CHAPTER

3 Contract Administration

3-1 Introduction

Contract Administration is defined as the sum total of all the actions required by the Engineer to ensure that the contemplated work is constructed and completed by the Contractor in accordance with all terms of the contract.

These actions include, but are not limited to:

- Interpretation and enforcement of the plans and specifications.
- Compliance with applicable Caltrans policies and procedures.
- Objective and subjective decision-making (i.e., engineering judgment).
- Sampling, testing, and inspection of the work.
- Problem-solving that may result in contract changes to meet design intent.
- Proper documentation to defend Caltrans' position regarding the accuracy of the information provided at the time of bid.

A well-administered contract is not always free from challenges and difficulty, but it will make possible a foundation that is best for the intended structure. Foundation operations are "high-risk" activities for all parties involved, as they have the potential to impact construction budgets and schedules. Although the Contractor's contractual obligation is to construct and complete the project in accordance with the contract documents, changes to the contract are sometimes necessary to meet the intent of the Designer. Therefore, the best results are obtained when Caltrans and the Contractor work together. This enables both to identify issues as early as possible and work together for a resolution. Caltrans promotes "partnering" relationships with the Contractor to effectively complete the contract to the benefit of both parties; maintain cooperative communication, and resolve conflicts or challenges at the lowest possible level. This process is particularly important in foundation work where risks to the project are high and contract change orders may be required to effectively administer the contract.

The Engineer must thoroughly understand the contemplated work to determine if the Contractor successfully completed the contract. To achieve this, the Engineer must conduct a thorough study of the contract documents. This includes the *Standard Specifications*, *Standard Plans*, contract plans, *Special Provisions*, the *Log of Test Borings*, and the *Foundation Report*. The Engineer must become completely familiar

with the contract plans and their requirements as well as the Contractor's construction schedule. In addition, the Engineer should:

- Check footing elevations.
- Ensure that there is adequate cover.
- Verify design bearing pressures.
- Look for special treatment of foundation provisions.
- Check the proximity of utilities, existing structures, highways and railroads, etc.
- Thoroughly understand the construction sequence.

A field investigation should be made of the proposed project site and, to the extent possible, the location of all utilities and obstructions should be verified prior to the start of construction. Conflicts or potential problems must be communicated to the appropriate parties so that a path to resolution may begin.

The table below outlines the documents to be reviewed by the Engineer in addition to the information described above.

Table 3-1. Documents to be Reviewed.

DOCUMENT	DESCRIPTION
Log of Test Borings	Prepared by Geotechnical Services, this log provides the results of the geotechnical investigation. It provides a description of the soil or rock sampled in the field, test results for laboratory-tested samples, and groundwater elevations. It can be used to obtain soil profiles.
RE Pending File	This file is a collection of all correspondence relative to a particular project and; therefore, provides a historical outline of its development, and information relative to existing or proposed utilities, potential problems, and any other special considerations.
Preliminary Report	Prepared by the Preliminary Investigations Branch of Photogrammetry and Preliminary Investigations, this report is based on information furnished by the District and by data obtained during a field investigation of the proposed site. The report furnishes the Designer with the required roadway geometrics, clearances, proposed and existing utilities and/or obstructions, and will present any potential problems or other special considerations.
Foundation Report	Prepared by Geotechnical Services, this report is very informative and must be thoroughly reviewed. It provides detailed information about the foundation investigation conducted for the structure or project. It is part of the RE Pending File and included in the Supplemental Project Information handout to contractors. This report contains a description of the area geology, a Log of Test Borings for selected locations, and recommendations for foundation types and construction considerations.
As-Built Drawings	Prepared by Structure Construction after successful completion of a contract, these documents can be useful when widening or constructing new structures near or adjacent to existing structures.

The contract plans and specifications, the documents outlined above in Table 3-1, and a field investigation of the site must all be reviewed for compatibility. It is important that

all ambiguities, discrepancies, and omissions be resolved expeditiously to avoid unnecessary work delays.

