CDOT Construction Manual

SECTION 100
GENERAL PROVISIONS

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SECTION 101
GENERAL GUIDELINES

Section 100 presents the general requirements of construction contract administration and includes topics such as the contracting process, the authority of the Department, legal aspects, contract time, and payment for work. The intent and meaning of terms, pronouns, and acronyms that are typically used in Contract documents are found in Section 101. Section 101 also refers to various agencies and organizations whose specifications and construction requirements are referenced in the Contract.

101.1 – 101.100 RESERVED

101.101 SOURCE DOCUMENTS

As needed for clarification and additional information, reference the following documents:

- *CDOT Construction Bulletins*,
- *CDOT Cost Data Book*,
- *Rental Rate Blue Book for Construction Equipment*,
- *CDOT Embankment and Base Manual*,
- *CDOT Erosion Control and Storm Water Quality Guide* and *Pocket Book*,
- *CDOT Field Materials Manual*,
- *CDOT Laboratory Manual of Test Procedures,*
- *CDOT M&S Standard Plans*,
- *CDOT Policy and Procedural Directives*,
- *CDOT Safety Manual*,
- *CDOT* SiteManager® *Users Guide*,
- *CDOT Standard Specifications for Road and Bridge Construction*,
- *CDOT Standard Special Provisions*,
- *CDOT Project Special Provisions*,

- *CDOT Supplemental Specifications*,
- *CDOT Survey Manual*,
- *CDOT Work Zone Safety Book* and *CDOT MUTCD Supplement*, and
- Contract Plans.

If a discrepancy is found in the Contract documents, check subsection 105.04 of the *Standard Specifications* for the order of precedence to use in resolving the discrepancy. Note that updates to *CDOT Standard Specifications* are issued quarterly as *Standard Special Provisions*. Updates to the *CDOT Construction Manual* are published periodically in the *CDOT Construction Bulletins*.

101.102 CDOT INTERNET AND INTRANET WEB SITE

Most CDOT information is maintained in an electronic format on the Department's Internet and Intranet web site. The Department's web site is an invaluable source of information for construction contract administration information. The Department's web site is: http://www.dot.state.co.us/DevelopProjects/designsupport/. Following is a partial list of the electronic information contained on the web site: *Standard Specifications*, *Standard Special Provisions*, *M&S Standards*, *CDOT Construction Manual*, and *CDOT Construction Manual Bulletins*. Contact the Project Development Branch for additional information.

101.103 CDOT ORGANIZATION AND STAFF

101.103.1 Chief Engineer

The assignment of complete responsibility for individual contracts to Project Engineers is at the administrative direction of the Chief Engineer, who is responsible for directing all CDOT activities within the Division of Engineering and Maintenance.

101.103.2 Project Development Branch Manager

Under the direction of the Chief Engineer, the Project Development Branch Manager provides each Region and various Local Agencies with assistance, engineering, and support services for the administration of construction contracts. Responsibilities include, but are not limited to, the following:

- establishing consistent policy and uniform standards for the administration of construction contracts;

- formulating, developing, issuing, and implementing policies, procedures, and specifications to ensure efficient and effective contract administration;

- providing guidance and training to ensure that policies, procedures, and specifications are clearly understood and uniformly applied;

- conducting joint FHWA/CDOT Quality Assurance Reviews for construction projects under the Federal-Oversight Program, compiling findings, and providing and implementing recommendations to improve quality in construction; and

- assisting the Chief Engineer during construction contract claim resolution.

101.103.3 Region Transportation Director

The Region Transportation Directors exercise overall control of their Region and act as the Chief Engineer's representatives in their respective Region. Additional assigned duties include supervision of the Region Business Office, EEO Office, Maintenance Section, Planning and Environmental Section, Traffic and Safety Section, and the Program Engineering Section.

101.103.4 Region Program Engineer

The Region Program Engineer reports directly to the Region Transportation Director and directs the operations of the Region Program Engineering Section. The Region Program Engineer is the highest level of authority with design and construction responsibility within the Region. Assisted by Resident Engineers, the Region Program Engineer administers all construction contracts according to the policies and procedures established by the Project Development Branch. The Region Program Engineer is also responsible for funding decisions within the Region.

101.103.5 Resident Engineer

The Resident Engineers within each Region report directly to the Region Program Engineer. They are charged with the overall administration of projects assigned to the unit (i.e., scoping through construction) and for maintaining a unit capable of efficiently and effectively carrying out the Department's policies and procedures, including continuing and special training programs. Resident Engineers delegate authority to Project Engineers based on their experience and ability.

The Region Program Engineer may authorize Resident Engineers to evaluate, process, and approve change orders, disputes, and claims. In cases that exceed allowable authority, the Resident Engineer must notify the Region Program Engineer of reasonable alternatives and obtain assistance. The Resident Engineer is responsible for apprising the Region Program Engineer on the status of work, any problems that are encountered, decisions that have been made, and any recommendations for improvements in construction practices.

101.103.6 Project Engineer

The complete responsibility for the administration of a CDOT construction contract is assigned to the Project Engineer. The Project Engineer is the direct representative of the Chief Engineer and reports directly to the Resident Engineer. The Project Engineer has immediate charge of the engineering details of the construction project. The Project

Engineer is responsible for the administration and satisfactory completion of the project and is delegated commensurate authority.

Specific responsibilities include: construction of the project in accordance with the plans; enforcement of governing specifications and special provisions; control of inspection; proper documentation; and preparation of change orders. By law, consultant or entity project engineers cannot obligate funds or authorize payment on behalf of CDOT. As the Department's representative, the Project Engineer has frequent personal contacts with the Contractor, property owners, municipal officials, utilities and the traveling public; thus, personal conduct should be a credit to both the individual and CDOT.

The Project Engineer is the first level of authority concerned with unusual circumstances (e.g., non-specification work, work outside the scope of the Contract, disputes, change orders). As practical, problems concerning contract interpretation should be referred to higher levels of authority until the problem is acceptably resolved. Immediate decisions can be made and orders written, as necessary, to expedite construction.

101.103.7 Project Inspector (Materials Tester)

Under the supervision of the Project Engineer, Project Inspectors are authorized to inspect or test all work performed and materials furnished. Such inspections may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. Project Inspectors are not authorized to alter or waive provisions of the Contract or to issue instructions contrary to the Contract.

101.103.8 Staff Bridge Branch

101.103.8.1 Quality Assurance Inspectors (Fabrication Inspectors)

Fabrication Inspectors of the Staff Bridge Branch act on behalf of the Project Engineer and inspect the Contractor’s ability to control quality in fabricated work and materials. The Fabrication Inspectors are authorized to assess and accept or reject the fabricated work, the fabrication plant, and the Contractor’s quality control inspection and testing

personnel. Fabrication Inspectors will contact the Project Engineer regarding work and materials that are out of specified limits. Fabrication Inspectors also provide assistance to field personnel regarding the processing of pre-inspected items, and may be contacted at (303) 757-9192.

101.103.8.2 Bridge Construction Assistance

The Staff Bridge Branch provides assistance regarding structural items to Region personnel. The Staff Bridge Branch processes shop drawings by distributing them to the Project Structural Engineer and returning them to the Project Engineer. In cooperation with Project Structural Engineer, Staff Bridge Branch provides assistance to field personnel on questions regarding design intent, post-tensioning operations, and construction modifications. Structural defects noted during inspection or changes made during construction should be discussed with the Staff Bridge Branch. Contact Staff Bridge Branch at (303) 757-9309 for bridge construction assistance; and Bridge Records at (303) 757-9186 for questions pertaining to shop drawings.

101.104 QUALITY CONTROL/QUALITY ASSURANCE (QC/QA)

For information on the Quality Assurance Program, see the *CDOT Field Materials Manual*.

