5-2 Contract Change Orders

Contract Change Orders (CCOs) change the requirements of construction contracts that were previously reviewed and approved through the project development stages of projects.

The appropriate project development units must review and approve CCOs before being issued. For CCOs that are structure related, the OSFP Liaison Engineer must review and provide technical design approval in writing prior to the CCO receiving final approval in conformance to departmental policies.

This section outlines the coordination and preparation required to develop structure related CCOs and the reviews necessary to obtain design approval by the Liaison Engineer.

Sponsoring agencies and consultants should establish contingencies in budgets and schedules for unexpected capital costs and for the engineering to prepare and support contract changes since CCOs can be expected as projects are constructed.

Change Order Coordination

Structure Representatives and consultants must notify the Liaison Engineer of potential changes to contract requirements as soon as possible to discuss the need for a CCO and the parameters that will be involved. Some major factors that must be discussed are as follows: the scope of changes to the structure elements and overall project, design approaches, documents that must be prepared, reviews that will be required, and time schedule constraints.

Once the parameters are reconciled and CCO development is underway, the Structure Representative and consultant must communicate the status of the development and coordinate issues that arise with the Liaison Engineer to ensure subsequent timely reviews and approval. The exact coordination and lines of communication depends on whether the construction contract is administered by Caltrans or by others as described below.

Projects Administered by Caltrans

For construction projects administered by Caltrans, communication between the Caltrans Structure Representative and the consultant is through the Liaison Engineer. When a potential change is identified, the Structures Representative or consultant must notify the Liaison Engineer who then coordinates with the consultant or Structure Representative, respectively.

The Liaison Engineer coordinates with the consultant to obtain the necessary structural analysis and CCO documents. Once the consultant prepared documents are reviewed and approved, the Liaison Engineer transmits the appropriate CCO documents with an approval letter to the DES Office of Structure Construction who in turn writes an approval letter to the Structure Representative for executing the CCO.

In cases where the Structure Representative or contractor prepares the CCO details and the related support documents, the Liaison Engineer will coordinate the necessary technical reviews from the consultant.

When revised, supplemental, or additional plan detail sheets required for the CCO are prepared, reviewed and approved, the originals will be stored within DES and approved copies will be distributed per DES policy.

Projects Administered by Others

For construction projects administered by others, the preparation of CCOs, reviews, and approval are conducted in the same manner as for projects advertised by Caltrans except as follows: 1) the Structure Representative and consultant may communicate directly; 2) the Structures Construction Oversight Engineer must also review and approve any changes before the Liaison Engineer provides design approval; and 3) the Liaison provides written approval for the changes directly to the Structures Construction Oversight Engineer.

Once the CCO is issued, the Liaison Engineer must be provided with the number of copies of revised plans, special provisions and other documents as requested for distribution within DES. The consultant or Structure Representative must distribute to all others as necessary.

Preparation and Review of Change Order Documents

The types of documents that must be prepared and submitted to the Liaison Engineer for review depend on the scope of changes involved. The documents must consist of plan details, specifications, calculations, reports, and others as necessary to construct and support the change.

The exact types of documents and the number of copies will be as determined by the Liaison Engineer. The potential types and numbers of copies are as shown under “Deliverables” at the end of this section.

The documents must meet the same quality standards as for documents prepared in the project development phases and as described below. All documents must be stamped and signed by a registered engineer when required.

Plan Details

There are several different methods that can be used in CCOs to modify the contract plan details, and the following criteria should be used to help select the most appropriate: 1) The method must delineate the change clearly, concisely, and with no ambiguity, 2) The method must be an effective way to record the particular change in the as-builts, and 3) Provided the previous two criteria are met, the method used should be one that is the most expeditious.

Simple changes to plan details can be made with a sketch that shows the plan revisions. This method requires the Structure Representative (and ultimately the consultant) to make the

corresponding corrections to the as-built drawings and should not be used for complex detail changes.

Changes of increased complexity must be made by one of the following methods that conforms to the *Bridge Design Details* manual: 1) revisions to the original plan sheets, 2) replacement plan sheets, 3) supplemental plan sheets, or 4) additional plan sheets. All plan sheets must be prepared on formatted sheets as described in "Plans" elsewhere in this Guide. Each of these methods produces plan detail sheets that are essentially "as-built ready".

For plan sheets prepared in accordance with the *Bridge Design Details* manual, the Liaison Engineer provides an oversight approval signature directly on each plan sheet. For the method of revising original plan sheets, the consultant must contact the Liaison Engineer to determine how the "original" sheets will be obtained or generated so that the oversight signature is blank.

Contract Specifications

For simple changes, the Structure Representative may write the specifications changes directly into the text body of the CCO. For extensive, complex, or lengthy specification changes, attachments to a CCO are usually required that consist of edited Standard Structure Specifications (SSPs) or "all new" specifications all of which must conform to "Contract Special Provisions" elsewhere in this Guide.

Structure Calculations

Structure design calculations and independent design check calculations must conform to "Structure Calculations" elsewhere in this Guide. Structure design and independent check calculations must document the analysis for the direct structure changes that are made and must analyze and document changes in forces and capacities of all structure elements that could potentially see an influence as a result of the change. Calculations must incorporate the most recent design specifications and policies unless otherwise approved by the Liaison Engineer.

Quantity Calculations and Cost Estimates

The need for quantity calculations and cost estimates is based the needs of the Structure Representative. If required, quantity calculations and check quantity calculations must be prepared and conform to "PS&E Estimates" elsewhere in this Guide.

Foundation Report

A foundation report that conforms to "Foundation Report" elsewhere in this Guide is required when foundations are affected.

Hydraulics Report

A hydraulics report that conforms to "Hydraulics Report" elsewhere in this Guide is required for changes that affect the encroachment that was originally planned on waterways.

Deliverables

The exact documents required will depend on the scope of changes and will be determined by the Liaison Engineer. The potential documents and numbers of copies are as follows.

Type of Document	Number of Copies: Initial and Intermediate Submittals	Number of Copies: Final Submittal*
Revised, Supplemental, Replacement Plan Details	7	6
Final Plan Details (full size)	--	1
Final Plan Details (electronic)	1	1
Special Provisions	4	--
Quantities	2	--
Check Quantities	2	--
Cost Estimates	2	--
Structure Design Calculations	1	--
Structure Independent Check Calculations	1	--
Foundation Report	3	--
Hydraulics Report	2	--
Other backup documents needed to support the change	As Required	As Required

*Assumes that documents not required were received and determined to be final in previous reviews

Review durations for the first submittal will be dependent on the changes involved in the CCO. Review durations may range from a few days for the simplest changes and up to six weeks for complex changes.

Review durations for subsequent submittals will be substantially shorter than for the first review provided the comments from the first review are thoroughly addressed. For complex changes, the minimum review duration should be assumed not less than two weeks.