In the past, the *Log of Test Borings (LOTB)* and other information provided to the Contractor at the time of bid were not considered part of the contract and were provided for information only. They now are included within the Bid Documents as the *Supplemental Project Information* handout. The *2006 Standard Specifications*[1] state that the Bidder is required to investigate the site and other available information, and it is understood that the information provided by Caltrans will be used by the Contractor to develop a competitive bid. Caltrans takes responsibility for the information provided. The Bidder is required to carefully examine the site and the information provided and is responsible for the conclusions that are drawn from these materials. The *2010 Standard Specifications*[2]simplifies this by requiring the Contractor to "Examine the job site and Bid Documents." The *LOTB* and *Foundation Report* are included within the Bid Documents as Supplemental Project Information.

It is imperative for the Engineer to meet with the Designer and the Geoprofessional to discuss substructure considerations and foundation details. If an on-site meeting is impractical, the meeting should be held by telephone or teleconference. Any questions or inconsistencies must be clarified to establish an understanding of the foundation material as well as the potential risks or challenges anticipated in constructing the foundation. This also would be the appropriate moment to discuss the project with the Bridge Construction Engineer, preferably at the job site.

Once the contract documents have been reviewed and meetings held, the Engineer should have a firm grasp of the project's technical and contractual requirements, as well as subsurface conditions that are expected to be encountered at the job site's various foundation locations. Special attention should be given to those locations requiring extreme care in performing the work and resolving any remaining issues concerning utility relocations. These challenges and concerns should be presented at the preconstruction conference(s) to be held with the Contractor and other interested parties.

Preconstruction conferences usually are held when the Contractor begins mobilizing to the site, but well before work actually starts on the project. Five general subjects normally covered are:

1. Safety.
2. Labor compliance and affirmative action.
3. Utilities.
4. Environmental considerations.
5. Performance issues related to the work.

[1] 2006 SS, Section 2-1.03, *Examination of Plans, Specifications, Contract, and Site of Work.*
[2] 2010 SS, Section 2-1.30, *Job Site and Document Examination.*

Depending on a particular District's policies and the project's complexity, more than one meeting may be appropriate in order to limit the scope and number of individuals present. Meetings should result in a common understanding of the proposed work, the risks, challenges, and potential solutions that may be expected throughout the contract.

The preconstruction conference presents an excellent opportunity to focus on inherent risks in foundation work, specific project challenges, and specifications that could have significant impacts on the Contractor's operations. Since contracts vary and many specifications govern foundation work, it is impossible to list all of the items that might be considered. Table 3-2 lists the specification items that must be covered and understood for effective contract administration:

Table 3-2. Specifications to be Reviewed at the Preconstruction Conference.

ITEM	REFERENCE
Test Boring Information	2010 SS, Section 2-1.30, *Job Site and Document Examination,* or 2006 SS, Section 2-1.03, *Examination of Plans, Specifications, Contract, and Site of Work.*
Excavation Safety Plans; Trench Safety	2010 SS, Section 7-1.02K(6)(b), *Excavation Safety,* or 2006 SS, Sections 5-1.02A, *Excavation Safety Plans,* & 7-1.01E, *Trench Safety.*
Differing Site Condition	2010 SS, Section 4-1.06, *Differing Site Conditions,* or 2006 SS, Section 5-1.116, *Differing Site Conditions.*
Source of Materials	2010 SS, Section 6-2, *Material Source,* or 2006 SS, Section 6-1.01, *Source of Supply and Quality of Materials.*
Water Pollution	2010 SS, Section13, *Water Pollution Control,* or 2006 SS, Section7-1.01G, *Water Pollution.*
Sound Control Requirements	2010 SS, Section 14-8, *Noise and Vibration,* or 2006 SS, Section7-1.01I, *Sound Control Requirements.*
Public Safety	2010 SS, Section 7-1.04, *Public Safety,* or 2006 SS, Section 7-1.0 *Public Safety*.
Preservation of Property	2010 SS, Section 5-1.36, *Property and Facility Preservation,* or 2006 SS, Sections 7-1.11, *Preservation of Property,* & 19-1.02, *Preservation of Property*
Contractor's Responsibility for the Work and Materials	2010 SS, Sections 5-1.37, *Maintenance and Protection,*& 5-1.39, *Damage Repair and Restoration,* or 2006 SS, Section 7-1.16, *Contractor's Responsibility for the Work and Materials.*
Protection of Utilities	2010 SS, 5-1.36D, *Non-Highway Facilities*, or 2006 SS, Section 8-1.10, *Utility and Non-Highway Facilities.*
Cofferdams	2010 SS, Section 19-3.03C, *Cofferdams,* or 2006 SS, Section 19-3.03, *Cofferdams.*
Water Control & Foundation Treatment	2010 SS, Section 19-3.03D, *Water Control and Foundation Treatment,* or 2006 SS, Section 19-3.04, *Water Control and Foundation Treatment.*
Foundation Inspection	2010 SS, Section 19-3.03B(1), *Structure Excavation, General,* or 2006 SS, Section 19-3.05, *Inspection.*