101.105 FHWA INVOLVEMENT

To ensure compliance with applicable engineering, legal, and administrative requirements in the expenditure of Federal funds, the Federal Highway Administration (FHWA) administers the Federal-Aid Program, which funds eligible highway improvements nationwide. Pursuant to the Transportation Equity Act for the 21st Century, CDOT and FHWA have adopted a Stewardship Agreement that defines FHWA oversight requirements on Federal-Aid projects. The Stewardship Agreement specifically addresses the type, scope, and location of projects requiring Federal oversight. An FHWA Operations Engineer assigned from the FHWA Colorado Division

Office will be the primary point of contact. The FHWA Operations Engineer typically will be involved in joint FHWA/CDOT Quality Assurance Reviews and the processing of claims and contract modification orders, as defined in the Stewardship Agreement.

101.106 AASHTO SITEMANAGER® OVERVIEW AND WORKFLOW

It is necessary to use SiteManager® to process the interim estimates. To pay the estimate, all change orders and Form 205 – Sublet Permit Application must be entered before the estimate can be run.

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SECTION 102
BIDDING REQUIREMENTS AND CONDITIONS

Section 102 of the *Standard Specifications* governs the requirements and conditions under which bids may be accepted from contractors. The Contracts and Market Analysis Branch administers the provisions of Section 102 and may be contacted for assistance with bidding rules and requirements.

102.1 PREQUALIFICATION OF BIDDERS

In the interest of improving the quality of contracting, a Project Engineer who experiences performance problems with the Contractor or a subcontractor will document and report the situation to the Resident Engineer. The Resident Engineer will review the documentation, investigate the matter, and submit a report to the Region Program Engineer. The Region Program Engineer will review the information, investigate the matter, and submit a report to the Contracts and Market Analysis Branch Manager. The information will become a permanent part of the company's file and will be considered during subsequent project awards, prequalification renewals, and subcontract approvals. Performance evaluation forms are available upon request from the Contracts and Market Analysis Branch.

102.2 – 102.4 RESERVED

102.5 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK

102.5.1 Pre-Bid Conference

When CDOT specifies a mandatory Pre-Bid Conference, the time and location of the Conference will appear in the Notice to Bidders. In such cases, bids will only be accepted from prequalified bidders that attended the Pre-Bid Conference.

102.5.2 Project Showings

It is the responsibility of each prospective bidder to carefully examine the site of the proposed work and to schedule an on-site project showing. To schedule a project showing, prospective bidders should contact the Engineer whose name appears in the Notice to Bidders.

To ensure competitive bidding, the Project Engineer should provide all bidders with an equal opportunity to view the proposed construction site and conduct each of the project showings in a similar manner. It is important to provide each prospective bidder with identical information. This helps to avoid favoring one company over the other. It is preferable that the same Project Engineer conduct each of the project showings; however, if this is not practical, ensure that identical information is communicated to each attendee.

Bidders sometimes ask questions requiring the interpretation of contractual documents. In such cases, the Project Engineer should inform the bidder to bid on the job as the documents are written. Do not provide statements regarding intention or potential changes. If revisions to plans, specifications, or other contractual documents have been published and distributed, apprise each of the prospective bidders during the project showing. If a Project Engineer volunteers information to one bidder, ensure that the identical information is made available to the other prospective bidders, with a caveat stating that it is the bidder's responsibility to verify the information. Project showings must be documented in the project diary (see Section 120).

102.6 RESERVED

102.7 IRREGULAR PROPOSALS

If the Project Engineer discovers an irregularity in the Contract (e.g., a unit bid price that appears to be materially unbalanced to the detriment of the Department), the Project Engineer should contact the Contracts and Market Analysis Branch Manager at (303) 757-9592.

SECTION 103
AWARD AND EXECUTION OF CONTRACT

The procedures for determining the successful bidder and entering into the Contract are governed by Section 103 of the *Standard Specifications*. The Contracts and Market Analysis Branch administers the requirements of Section 103.

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SECTION 104
SCOPE OF WORK

Section 104 of the *Standard Specifications* governs the work under the Contract and specifies procedures for revising the scope of work, if necessary. A revision to the scope of work requires the proper execution of a change order. The Contractor cannot be required to do work beyond the original project limits, unless the Contractor has agreed to complete the work and a project extension change order has been executed. Pre-approval for project extension change orders must be received from the Project Development Branch Manager and the Chief Engineer before work is begun. See Section 120.7 for additional information on preparing and processing change orders.

104.1 INTENT OF CONTRACT

The intent of the Contract is to provide for the construction and completion of the work described.

104.2 DIFFERING SITE CONDITIONS, SUSPENSIONS OF WORK, AND SIGNIFICANT CHANGES IN THE CHARACTER OF WORK

Issues relating to differing site conditions, suspension of work, and significant changes in the character of work are usually complex and frequently result in Contractor claims for additional time and compensation. A change order is required to authorize an adjustment in cost or extension of contract time resulting from the impact of these issues. The expertise of engineering and legal staff outside the office of the Resident Engineer may be useful in assessing the situation. Contact the Area Engineer for additional guidance. See Section 120.7 for additional information on preparing and processing change orders.

104.3 EXTRA WORK

If extra work for which there is no price included in the Contract is necessary or desirable for Contract completion, the Project Engineer may order the extra work to be performed by the Contractor. Extra work must be authorized by a change order and paid for as provided under subsection 109.04 of the *Standard Specifications*. See Section 109.4 of this *Manual* for additional information.

104.4 MAINTAINING TRAFFIC

Subsection 104.04 of the *Standard Specifications* defines the responsibilities for maintaining traffic throughout the project, including items such as detours, access points, and snow removal. The provisions of subsection 104.04 are a day-to-day responsibility of both CDOT and Contractor personnel and will be emphasized during the Preconstruction Conference.

The Contractor must make every reasonable and practical effort to maintain safety and minimize the inconvenience to the traveling public. Project Engineers and Project Inspectors should continually monitor the condition of the traveled way and ensure that the Contractor properly places and maintains traffic control devices in compliance with specified requirements. Regardless of who is responsible for the cost or repair of maintenance, both CDOT and Contractor personnel must ensure that all dangerous situations are immediately corrected or reported to the Project Engineer or Contractor for correction. See Section 630 of this *Manual* for additional information on construction zone traffic control.

The Contractor is responsible for the maintenance and repair of all Contract items. Subsection 107.17 of the *Standard Specifications* permits the Project Engineer to relieve the Contractor of expenses for damage to certain portions of the work caused by traffic or the elements. See Section 107.17 of this *Manual* for additional information.

104.5 – 104.6 RESERVED

104.7 VALUE ENGINEERING CHANGE PROPOSALS BY THE CONTRACTOR

Contractors are encouraged to submit Value Engineering Change Proposals to the Department for evaluation. Submittal requirements are defined in subsection 104.07 of the *Standard Specifications*. The Project Engineer, working in partnership with the Contractor, is responsible for assessing the merits and cost savings of the proposal. Consider the following:

1. Evaluation of Proposals. The Project Engineer will review and accept or reject each Value Engineering Change Proposal submitted by the Contractor. The Project Engineer will contact the appropriate CDOT and FHWA experts and thoroughly discuss the potential merits, cost savings and original design intent before accepting or rejecting the proposal. The Area Engineer may be contacted for evaluation guidance and to determine which parties should be involved in the review process.

2. Evaluation of Costs. Evaluation of costs, including time, should be performed as specified for change orders. The Project Engineer must be comfortable with the cost and shared risk. The cost of each individual item in the proposed change and the cost of the total proposal should also be reasonable. The Project Engineer and the Contractor should be certain that the estimated quantities are reasonably close to what will be required to complete the items. The Contractor shall provide additional information if costs or quantities are questionable.

3. Additional Evaluation Resources. The Project Engineer may hire a private consultant to assist in the evaluation. A consultant may also be employed as a subcontractor to the Contractor. However, if the latter method is used, the consultant must be an Engineer registered in the State of Colorado, who is independent from the Engineer employed by the Contractor to formulate the proposal. The cost of the consultant evaluation should be deducted from the total savings of the proposal prior to calculating shared savings.

After the terms of the proposal are agreed upon, the Project Engineer will process the proposal using Form 90 – Contract Modification Order. See Appendix C for an example. It is preferable that the final cost be agreed upon before implementation; however,

based on the estimated value of the change, the Project Engineer and the Contractor may agree to a flexible method of determining the final cost share. Such agreements must be documented in detail on Form 90.

