a checkmark in “Complete or partial submittal on or before RTL” when requested items are delivered.

**Project Engineer**

The project engineer should sign and date upon delivery.

**Project Surveyor**

The project surveyor should sign and date upon receipt.

**3. Agreement for Submittal after RTL, but before advertisement**

If mutually agreed upon by the project engineer and project surveyor, a submittal date after RTL but before advertisement may be identified for items not available at RTL. Indicate with a checkmark in “Agreement for submittal after RTL, but before advertisement” when requested items are delivered.

**Target Submittal Date**

**Identify the target date for submittal.**

**The following items will be delivered on the agreed upon date**

Identify the items that will be delivered after RTL.

**Project Engineer**

The project engineer should sign and date only if a later submittal date is agreed upon.

**Project Surveyor**

The project surveyor should sign and date only if a later submittal date is agreed upon.



**4. Survey File not required**

If surveying efforts are not required for the construction of a project, indicate with a checkmark in “Survey File not required” and the project engineer and project surveyor should sign the form to verify that the project does not require the delivery of the survey file.

**Project Engineer**

The project engineer shall sign and date only if a survey file is not required.

**Project Surveyor**

The project surveyor shall sign and date only if a survey file is not required.

## **CHAPTER 3 Templates**

### **ARTICLE 1 Template for the Survey File Checklist**

This article is a template for the survey file checklist. Guidance for completing this template is located in Chapter 2 of this appendix.

## Survey File Checklist

Project Surveyor - **Check** the appropriate "Requested by Surveys" box for each item required.  
 Project Engineer - **Check** the appropriate "Included" or "Confirmed" box when preparing the Survey File.  
 Submit this checklist with the Survey File.

### Project Information

District: \_\_\_ County: \_\_\_ Route: \_\_\_ PM (KP) Limits: \_\_\_ EA#: \_\_\_

<b><u>Project Engineer</u></b>	
Name: _____	Phone #: _____
e-mail: _____	Phone #: _____
<b><u>Engineer Preparing Survey File</u></b>	
Name: _____	Phone #: _____
e-mail: _____	Phone #: _____
<b><u>Project Surveyor</u></b>	
Name: _____	Phone #: _____
e-mail: _____	Phone #: _____
<b><u>Structures Engineer</u></b>	
Name: _____	Phone #: _____
e-mail: _____	Phone #: _____
<b><u>Construction Area Engineer</u></b>	
Name: _____	Phone #: _____
e-mail: _____	Phone #: _____

### Attachments

- Included **Contact List**
- Included **Datum Listing**
- Included **Project Reference List**
- Included  N/A **Additional Instructions**

### Project Deliverables

<b>Contract Plans</b>	<b>Hardcopy</b>	
<input type="checkbox"/> Requested by Surveys	___ # of Copies	<input type="checkbox"/> Included <b>Plan set submitted at PS&amp;E</b>
<input type="checkbox"/> Requested by Surveys	___ # of Copies	<input type="checkbox"/> Confirmed <b>Reduced (11" x 17")</b>
<input type="checkbox"/> Requested by Surveys	___ # of Copies	<input type="checkbox"/> Confirmed <b>Full size</b>
<b>Project Control</b>	<b>Electronic Format:</b>	_____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included	<b>Control used during collection of topographic data</b>
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included	<b>Control set for construction stakeout</b>
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included	<b>Other:</b> _____
<b>Topography</b>	<b>Electronic Format:</b>	_____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included	<b>Topographic data</b>
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included	<b>Other:</b> _____
<b>Base Map</b>	<b>Electronic Format:</b>	_____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included	<b>Alignment data, roadway &amp; drainage features, etc.</b>
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included	<b>Other:</b> _____

<b>Alignments</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
	<b>Highways, ramps, &amp; branch connections</b>
	<b>City, county, and frontage roads</b>
	<b>Detours</b>
	<b>Curb returns, islands, &amp; pullouts</b>
	<b>Other:</b> _____
	<b>Printed copies of requested alignment traverses</b>

<b>Profiles</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
	<b>Highways, ramps, &amp; branch connections</b>
	<b>City, county, and frontage roads</b>
	<b>Detours</b>
	<b>Curb returns, islands, &amp; pullouts</b>
	<b>Other:</b> _____

<b>Cross Sections</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
	<b>All roadways</b>
	<b>Bridge</b>
	<b>Other:</b> _____
	<b>Printed copies of requested cross sections</b>

<b>Slope Stake Listings</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
	<b>All roadways</b>
	<b>Number of stations per page: _____</b>
	<b>Other:</b> _____
	<b>Printed copies of requested slope stake listings</b>

<b>Right of Way</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
	<b>Hardcopy of final R/W Appraisal Map</b>
	<b>Right of Way coordinate geometry</b>
	<b>Monument perpetuation documentation</b>
	<b>Other:</b> _____

<b>Structural Systems - District</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
	<b>Retaining wall and sound wall LOL's</b>
	<b>Other:</b> _____