ITEM	REFERENCE
Foundation Revisions	2010 SS, Sections 19-3.04, *Payment,* & 51-1.03C(1), *Preparation, General,* or 2006 SS, Sections 19-3.07, *Measurement,* & 51-1.03
Piling	2010 SS, Section 49, *Piling*, 2006 SS, Section 49, *Piling.*
Seal Course	2010 SS, Sections 51-1.03D(3), *Concrete Placed Under Water,* & 51-1.04, *Payment,* or 2006 SS, Section 51-1.10, *Concrete Deposited Under Water.*
Special Concrete Mix Designs	Special Provisions
Applicable Caltrans Policies	Various Manuals
Hazardous Waste Material	2010 SS, Section 14-11, *Hazardous Waste and Contamination,* or Special Provisions for contracts using 2006 SS.

On some projects, the scope and complexity of foundation work may require scheduling a separate preconstruction meeting just to address foundation work. For projects with cast-in-drilled-hole (CIDH) piles, the *Special Provisions* require a separate CIDH pile preconstruction meeting to establish contacts and communication protocols for the Contractor, Engineer, and their representatives involved in CIDH pile design and construction.

3-2 Utilities

All utility locations shown on the contract plans should be verified with the utility representative. Utilities constructed by local municipalities and Caltrans are not verified by the Utilities Service Alliance (USA) and Caltrans and each individual municipality will be required to identify and locate them. The Engineer should request as-built plans from the local municipality and conduct field meetings to verify the locations of these existing facilities prior to excavation.

The Contractor is required to notify the proper agencies to have the existing underground utilities located in the field prior to commencing excavation operations. The status of utilities not yet relocated and field evidence of additional existing utilities also must be discussed. Problems in this area could result in serious delays. If not solved at the preconstruction conference, these utility issues should be resolved at the earliest possible opportunity.

The Contractor's proposed methods of performing foundation work adjacent to utilities also should be discussed at the preconstruction conference. All parties should be advised of any proposed change orders that potentially may affect their work or property.

All preconstruction conferences should be well documented. When appropriate, minutes of the meeting should be distributed to all attendees, to confirm positions taken and agreements made at the meeting.

Proposed foundation changes, whether the result of geologic or non-geologic conditions, should be discussed with the Bridge Construction Engineer. Depending on the extent of the proposed change, it may be advisable to consult with Structure Design and Geotechnical Services.

3-3 Change Orders

Certain revisions in excavation limits, footing elevations and sizes, and changes to or elimination of seal course concrete are presented in the contract documents. This gives the Engineer the authority to give written direction to the Contractor to implement various changes in the field. As most items are final pay items, a contract change order ultimately will be needed in order to allow the quantity change for the items affected by this revision.[3] Once it is determined that a change is necessary, the Contractor is issued a contract change order describing the work to be done, the basis of compensation, and the extent of any time extension.

To eliminate any possible misunderstanding about field revisions of foundations, a letter should be sent to the Contractor prior to commencing foundation operations[4]. Table 3-3 below lists the items that the letter should advise on. An example of this letter is provided in Appendix C, *Footing Foundations*.

Table 3-3. Items to Consider for Letter to Contractor prior to Construction of Foundations.

ITEM	REMINDER/STATEMENT
1	A reminder that the contract specifications[5] gives the Engineer the right to revise, as may be necessary to secure a satisfactory foundation, the footing size and bottom of footing elevations shown on the contract plans.
2	On projects involving seal courses, a reminder that the contract specifications[6] allows the Engineer to revise or eliminate the seal course shown on the contract plans.
3	A statement to the effect that final footing elevations and/or the need for seal courses will be determined by the Engineer at the earliest possible time consistent with the progress of the work, and that the Contractor will be notified, in writing, of the Engineer's decision.
4	Caution the Contractor that work done or materials ordered prior to receiving the Engineer's decision regarding foundations is done at their risk, and that they assume the responsibility for the cost of alterations to such work or materials in the event revisions are required.