SECTION 105
CONTROL OF WORK

The authority, rights, and duties of CDOT and the Contractor are specified in Section 105 of the *Standard Specifications*. Pay particular attention to the requirements of *Standard Special Provisions* that pertain to Quality Control/Quality Assurance and roadway smoothness.

105.1 AUTHORITY OF THE ENGINEER

The Engineer will decide all questions regarding the quality and acceptability of work, material, and rate of progress; all interpretations of the Contract documents; and the acceptable fulfillment of the Contract.

105.1.1 Quality in Construction

During any given fiscal year, funds available to CDOT are generally insufficient to cover all needed road and bridge improvements within the State. It is essential that construction quality continually be improved on CDOT projects. Improvement in the quality of construction will:

- extend the useful life of Colorado's roads and bridges;
- allow more efficient and effective use of available funding;
- increase the opportunity to secure additional funding;
- increase the traveling public's satisfaction; and
- increase the satisfaction of project personnel for a job well done.

105.1.1.1 CDOT Commitment

CDOT staff, management, and administration are committed to quality in construction and will provide advice and support upon request. Region and project personnel are encouraged to contact CDOT Headquarters staff for advice and assistance, especially if quality problems are encountered or perceived. In general, CDOT supports field decisions that improve construction quality. CDOT and the FHWA periodically sponsor quality improvement seminars and will continue to lead quality improvement and quality management activities.

105.1.1.2 Local Support

The Colorado Contractors Association, Colorado Asphalt Paving Association, Colorado/ Wyoming Chapter of the American Concrete Paving Association, as well as other industry groups and individual contractors, support the continual improvement of quality in construction.

105.1.2 Partnering

105.1.2.1 Benefits of Partnering

Partnering is a process that will establish a productive working relationship among all stakeholders on the construction project through a mutually developed strategy of commitment and communication. Partnering uses teambuilding to create a cooperative and trustful environment that reduces disputes, fosters a cooperative relationship, produces a high-quality product, and expedites completion of the project. In some cases, CDOT requires formal partnering on projects through the use of a Special Provision. Partnering, whether formal or informal, has many benefits that will help to improve quality in construction. Consider the following:

1. Cooperation. CDOT and Contractor personnel must establish and maintain a cooperative working environment to ensure quality in construction. Partnering helps create the mutual respect and trust necessary to achieve this goal.

2. Communication. Partnering workshop meetings foster ongoing communications between team members to promote quality improvements and to provide for the efficient and effective resolution of disputes and problems encountered by field personnel at the lowest possible level (e.g., Project Inspectors, Foremen).

3. Quality Dispute Resolution Program. Many formal partnering charters include a Quality Dispute Resolution Program. Project Engineers and Contractor Superintendents should establish such a program on each project, whether or not a Special Provision on formal partnering is included in the Contract.

4. Specified Requirements. Specified requirements will not be relaxed or waived in the "spirit of partnering." Such practice is not partnering. The spirit of partnering fosters development of mutually beneficial solutions to issues encountered on the project. If a specified requirement is questionable or the Contractor proposes an apparent improvement, the Project Engineer should discuss the matter with appropriate Region or CDOT Headquarters personnel.

105.1.2.2 Partnering Process

CDOT and Contractor personnel should partner on each construction project, whether or not a Special Provision on formal partnering is included in the Contract. Consider the following when establishing a partnering relationship:

- Each partner can best contribute to project success by starting with realistic and positive expectations.

- All partners must be committed to success. Quality in construction must be a mutual goal.

- Establish open communication among team members. Open communication ensures the understanding of mutual goals and risks, fosters trust among team members, and builds an effective team.

- Each party should communicate and work together to develop a process for the rapid and mutually beneficial resolution of problems and issues.

- Timely decision-making saves money and helps to resolve issues before they become disputes.

- Planning and coordination should be ongoing among all parties involved in the construction project.

- All parties should work together to establish mutual goals and carry out a plan to achieve a successful completion of a quality product.

- The parties should constantly evaluate the construction process to ensure that the plan is going as intended, all parties are carrying their share of the load, and the highest possible quality is being achieved.

- All partners must be committed and have a positive attitude in working toward a mutual goal, which is to successfully complete a quality project.

105.2 PLANS, SHOP DRAWINGS, WORKING DRAWINGS AND CONSTRUCTION DRAWINGS

Shop drawings are submitted to the Project Engineer for formal review and returned to the Contractor for action. Working drawings are submitted to the Project Engineer for information only and are not formally reviewed or returned to the Contractor. The *Standard Special Provision, Revision of Section 105 – Contractor Submittals* defines which items require shop drawings and working drawings. Review all Contract Plans and Specifications with respect to Contractor submittal requirements.

105.2.1 Working Drawing Review

Unless otherwise specified, the Contractor shall submit two sets of working drawings to the Project Engineer. The working drawings are for information only and are not formally

reviewed and returned to the Contractor. The Project Engineer may review the drawings for conformity to Contract requirements, but inspection and acceptance of the work will be based on the Contract requirements. For archival purposes, the Project Engineer will forward one set of working drawings to Bridge Records, in care of Staff Bridge Branch, for the following structural items:

- expansion devices (0 inch to 4 inch),
- precast panel deck forms,
- permanent steel bridge deck forms, and
- bridge railing.

105.2.2 Falsework Certification

The Contractor's Professional Engineer shall determine when falsework drawings are required.

In accordance with subsection 601.02 of the *Standard Specifications*, the Contractor's Engineer will provide the required certifications before the placement of any concrete that will be supported by falsework.

See Section 601.2 of this *Manual* for additional information on falsework.

105.2.3 Shop Drawing Review Process

The Project Engineer will use the services of the Staff Bridge Branch to process shop drawings. The shop drawing submittal usually goes through the following steps:

1. Unless otherwise specified, the Contractor shall submit seven sets of shop drawings to the Project Engineer. One additional set shall be submitted for each railroad company, if applicable. The submittals shall be stamped "Approved for Construction" and signed by the Contractor. Subcontractors and suppliers shall submit shop drawings to the Contractor who shall approve the drawings for construction, which then shall be submitted to the Project Engineer.

2. The Project Engineer will retain one set for informational purposes and transmit all other sets to Bridge Records of the Staff Bridge Branch. The Project Engineer will discard the retained set when the reviewed shop drawings are returned. The Project Engineer and Bridge Records will document the time the shop drawings are received.

3. Bridge Records will send the drawings to the appropriate CDOT or consultant Project Structural Engineer for review.

4. The Project Structural Engineer will review and mark the shop drawings "Reviewed," "Reviewed as Noted," or "Resubmit," as appropriate. The Project Structural Engineer will retain one set and return the remaining sets to Bridge Records.

5. Bridge Records will retain two sets (one set for Bridge Records and one set for the Fabrication Inspectors). Bridge Records then will return the remaining sets to the Project Engineer.

6. The Project Engineer will retain one set of reviewed shop drawings for the project records and distribute two sets to the Contractor (one set for the supplier) and one set to each railroad company, as applicable.

If marked "Resubmit," the Contractor/supplier will make the appropriate corrections, and the above procedures will be repeated upon receipt of the corrected drawings.

105.2.4 Construction Drawings

The Contractor shall retain one set of plans, reviewed shop drawings, working drawings, and other submittals and mark on this set all changes and deviations as the work progresses. Upon completion of the work, these drawings shall be submitted to the Project Engineer for use in preparing As-Constructed Plans (see Section 121.2.3).

105.3 CONFORMITY WITH PLANS AND SPECIFICATIONS

Subsection 105.03 of the *Standard Specifications* requires the Contractor to perform work in conformity with the various Contract provisions. Although criteria for determining acceptability of the work is defined, good engineering judgment must be used to determine conformity with the intent of the Contract.

105.3.1 Use of Price Reductions

The Contractor is required to furnish materials and workmanship that conform to the requirements of the Contract. However, there are rare, brief, and accidental instances during the project where the Contractor could produce material or work that is slightly out of tolerance. In such cases, price reductions will be used.