<b>Structural Systems - Structures</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Confirmed
	<b>Retaining wall and sound wall LOL's</b>
	<b>Bridge control monuments</b>
	<b>Bridge abutment &amp; wing wall LOL's</b>
	<b>Column, bent, &amp; pier LOL's</b>
	<b>Edge of deck LOL's</b>
	<b>Other:</b> _____

<b>Drainage Systems</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
	<b>C/L of pipes and culverts</b>
	<b>In-stream and channel facilities</b>
	<b>Headwall LOL's</b>
	<b>Flow line Profile</b>
	<b>Other:</b> _____

<b>Digital Design Model</b>	<b>Electronic Format:</b> _____
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
<input type="checkbox"/> Requested by Surveys	<input type="checkbox"/> Included
	<b>Finished Grade</b>
	<b>Other:</b> _____

## ARTICLE 2                      Template for the Datum Listing

This article is a template for the datum listing. Guidance for completing this template is located in Chapter 2 of this appendix.

### Datum Listing

District: \_\_\_ County: \_\_\_\_\_ Route: \_\_\_\_\_ PM (KP) Limits: \_\_\_\_\_ EA#: \_\_\_\_\_

#### Horizontal Datum

Coordinates, bearings, and grid distances are based on:

- CCS83 (1991.35), Zone \_\_\_\_  
 CCS83 (2007.00), Zone \_\_\_\_  
 CCS83 (\_\_\_\_\_), Zone \_\_\_\_  
 CCS27, Zone \_\_\_\_  
 \_\_\_\_\_

#### Vertical Datum

Elevations are based on:

- NGVD29       NAVD88       \_\_\_\_\_

#### Project Units

Units:

- U.S. Survey Feet       Metric

#### Existing Alignment Information

Existing alignment engineering is based on:

- Existing alignments from as-built contract plans  
 "Best-fit" to photogrammetric topographic data  
 "Best-fit" to survey topographic data  
 A field survey "best-fit" retracement of the as-built contract plans generated by Surveys Office  
 Other:

**If U.S. Survey Feet stationing is based on metric as-built data identify a major tie point:**

**U.S. Survey Feet station** \_\_\_\_\_ **= metric station** \_\_\_\_\_.

**If metric stationing is based on U.S. Survey Feet as-built data identify a major tie point:**

**Metric station** \_\_\_\_\_ **= U.S. Survey Feet station** \_\_\_\_\_.

#### Comments

## **ARTICLE 3                      Template for the Project Reference List**

This article is a template for the project reference list. Guidance for completing this template is located in Chapter 2 of this appendix.



# ARTICLE 4                      Template for Additional Instructions

This article is a template for additional instructions. Guidance for completing this template is located in Chapter 2 of this appendix.

## Additional Instructions

District: \_\_\_\_\_ County: \_\_\_\_\_ Route: \_\_\_\_\_ PM (KP) Limits: \_\_\_\_\_ EA#: \_\_\_\_\_

### Cross Sections & Slope Stake Listings

- Cross sections only
- Slope stake listings only

- |   |                                   |
|---|-----------------------------------|
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |

**Key Stations:** \_\_\_\_\_  
**Key Stations:** \_\_\_\_\_  
**Key Stations:** \_\_\_\_\_  
**Key Stations:** \_\_\_\_\_

- |   |                                   |
|---|-----------------------------------|
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |

**Lane Line Grade Breaks**  
**String Line Grade Breaks**

- |   |                                   |
|---|-----------------------------------|
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |
| <input type="checkbox"/> Requested by Surveys | <input type="checkbox"/> Included |

**Other:** \_\_\_\_\_  
**Other:** \_\_\_\_\_  
**Other:** \_\_\_\_\_  
**Other:** \_\_\_\_\_

### Other Items Requested by Surveys

- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_
- Included \_\_\_\_\_

### Comments



## ARTICLE 5                      Template for Verification of Survey File Delivery

This article is a template for verification of delivery. Guidance for completing this template is located in Chapter 2 of this appendix.

### Verification of Survey File Delivery

#### Project Information

District: \_\_\_\_\_ County: \_\_\_\_\_ Route: \_\_\_\_\_ PM (KP) Limits: \_\_\_\_\_ EA#: \_\_\_\_\_

**Complete or partial submittal on or before RTL**

**Project Engineer**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Project Surveyor**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Agreement for submittal after RTL, but before advertisement**

Target Submittal Date: \_\_\_\_\_

**The following items will be delivered on the agreed upon date:**

**Project Engineer**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Project Surveyor**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Survey File not required**

**Project Engineer**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Project Surveyor**

Name: \_\_\_\_\_

Date: \_\_\_\_\_



*California Department of Transportation*

Project Development Procedures Manual

If you have questions regarding this manual, contact:

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF DESIGN  
CHIEF, OFFICE OF STANDARDS AND PROCEDURES  
1120 "N" Street  
SACRAMENTO, CALIFORNIA 95814