[3] Bridge Construction Memo 2-9.0, *Footing and Seal Course Revisions.*
[4] Bridge Construction Memo 2-9.0, *Footing and Seal Course Revisions.*
[5] 2010 SS, Section 51-1.03C(1), *Construction Preparation, General* or 2006 SS, Section 51-1.03, *Depth of Footings.*
[6] 2010 SS, Sections 19-3.04, *Payment*; 51-1.04, *Payment* or 2006 SS, Section 51-1.22, *Measurement.*

3-4 Pile Foundations

3-4.1 Driven Piles

In accordance with the contract specifications[7], driven piles must achieve the required nominal driving resistance and penetrate to the specified tip elevation unless otherwise permitted in writing by the Engineer. Nominal driving resistance is usually determined by the Gates Formula. Additional information regarding this formula can be found in Chapter 7, *Driven Piles,* and in Bridge Construction Memo 130-4.0*, Pile Driving Acceptance Criteria*. The nominal driving resistance for large diameter piles is determined from non-destructive testing such as the pile driving analyzer or static pile load tests. Driven piles that are to be load-tested, need to be driven to the specified tip elevation shown on the contract plans. The nominal driving resistance will be determined from the pile load test. Revisions to specified tip elevations may be required as a result of the values obtained during testing. Procedures for load testing piles are discussed in Chapters 7, *Driven Piles,* and 8, *Static Pile Load Testing and Pile Dynamic Analysis,* of this Manual.

During pile-driving operations, one of the following scenarios will occur:

- The pile will achieve the required nominal driving resistance and specified tip elevation.
- The pile will achieve the required nominal driving resistance but falls short of the specified tip elevation.
- The pile will not achieve the required nominal driving resistance at the specified tip elevation.

As a result of this variability, the Contractor may decide to furnish pilings of a longer length than those shown on the contract plans. Sometimes the Contractor will elect to continue driving the pile beyond the specified tip elevation even though the required nominal driving resistance has been achieved. This is often done to avoid the cost of cutting off the extra length of pile so that the top of the pile is at the specified cutoff elevation. In these situations, the Contractor should be notified in writing that the cost of additional driving and length of pile are at the Contractor's expense.

The Engineer may revise the specified tip elevation as provided in the contract specifications[8], either to allow acceptance of piles that do not reach the specified tip elevation or to require continued driving until the required nominal penetration is achieved. When considering revisions to the specified tip elevation, particular attention must be paid to the information provided about the pile data sheets of the contract plans. These sheets contain information on the design requirements or constraints for the piles and may include design tip elevations for compression, tension, lateral, downdrag,

[7] 2010 SS, Section 49-2.01A(4)(b), *Pile Driving Acceptance Criteria* or 2006 SS, Section 49-1.08, *Pile Driving Acceptance Criteria.*
[8] 2010 SS, Section 49-2.01C(1), *Construction, General* or 2006 SS, Section 49-1.08, *Pile Driving Acceptance Criteria.*

liquefaction, and scour potential, among others. The specified tip elevation is the deepest foundation elevation and is the one that controls the design. Revisions to tip elevations may impact the performance of the pile and need to be discussed with Structure Design and Geotechnical Services. This is particularly important when compression does not control the design.

When driven piling is measured for payment, the measurement and payment method referenced in the contract specifications must be used. Refer to Bridge Construction Memo 130-6.0*, Payment for Piling,* for additional information.

The Engineer should consider using lugs to reduce the additional pile length required when steel "H" piles exhibit a trend that indicate the piles need to penetrate beyond the specified tip elevation in order to achieve the required nominal resistance. Lugs are pieces of steel that are welded to the pile to increase the surface area and provide greater driving resistance. When the Engineer orders lugs, the cost of furnishing and welding steel lugs to piles is paid for as contract change order work, at force account or agreed price. Bridge Construction Memo 130-5.0*, Steel H Pipe Lugs,* describes this process and shows a detail of a pile lug

3-4.2 Cast-In-Drilled-Hole Piles

On projects involving cast-in-drilled-hole (CIDH) concrete piles, the Engineer must notify the Contractor in writing that:

- CIDH piles must penetrate at least to the specified tip elevation shown on the contract plans or as ordered by the Engineer

and

- No additional payment will be made for piles that penetrate below the specified or ordered tip elevation.