Price reductions are not to be used as a general method of continually accepting nonconforming items on the project, nor are they to be used for items under the provisions of the Quality Control/Quality Assurance Specifications (see Section 105.3.2). Where nonconformance is detected, the Project Engineer will immediately require the Contractor to bring the item back into conformance. If the Contractor does not comply, the Project Engineer will issue a written stop work order for the item until the problem is satisfactorily corrected.

105.3.2 Price Reductions for Nonconforming Materials

Although materials will be sampled and tested in accordance with the schedules and procedures presented in the *CDOT Field Materials Manual*, CDOT has the right to test materials at any time during the project. Any material that appears suspect during the course of the work should be immediately sampled and tested, regardless of specified sampling schedules, and treated as a one sample lot.

105.3.3 Price Reductions for Nonconforming Work

Nonconforming work is work that does not conform to the requirements of the Contract. The Department classifies nonconforming work as follows:

- nonconforming work that is reasonably acceptable, and
- nonconforming work that is unacceptable.

The final determination of how to classify nonconforming work, as defined in the *Standard Specifications*, is the responsibility of the Project Engineer. See Section 105.3.3.1 and Section 105.3.3.2 of this *Manual*, respectively, for the processing procedures for reasonably acceptable and unacceptable work.

105.3.3.1 Reasonably Acceptable Work

Reasonably acceptable work is work that does not conform to the Contract but is reasonably acceptable and may remain in place, as assessed by the Project Engineer.

There are two processing procedures to consider, depending on whether the work item has an associated “F” factor. See Section 105.3.3.1.1 for processing guidance on Contract items without an “F” factor and Section 105.3.3.1.2 for guidance on items with an “F” factor.

105.3.3.1.1 Contract Items without “F” Factors

For Contract items that do not have an element listed in the Table of Price Reduction Factors in the *Standard Specifications* or *Special Provisions*, the price reduction should be based on engineering judgment. Such reductions must be documented by a change order. When assessing a fair and equitable price reduction for accepting nonconforming work of this type, the impacts on the item’s service life and future maintenance costs must be considered. The Project Engineer should contact the Region Materials Engineer and, as needed, the Materials and Geotechnical Branch for assistance with this determination.

105.3.3.1.2 Contract Items with "F" Factors

For Contract items that have an element listed in the Table of Price Reduction Factors in the *Standard Specifications* or *Standard Special Provisions*, determine the price reduction based on the equation and methodology provided in the Contract. The equation is based on statistical sampling and testing data. The procedures for establishing sampling lots and performing random sampling and testing are presented in the *CDOT Field Materials Manual*. These procedures must be followed. Use the following guidelines when determining price reductions for Contract items with "F" factors:

1. Sampling and Testing Errors. Results from erroneous samples and tests will not be used. The reason for voiding samples and tests will be noted on Form 626 – Field Lab Test Results, which must be signed by the Project Materials Tester.

2. Calculations. Calculations will be performed using the current version of the computer price reduction program available from the Pavement Management and Design Program of the Materials and Geotechnical Branch. Input data should be carefully checked to ensure accuracy before running the program.

3. Outliers. Certain test results may be statistical outliers. An outlier does not imply an incorrect result, rather a result that is not acceptable for use in determining price reductions (i.e., outside statistical limits). Outliers should be promptly investigated for errors and the material retested if an error is discovered. The new result, if found statistically acceptable, should be used in determining the price reduction.

4. Total "P" Value. Use the total "P" value to assess the work as follows, where "P" is the price reduction percentage factor:

    a. Total "P" Value < 3. If the total "P" value is less than 3, accept the material represented at the full Contract price.

b. 3 ≤ Total "P" Value ≤ 25. If the total "P" value is between 3 and 25, inclusive, require approved corrective work or apply the calculated price reduction to the quantity represented by the lot.

c. Total "P" Value > 25. If the total "P" value is greater than 25, consider the following two alternatives:

i. Require complete removal and replacement of the work represented by the lot or require corrective action to bring the work into conformity.

ii. A less-desirable alternative is to allow the work to remain in place and use a price adjustment based on engineering judgment. This action must be documented by a change order. If the item has no "F" factor, the justification for the price adjustment should be treated as discussed in Section 105.3.3.1.1 of this *Manual*. Such adjustments should be no less than a calculated price reduction with a "P" value of 25.

105.3.3.2 Unacceptable Work

Unacceptable work is work that is not in conformance with Contract requirements and of such poor quality that the final product is totally unacceptable. The Project Engineer will require the unacceptable item to be removed, replaced, or otherwise corrected to bring the item into conformance. Such activities by the Contractor will be at no additional cost to the Department.

105.3.4 Quality Control/Quality Assurance (QC/QA) Specifications

105.3.4.1 Cooperation and Communication

Communication between project personnel is essential to implementing QC/QA specifications and resolving project issues. The Project Engineer, the Contractor's Superintendent and Process Control Supervisor, as well as other project personnel,

generally achieve this goal by attending formal or informal weekly meetings. Note that some Regions mandate weekly meetings to coordinate schedules and address material quality and traffic control issues.

105.3.4.2 Quality Level

Contract items that are governed by QC/QA specifications require random sampling and testing during the prosecution of the work. Results of such tests are statistically analyzed to determine Quality Level (i.e., the percentage of work projected to be within specified requirements). Depending on the Quality Level, a factor will be assigned to adjust payment for the work as discussed in Section 105.3.4.3.

105.3.4.3 Incentive/Disincentive Payments

QC/QA specifications define an incentive for the Contractor to provide a high-quality Contract item and a disincentive for producing a product with lesser quality. A pay factor, based on Quality Level, is used to adjust payment. See Section 105.3.4.2 for information on Quality Level. Pay factors can be categorized as follows:

1. Pay Factor ≥ 1.0000. A pay factor greater than or equal to 1.0000 will be used for work and materials with a Quality Level of a high-quality product (i.e., the better the quality, the greater the payment above the unit bid price).

2. Pay Factor < 1.0000. A pay factor less than 1.0000 will be used for work and materials with a Quality Level representing a lesser quality product (i.e., the poorer the quality, the greater the reduction in pay below the unit bid price).

Incentive payments compensate the Contractor for maintaining good quality control that will produce high-quality material. High-quality materials will increase the performance and service life of the final product. The Contractor must maintain a consistent quality to earn incentive payments. Disincentive payments are applied when the Contractor has poor quality control that will produce an inferior product.

105.3.4.4 Acceptance Sampling

To ensure statistical accuracy, acceptance samples for QC/QA specifications must be obtained through a stratified random sampling procedure. The random samples will be used to statistically analyze the acceptance of the work. The following example illustrates the stratified random sampling procedure:

1. Given: Testing Frequency. The testing frequency in this example is one test for every 500 tons. Therefore, a random sample will be taken from every 500 tons.

2. Select Random Location. To determine the exact location for the density test, randomly select both a longitudinal station and a transverse offset.

3. Obtain Sample. Perform the density test at the exact location of the randomly selected longitudinal station and transverse offset.

Although acceptance sampling is performed to meet QC/QA specifications, additional sampling and testing may be performed at the discretion of the Project Engineer, such as where a material appears obviously deficient. Such samples and tests are not random and, therefore, must not be incorporated in the QC/QA statistical analysis. Consider the following examples for a project that includes a QC/QA specification for hot bituminous pavement:

1. Example 1 – Segregation. Quality Assurance tests for aggregate gradation are being taken from the cold feed at the plant. The test results are within specified requirements; however, the Project Engineer notices an obviously segregated area behind the paver screed and immediately requests the Contractor to stop the paver, remove the segregated area, and replace the deficient material with non-segregated hot bituminous pavement. If the Project Engineer and the Contractor disagree on the material being segregated, the Project Engineer will have the material sampled and tested in accordance with the specifications. The Project Engineer will not allow the Contractor to place segregated material.