Any change ordered by the Engineer must be in writing.

In certain instances, the Contractor has the option to submit a proposal to increase the diameter and revise the tip elevation of CIDH piles. These revisions must be made in accordance with the contract specifications[9]. In this instance, the Contractor is paid the theoretical length of the specified pile to the specified tip elevation. The Engineer should consult with Structure Design and Geotechnical Services before agreeing to this change.

CIDH concrete piles sometimes are constructed in the presence of groundwater using the "wet method." This operation uses drilling slurry to control groundwater and to maintain the stability of the drilled hole. Concrete is placed using a tremie, and visual inspection is not possible. Caltrans uses non-destructive testing for these pile types to verify pile integrity. Chapter 9, *Slurry Displacement Piles,* describes this process and outlines the roles and responsibilities of the Engineer to have the piles tested and to address the repair of any defective material identified by the testing.

[9] 2010 SS, Section 49-3.02C(1), *Construction, General* or 2006 SS, Section 49-4.03, *Drilled Holes.*

3-5 As-Built Drawings and Pile Records

The Engineer is required to monitor the installation of piles during foundation operations that involve driven or CIDH piling and keep accurate records of these activities. Bridge Construction Memo 3-7.0*, CIDH Concrete Piling,* discusses and explains the various forms that are to be completed during these activities. The information recorded on the forms is valuable to Caltrans, as it may be used to help assist in the acceptance of piling that does not reach specified tip elevation/nominal resistance or to provide information for the resolution of construction claims. Geotechnical Services uses the information to refine recommendations for future projects. In addition to the forms, SC Headquarters Office keeps a database of various aspects of CIDH piling that is constructed using the "wet method"[10].

Bridge Construction Memo 9-1.0*, As-Built Plans,* incorporates As-Built plans as a part of the final records and reports. As-Built plans should provide an accurate portrayal of what was constructed. This information is important when changes are made to the structure after original construction is complete. For example, footing overpours need to be shown on the As-Built plans, as they could eventually become a problem during the construction of footing widenings and seismic retrofits. Other problems can arise when existing shoring and utilities that are moved or left in place were not shown on As-Built plans. These issues, among others, have added to the cost of projects involving improvements to existing structures.

3-6 Differing Site Conditions

The concept of a differing site condition is unique to substructure and foundation work. Differing Site Conditions (DSC) can be identified by either party and are defined in the contract specifications[11]. Differing Site Conditions occur when the Contractor or Engineer finds:

- Physical conditions differing materially from the contract documents or a jobsite examination, such as ground conditions differing materially from those shown on the *Log of Test Borings* or *Foundation Report* or the presence of groundwater where none was indicated.

or

- Physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, such as archaeological finds or buried hazardous materials where none were indicated.

[10] Bridge Construction Memo 130-13.0, *CIDH Pile Information Submittal.*
[11] 2010 SS, Section 4-1.06, *Differing Site Conditions* or 2006 SS, Section 5-1.116, *Differing Site Conditions.*

Timely notification about, documentation of, and response to differing site conditions are of critical importance. Consult with the Resident Engineer and the Bridge Construction Engineer immediately upon receipt of a *Notice of Differing Site Condition*.

After investigating conditions at the job site, the Engineer decides whether the Contractor's *Notice of Differing Site Condition* has merit. Should the Engineer find merit, a change order would be negotiated and processed. Should the Engineer find no merit, the Contractor has a timeframe to submit a protest of the decision with a *Notice of Potential Claim*. If the Contractor opts to pursue the issue, the timelines established in the contract specifications[12] must be followed. Section 3-404, "*Differing Site Conditions*" of the *Construction Manual* outlines the procedures to be followed, should the Engineer receive a *Notice of Differing Site Condition* or a *Notice of Potential Claim* regarding a differing site condition.

[12] 2010 SS, Section 5-1.43, *Potential Claims and Disputer Resolution* or 2006 SS, Section 9-1.04, *Notice of Potential Claim.*