2. Example 2 – Asphalt Content. Quality Assurance tests for asphalt content are being performed at the plant, and the test results are within specified limits. The

Project Engineer suspects that a truckload of hot bituminous pavement contains too much asphalt cement. The Project Engineer immediately requests the Contractor to obtain a sample of the hot bituminous paving material. If the test results are outside specified limits and the Project Engineer determines that the material is unacceptable, the Contractor must remove and replace the material at no cost to the project.

CDOT may sample materials at any time and location, especially if the Project Engineer suspects that there is an obvious defect. The material represented by that sample will be accepted or rejected based on the test results of the sample. Samples that are not randomly selected will be individually tested, and the test results and the quantity they represent will not be included in the QC/QA statistical analysis.

105.4 COORDINATION OF PLANS, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS

Subsection 105.04 of the *Standard Specifications* states that the Contract Plans, *Standard Specifications*, *Supplemental Specifications*, and *Special Provisions* are essential parts of the Contract and are intended to be complimentary. If a discrepancy is found in these documents, the discrepancy should be resolved based on the order of preference presented in subsection 105.04 of the *Standard Specifications*.

105.5 COOPERATION BY CONTRACTOR

The Contractor is required to have a competent Superintendent, authorized to act on behalf of the Contractor, who will be on the project at all times. The Contractor Superintendent must be on the project when subcontractors are working, even if the Contractor is not performing work with its own forces. A Superintendent who is not competent should be removed from the project. The Superintendent is responsible for all subcontractors and suppliers and must schedule and control their respective operations.

105.6 COOPERATION WITH UTILITIES

CDOT will attempt to have all utility adjustments coordinated as soon as practical, and the Contractor is expected to cooperate fully with the affected companies. No additional compensation will be allowed by the Department for any delay or damage to, associated with, or caused by utility appurtenances or adjustments that are shown in the Contract.

The Contractor must consider all delays noted in the Contract when submitting the bid. If the utility installation takes longer than anticipated, it may qualify as a changed condition under subsection 104.02 of the *Standard Specifications*. Unforeseen utilities or unplanned relocations should also be handled as a changed condition. If such a situation develops, it is imperative that good records be maintained. The project records must document the events leading to the situation and the effect of the delay on the Contractor's operations. Nonetheless, the Project Engineer should encourage the utility company to expedite its work and coordinate with the Contractor to minimize the impact on the overall project schedule.

105.7 COOPERATION BETWEEN CONTRACTORS

Subsection 105.07 of the *Standard Specifications* requires the Contractor to prosecute the work required by the Contract without interfering with other contractors.

105.8 CONSTRUCTION STAKES, LINES, AND GRADES

Subsection 105.08 of the *Standard Specifications* prohibits the Contractor from beginning construction work until adequate lines and grades have been established. A Pre-Survey Conference will be held before the survey is performed (see Section 120.13.6). If the survey work is subcontracted, the subcontractor must first be approved using Form 205 – Sublet Permit Application. Before construction, the Project Engineer should ensure that the construction stakes have been located in accordance with Section 625 of the *Standard Specifications*.

105.9 AUTHORITY AND DUTIES OF THE PROJECT ENGINEER

105.9.1 Authority of Project Engineers

The Project Engineer has immediate charge of the administrative and engineering details of the Contract, and has the authority to exercise all duties and responsibilities of the Engineer, as referenced in the Contract, except those specifically retained by the Chief Engineer. The Project Engineer, as the Chief Engineer's representative, is authorized to sign change orders and is responsible for decisions on Contractor claims for additional compensation and extension of contract time that are filed pursuant to subsection 105.17 of the *Standard Specifications*. Note that consultant or entity project engineers, by law, cannot obligate funds or authorize payments on CDOT Contracts.

105.9.2 Commitment to Quality

Quality in construction is a statewide goal that should be uniformly sought during the administration of all CDOT Contracts. The Project Engineer must not allow the Contractor to furnish nonconforming material or workmanship (see Section 105.3). The Project Engineer is responsible for ensuring that CDOT receives a quality product. All CDOT personnel are committed to improving construction quality and support the Project Engineer's decisions.

105.9.3 Problem Resolution

The Project Engineer should attempt to resolve quality concerns with the Contractor Superintendent. If the concern is not resolved, the Project Engineer should discuss the concern with the Resident Engineer and consider suspending work on the affected item. Additional guidance may be obtained from the Region Materials Engineer, Region Program Engineer, Materials and Geotechnical Branch, and Area Engineer. Address

problems immediately. Do not wait until a substantial portion of the item is completed before resolving the problem or seeking advice. If work is suspended, do not permit work to resume until the problem has been corrected.

105.9.4 Quality of Workmanship

The Project Engineer must continually assess the quality of workmanship. The traveling public perceives quality primarily in terms of roadway durability, rideability, and appearance. It is therefore essential that the Project Engineer assertively and effectively partners with the Contractor and administers the Contract to encourage overall quality improvements.

The following example illustrates the impact of poor workmanship: The Contractor used high-quality, high-performance hot bituminous pavement material and excellent laydown and compaction procedures. In addition, the Contractor was extremely quality conscious and received the maximum incentive payment under the *QC/QA Hot Bituminous Pavement Specification*. However, the Region received several complaints from the public regarding crooked pavement markings, spilled pavement marking paint, splashed asphalt emulsion on curbs and median barriers, and unsightly and uneven guardrail. In addition, complaints were received regarding a rough riding surface. Upon investigation, the Contractor had apparently dumped shouldering material on the surface and bladed it off with a grader. The grader had damaged the new pavement surface and created a dangerously low shoulder. Although material and density met specified requirements, the overall quality of workmanship with respect to appearance and rideability was highly unacceptable.

105.9.5 Assessing Acceptability of Work

In assessing quality and acceptability, consider the following questions during construction:

- Will CDOT customers (i.e., Colorado taxpayers, traveling public) be satisfied?
- Would I accept this work if I owned the facility?
- Would I pay for this work out of my own pocket?

If any of these questions have a negative response, the Project Engineer should immediately resolve the problem as discussed in Section 105.9.3.

105.10 DUTIES OF THE PROJECT INSPECTOR

CDOT Project Inspectors are authorized to inspect all work and materials furnished by the Contractor. Such inspections may extend to all or any part of the work and to the preparation, fabrication, and manufacture of materials to be incorporated in the work. Project Inspectors are not authorized to alter, waive, or issue instructions contrary to the provisions of the Contract nor act on behalf of the Contractor, such as a foreman.

105.11 INSPECTION AND TESTING OF WORK

The Project Engineer is the direct representative of the Chief Engineer in all matters related to the Contract. Project Inspectors and Material Testers are directly responsible to the Project Engineer.

Project Inspectors and Material Testers should consider the following:

1. Safety Considerations. Review the *CDOT Safety Manual* and the Contractor's Safety Policy to ensure that all inspection activities will be in compliance. Do not take unreasonable risks when performing your duties. Report any unsafe practices immediately to the Project Engineer.

2. Authority and Responsibilities. Discuss your authority and responsibility with the Project Engineer who has day-to-day project responsibility. Know your responsibilities and authority before construction begins.

3. Contract Documents. Become thoroughly familiar with the Contract documents (e.g., Contract Plans, *Standard Specifications*, *Special Provisions*). Become familiar with available reference materials and understand their applicability.

4. Sampling and Testing. Review sampling and testing requirements and the certifications that must accompany materials upon delivery. See the *CDOT Field Materials Manual* for additional information.

5. Documentation. Review the format and required content for pay documentation, CDOT forms, and daily inspection diaries.

6. Maintenance of Traffic. Where traffic is maintained during construction, review the approved Method of Handling Traffic and the required type, number, and arrangement of traffic control devices.

7. Changes. Advise the Project Engineer of any changes, corrections, delays, rejections, or deviations from the Contract Plans and Specifications.

105.12 REMOVAL OF UNACCEPTABLE WORK AND UNAUTHORIZED WORK

Work that does not conform to specified requirements will be removed and replaced in an acceptable manner at the Contractor's expense. The project records will contain written documentation of the reason for the removal and replacement.

105.13 LOAD RESTRICTIONS

During construction, the Contractor’s haul trucks and construction equipment must conform to the load restrictions and vehicle dimensions shown in Appendix D and http://www.dot.state.co.us/TruckPermits/. These restrictions apply to all Colorado public roads and bridges. Project personnel must continually monitor compliance with subsection 105.13 of the *Standard Specifications*. In general, project personnel must not allow overweight construction vehicles to traverse Colorado roads and bridges. Overweight vehicles shall not be permitted on newly constructed bridges or pavement or on other pavement or existing elements of the project that will not be removed and replaced. Weight limits apply to bridges and pavements as soon as they are constructed. Occasionally, however, the Contractor will need to move extremely heavy

equipment, such as a large crane, across a bridge or culvert. In such cases, contact the Staff Bridge Branch for guidance before the equipment is moved.

105.14 MAINTENANCE DURING CONSTRUCTION

Subsection 105.14 of the *Standard Specifications* governs the Contractor's responsibilities for maintenance during construction, which must be continuous and effective. The Contractor will be held responsible for the maintenance and repair of all Contract items, except as noted in Section 107.17. CDOT project personnel should monitor and require correction of any condition that threatens or inconveniences the traveling public (see Section 104.4).

105.15 FAILURE TO MAINTAIN ROADWAY OR STRUCTURE

If the Project Engineer notifies the Contractor of a maintenance problem and the Contractor does not take action, this subsection allows the Project Engineer to have the problem fixed and deducted from the money due the Contractor. See Section 107.17 of this *Manual* for additional information.

105.16 ACCEPTANCE

105.16.1 Partial Acceptance

The partial acceptance of a specific phase will be allowed if included in the original Contract. Partial acceptance for other occurrences must be in accordance with 105.16, 107.16 and 107.17 of the *Standard Specifications*. Refer to the *Project Special Provisions* when the project includes a landscape maintenance period.

105.16.2 Final Acceptance

The Project Engineer will perform a final inspection, and the Contractor shall correct any unacceptable work before written final acceptance from CDOT is issued. See Section 120.3.2 for guidance on preparing the Final Acceptance Letter.

105.17 DISPUTES AND CLAIMS FOR CONTRACT ADJUSTMENTS

105.17.1 General

The Project Engineer is responsible for processing disputes and claims for Contract adjustments in accordance with subsection 105.17 of the *Standard Specifications* and *Standard Special Provision, Revision of Section 105 – Disputes and Claims for Contract Adjustments*. Contract adjustments and claim settlements will be:

- based on Contract documents and factual information;
- objective and impartial (i.e., unaffected by individual personalities); and
- fair and reasonable.

105.17.1.1 Claims Evaluations

Adjustments or settlements must be based on the Contract documents and factual information. Doing otherwise encourages frivolous claims that are not in the best interest of the Department. All CDOT project personnel must maintain accurate and timely records throughout the project.

105.17.1.2 Claim Status Report

The Project Development Branch is responsible for preparing and forwarding a quarterly Claims Status Report to the Chief Engineer. Therefore, it is essential that Project Engineers monitor the status of each claim on their respective projects. To assist with this task, Project Engineers should use the Claim Status Report Form (see Appendix B), which is available in electronic format from the Project Development Branch. The Claim Status Report Form presents a list of key events that are common to processing claims.

Each time an event occurs, the Project Engineer is required to update the Form and submit a copy to the Area Engineer. Contact the Area Engineer for further assistance.

105.17.1.3 FHWA Involvement

Title 23 Code of Federal Regulations 635.124 defines the extent to which Federal-Aid highway funds may be used to participate in awards and settlements of construction contract claims brought by contractors against state highway agencies. The Project Engineer will provide the FHWA Operations Engineer with written notification upon receipt of the formal notification of intent to file a claim from the Contractor. The written notification shall be followed up with copies of all claims information. This notification will be provided for all claims meeting the following requirements:

- all claims exceeding $250,000 on Federal-Aid projects; and
- all claims on Federal-Aid oversight projects.

Upon notification, the FHWA Operations Engineer will determine the appropriate level of FHWA involvement. Note that it is not necessary to involve the FHWA Operations Engineer on State-funded projects where there is no FHWA involvement.

105.17.2 Claim Processing Procedures

105.17.2.1 Claim Notification

All claims filed by the Contractor must be based on the requirements of the Contract documents (e.g., Contract Plans, *Standard Specifications*, *Special Provisions*). Upon discovery of facts leading to a potential claim, the Contractor must provide the Project Engineer with immediate written notice of the intent to file a claim. Upon receipt of this notice, the Project Engineer should perform the following:

1. Acknowledge Receipt. Upon notification, the Engineer should respond with a letter that includes the following sample language. “I am in receipt of your notice

of intent to file claim in regard to_____. I will issue my decision upon receipt of your complete claim package, including the claim certification form, in accordance with subsection 105.17 of the Standard Special Provisions."

2. Contract Specifications. Review the requirements of subsection 105.17 of the *Standard Specifications* and *Standard Special Provisions*. Pay particular attention to specified time requirements.

3. Seek Guidance. Upon notification of a dispute or claim, the Project Engineer will seek advice and concurrence from the Resident Engineer and the Region Program Engineer. In addition, the Project Engineer will contact and discuss each claim with the Area Engineer before rendering a decision.

4. Gather Supplemental Data. Document all pertinent details as soon as practical after receiving notification, and immediately implement procedures to completely and accurately document the disputed work. Such records include:

   a. Force Account Records. Force account records of the disputed work must be on Form 10 – Inspector's Report for Force Account Work. It is recommended that the Contractor's representative initial each day's Form 10. If the Contractor is unwilling to initial the Form 10, the Contractor shall prepare his own Form 10 before commencing work on the next day. The Project Engineer should attempt to resolve the differences after receipt of the Contractor's Form 10. Ensure that each Form 10 is annotated "For Information Only" so that it is clear that CDOT is not admitting any liability by compiling this information. See Appendix B for a sample Form 10.

   b. Conversations. Accurately document conversations, agreements, and actions taken by the Contractor, Project Engineer, or other CDOT personnel regarding the disputed work. Do not editorialize.

   c. Photographs/Videotape. Where appropriate, take photographs and videotape of the disputed work. Follow the steps in 120.1.3.6. Be careful what is stated near audio microphones during videotaping.

105.17.2.2 Contractor's Claim Package

In accordance with subsection 105.17 of *Standard Special Provision, Revision of Section 105 – Disputes and Claims for Contract Adjustments*, the Contractor must submit to the Project Engineer a complete claim package that contractually and legally supports the validity of the claim. The Contractor's claim package must include supporting evidence, alleged time and cost impacts, relevant correspondence, and other factual data.

105.17.2.3 Review of Claim Package

The Project Engineer is responsible for reviewing the Contractor's claim package. The review must be complete and thorough. Consider the following guidelines:

1. Check Claim Package. Compare the claim package documents to the Contract documents (e.g., Contract Plans, *Standard Specifications*, *Special Provisions*) and the CDOT project records to ensure there exists a contractual and factual basis for the claim.

2. Seek Guidance. Seek advice and concurrence from the Resident Engineer and the Region Program Engineer. In addition, the Project Engineer will contact and discuss each claim with the Area Engineer before rendering a decision. If claims involve legal issues or legal questions, the Area Engineer, after discussing the issue with the Resident Engineer, will consult the Attorney General for guidance.

3. Request Audit. An audit may be performed for any claim and is mandatory for all claims greater than $250,000. The audit will evaluate the amount of the Contractor's damages. The Project Engineer will request the audit as soon as practical after receiving the complete claim package including the Contractor's Claim Certification. Discuss the audit procedures with the Area Engineer.

4. Use of Claim Consultants. Consider using a non-project-specific claim consultant currently under contract with CDOT. Complex or multiple delay issues are difficult to analyze, and such analyses are a complex and time-consuming task that may

be more effectively performed by a claim consultant. Claim consultants can help determine the impacts of delays, the validity from a contractual and legal standpoint, and the compensation due, if any. A thorough analysis and a fair assessment of entitlement issues can sometimes help resolve the claim at an early stage. Contact the Area Engineer for additional information.

5. Request Additional Information. If it is determined that additional information or clarification is required from the Contractor to fairly and accurately review the claim package, notify the Contractor in writing clearly stating the information required, why the information is required, and a reasonable response date. Acknowledge receipt of the information in writing.

105.17.2.4 Preparation of Official Claim Record

Based on the review of the claim package discussed in Section 105.17.2.3, the Project Engineer will prepare the official claim record. The claim record will include the Contractor's claim package (see Section 105.17.2.2), documents supporting the Department's position and decision, and a formal written response from the Project Engineer. The Project Engineer's response must completely address each of the Contractor's issues and thoroughly and accurately present the basis of the Department's position and decision. Consider the following guidelines:

1. Gather CDOT Documents. The Project Engineer must be thorough in determining the CDOT documentation that should be incorporated in the official claim record. Consider the following documents when preparing the claim record:

   - Contract Plans,
   - *Standard Specifications*,
   - *Special Provisions*,
   - shop drawings,
   - reports from claim consultants,
   - reports from auditors,
   - schedules and schedule updates,
   - schedule analysis,

- project diaries,
- correspondence,
- engineering memos,
- inspection reports,
- time counts, and
- pay estimates.

2. Prepare Formal Written Response. Respond to each allegation and issue raised by the Contractor. Failure to do so may jeopardize CDOT's position in resolving the claim. If the Contractor's claim has merit, settle the claim as soon as practical. If only a portion of the claim has merit, prepare a change order and make payment for the portion the Project Engineer has determined is justified.

3. Organization and Binding. Arrange the documents of the official claim record in an orderly manner (e.g., chronological) and differentiate the Department's formal written response and supporting documentation from the items in the Contractor's claim package. Provide section inserts and an index so that the information is readily retrievable. Bind the claim record. The claim record is the Department's official response to the claim and will be used by others if the claim is appealed to the Region Transportation Director and, in some instances, the Chief Engineer.

4. Forward Copy to Contractor. Forward one copy of the official claim record to the Contractor. This will include claim consultant reports that the Project Engineer used to render a decision.

5. Further Proceedings. Once the Project Engineer renders a decision, any further proceedings will be in accordance with the *Standard Special Provision*.

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SECTION 106
CONTROL OF MATERIAL

106.1 SOURCE OF SUPPLY

The Contractor is required to not use or enter on any private property until the Contractor has furnished the Project Engineer with a copy of the original signed agreement between the Contractor and the property owner. Private property includes, but is not limited to, dumps, storage yards, haul roads, and plant sites. The Project Engineer will retain the copy in the project records and note in the project diary that it was received.

106.2 RESERVED

106.3 SAMPLES, TESTS, CITED SPECIFICATIONS

Obtaining timely turn around of test results is vital to the successful construction of a project. This is important for all of the testing whether it is the Contractor conducting the tests for Quality Control, or the State conducting the tests for Quality Assurance. Refer to the Field Materials Manual for additional guidance.

106.4 – 106.7 RESERVED

106.8 BUY AMERICA REQUIREMENTS

The Contractor shall provide steel and iron products for which all manufacturing processes have occurred in the United States.

This requirement applies to all steel and iron products, including donated materials, which are permanently incorporated into the project.

The practice of making items non-participating to circumvent the Buy America provisions is prohibited.

The Contractor may use a minimal amount of foreign steel. The total cost of all such foreign steel, which includes the cost of delivering the steel to the project, shall not exceed one-tenth of one percent of the total Contract cost or $2,500, whichever is greater.

There is no clear-cut rule for resolving an after-the-fact discovery of an inadvertent incorporation of an excess amount of foreign materials into a project. Each situation must be resolved on a case-by-case basis and approved by the FHWA.

106.9 CERTIFICATES OF COMPLIANCE

The Project Engineer must be in receipt of all material certifications before payment is made for the Contract item.

SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

Section 107 of the *Standard Specifications* requires that all laws and regulations including those of Federal, State, and local jurisdictions, be observed by both Contractor and CDOT personnel.

107.1 LAWS TO BE OBSERVED

By reference, subsection 107.01 of the *Standard Specifications* incorporates legal statutes and requirements of the Davis-Bacon Act, Equal Employment Opportunity, Occupational Safety and Health Administration, Mine Safety and Health Administration, and other legal regulations related to CDOT construction contracts.

107.1.1 Davis-Bacon Act

The United States Department of Labor and the Federal Highway Administration delegate to the Department the responsibility for enforcing the Davis Bacon Act, the Contract Work Hours and Safety Standards Act, and the Copeland Anti-Kickback Act. The provisions of these acts respectively govern payment of minimum wage, payment of overtime wage, and prevention of Contractor kickbacks. The Davis-Bacon Act specifically governs payment of minimum wage and applies to all Federal-Aid highway construction contracts and subcontracts exceeding $2,000, except those for local roads and rural minor collectors.

107.1.1.1 FHWA Form 1273

The FHWA Form 1273 – Required Contract Provisions – Federal-Aid Construction Contracts must be incorporated directly into Federal-Aid Contracts, including subcontracts, lower tier subcontracts, and purchase orders. The Contractor shall be

responsible for ensuring compliance of all subcontracting entities. The Project Engineer must discuss these requirements with the Contractor and subcontracting entities at the Preconstruction Conference.

107.1.1.2 Weekly Payrolls

Weekly payrolls are required from all Contractors and subcontractors. Payroll checking procedure classes are available from the Contracts and Market Analysis Branch.

107.1.2 Processing Requests for CDOT Records

107.1.2.1 Colorado Open Records Act

The Colorado Open Records Act requires the Department to provide access to CDOT records within three days of the written request.

107.1.2.2 CDOT Review of Written Requests

Requests for access to CDOT public records must be forwarded to the Department in writing (see *CDOT Procedural Directive 51.2 – Public Inspection of Department Records*).

107.1.3 Equal Employment and Civil Rights Considerations

107.1.3.1 Disadvantaged Business Enterprises

If the Contractor requests replacement of a project subcontractor that appears on Form 715 – Certification of Proposed DBE Participation, carefully follow the specified processing procedures in the Contract.

107.1.3.2 Discrimination and Sexual Harassment Complaints

Discrimination and sexual harassment complaints must be kept confidential and forwarded immediately to the Region EEO/Civil Rights Specialist for action.

107.1.3.3 Form 280

Form 280 – EEO and Labor Compliance Verification will be used to document compliance with both Equal Employment Opportunity and labor requirements. During each separate construction phase, the Project Engineer will interview ten percent of the Contractor and subcontractor employees to verify worker classification and wage compliance. Separate construction phases include, but are not limited to, clearing and grubbing, earthwork, minor drainage structure work, work on box culverts, bridge construction, work on aggregate base courses, paving, and traffic control. Once completed, forward each Form 280 to the Region EEO/Civil Rights Specialist.

107.1.3.4 FHWA Form 1391

The FHWA Form 1391 – Federal-Aid Highway Construction Contract Annual EEO Report is required each year from all Contractors and subcontractors working on Federal-Aid projects, including Local Agency projects, that are active during the last week of July. The Region EEO/Civil Rights Specialist will establish the timetable for processing these reports. Each construction firm shall disclose its respective project workforce, or submit a Form 1391 with a "No Work" statement, for the one-week period designated by the Region EEO/Civil Rights Specialist. Only the project data for the designated one-week period will apply. Once completed, the reports will be submitted to the Project Engineer and forwarded to the Region EEO/Civil Rights Specialist for review and processing.

107.1.4 On-the-Job Training

107.1.4.1 Standard On-the-Job Training Program

The Standard On-the-Job-Training Program will be available on all Federal-Aid CDOT projects in excess of $250,000.

107.1.4.2 Colorado On-the-Job Training Program

The Colorado On-the-Job Training Program will be available on all CDOT projects.

107.1.4.3 Projects Offering Both On-the-Job Training Programs

If the planned force account for the project contains both On-the-Job Trainee and On-the-Job Pilot items and the Contractor elects not to participate in the Colorado Program, the Contractor is required to fulfill the trainee requirement for the project.

If the Contractor elects only to participate in the Colorado Program, the fulfillment of the trainee requirement is not required and reimbursement is only necessary if a Colorado Program trainee is actually used on the project. If the Contract contains neither force account item, training will not be paid. Contact the CDOT On-the-Job Training Program Manager for additional guidance.

107.1.5 Emerging Small Business Program

107.1.5.1 First-Time Reimbursement Payment

The Contractor shall be compensated for using an eligible Emerging Small Business that has never had a contract or subcontract on a CDOT project. Consider the following:

1. Before Subcontract Starts. Prior to beginning the subcontracted work, the Contractor must submit Form 205 – Sublet Permit Application and Form 977 –

Emerging Small Business Contractor Reimbursement Agreement (First Time Payment) to the Project Engineer, who will forward the forms to the Emerging Small Business Program Manager for approval.

2. During Subcontracted Work. Every six months and at the completion of the subcontracted work, the Contractor shall submit to the Project Engineer Form 980 – Contractor Performance Evaluation of an Emerging Small Business to the Project Engineer. The Project Engineer will forward each of these forms to the Emerging Small Business Program Manager for processing and approval.

3. After Subcontracted Work. Upon completion of the subcontracted work, the Contractor shall submit to the Project Engineer a request for payment and Form 981 – Contractor Certification of Actual Payments to a First-time Emerging Small Business. The Project Engineer will forward each of these forms to the Emerging Small Business Program Manager for processing and approval. Once approved, the Program Manager will sign Form 981, prepare a payment voucher, and forward these items with the bill to the Center for Accounting for payment.

107.1.5.2 Hourly Reimbursement

The Contractor shall be reimbursed for providing training and/or assistance to an eligible Emerging Small Business subcontractor during the project. The Contractor shall submit the following to the Project Engineer:

- Form 978 – Emerging Small Business Contractor Reimbursement Agreement (Hourly Payment),

- Form 980 – Contractor Performance Evaluation of an Emerging Small Business, and

- a signed invoice documenting the number of hours and services provided.

The Project Engineer will forward these items to the Emerging Small Business Program Manager for approval. Once approved, the Emerging Small Business Program Manager

will sign Form 978 and forward a copy to the Project Engineer for payment on the next progress estimate.

107.1.5.3 Bonding Assistance

For contracts exceeding $50,000, the Department will provide bonding assistance to Emerging Small Business Prime Contractors and subcontractors that submit the following information to the Emerging Small Business Program Manager:

- billing request for payment;
- proof of bond payment; and
- Form W-9 – Request for Taxpayer Identification Number Verification.

The Project Engineer is not involved in processing bonding reimbursement payments, because such processing is a primary responsibility of the Emerging Small Business Program Manager.

107.1.6 Drug-Free Workplace

Section 107 of the *Standard Specifications* requires that Contractors, subcontractors, and suppliers participating in CDOT construction contracts maintain and enforce a drug-free workplace policy. Incidents occurring on a CDOT construction project will be handled in accordance with subsection 108.05 of the *Standard Specifications*.

107.2 PERMITS, LICENSES, AND TAXES

If asked questions about Contractor tax liability or exemption certificates, CDOT personnel should:

- provide reference to subsection 107.02 of the *Standard Specifications*;

- refer questions regarding sales tax to the local taxing authority or the Sales, Use and Cigarette Tax Section of the Colorado Revenue Department; and

- not state opinions or make decisions regarding tax liability, especially during project advertisement.

107.3 – 107.5 RESERVED

107.6 SANITARY, HEALTH, AND SAFETY PROVISIONS

107.6.1 *CDOT Safety Manual*

The *CDOT Safety Manual* contains information regarding personal safety practices and protective equipment to be used for specific work conditions.

107.6.2 Safety Equipment

Required personal protective equipment (e.g., hard hats, vests, boots) will be made available to all CDOT personnel. Appropriate safety equipment will be utilized as required by the specific work conditions and current policy.

107.6.3 Responsibilities and Authority

The Contractor is responsible for complying with all safety regulations governed by the Occupational Safety and Health Administration and the Mine Safety and Health Administration and for ensuring the safety and convenience of the public throughout the work zone. The Contractor should hold weekly “tool box” meetings with all project personnel to discuss work safety issues. Consider the following additional guidelines:

1. CDOT Responsibility and Authority. The Department will not permit any employee to work in or around unsanitary or unsafe conditions. All CDOT

personnel on the project should continually monitor Contractor and subcontractor activities for obvious or suspected noncompliance with the minimum safety requirements of the Occupational Safety and Health Administration and the Mine Safety and Health Administration. The Department does not, however, have the authority to accept a specific condition as being in compliance with OSHA requirements.

2. Noncompliance. The Project Engineer will immediately notify the Contractor in writing of noncompliance. The notification should provide a required date of response that provides a reasonable amount of time to correct the infraction. If the condition is not corrected within the time stated in the notice, contact the Safety Officer in the Maintenance and Operations Branch at (303) 273-1849 for assistance.

3. Imminent Danger. Imminent danger is any situation or condition on the project that could, in the opinion of the Project Engineer, result in serious injury or death. In this event, the Project Engineer will immediately issue a written stop work order to suspend all work in the immediate vicinity until the hazard is adequately addressed. Contact the Safety Officer in the Maintenance and Operations Branch or the Area Engineer, as needed, for assistance with questionable situations.

107.7 – 107.9 RESERVED

107.10 BARRICADES AND SIGNS

The provisions of the *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)* and the *CDOT Supplement to the MUTCD* govern the work zone traffic control that will be used on CDOT construction projects. A change order is required before major changes can be made to the Traffic Control Plan for any project. For additional information on work zone traffic control, see Section 630 of this *Manual* and Section 630 of the *Standard Specifications*.

107.11 RESERVED

107.12 ENVIRONMENTAL COMMITMENTS

Many construction projects have environmental mitigation commitments. These commitments were developed in the project development process as part of the National Environmental Policy Act. These commitments may be in the form of water quality permit requirements, wetland mitigation, endangered species mitigation, cultural resources mitigation or others.

It is the Project Engineer's responsibility to ensure compliance with the environmental mitigation commitments during construction. Violations of environmental regulations can result in civil and criminal penalties.

Recommendations:

- Project Engineers should review the plans and the environmental mitigation commitments and discuss them with the RPEM before the project is advertised to ensure all commitments are addressed and understood.

- At the Preconstruction Conference, please ensure all sub-contractors have been invited and be sure to cover the environmental requirements. Request that the RPEM or other environmental specialist attend to speak to the environmental issues.

- At weekly meetings with the Contractor and subcontractors, be sure to cover the environmental mitigation commitments.

- If you suspect you will have difficulty getting the Contractor to comply with certain requirements, ask for assistance from your RPEM.

107.13 FOREST PROTECTION

107.13.1 Preservation of Wetland Areas and Plant and Animal Habitats

Legally protected wetland areas and habitats of threatened and endangered species will be designated in the Contract. As needed, contact CDOT Natural Resources Staff in Environmental Programs for assistance regarding permits or special treatments. Ensure that the Contractor has been properly informed regarding the importance of preserving wetland areas and plant and animal habitats. Check that limits of encroachment are clearly marked before construction begins. For affected projects, the requirements stipulated in the permits must be reviewed and understood by all project personnel.

107.13.2 Preservation of Trees and Shrubs

Trees and shrubs are protected for both environmental and aesthetic purposes. Before construction, check to ensure that protected trees and shrubs are clearly marked for preservation, and ensure that the Contractor fully understands the limits within which clearing and grubbing may be performed.

107.14 RESERVED

107.15 RESPONSIBILITY FOR DAMAGE CLAIMS

Subsection 107.15 of the *Standard Specifications* requires the Contractor to procure and maintain public liability and property damage insurance. Insurance coverage is evidenced by a Certificate of Insurance, which certifies that the policy is in effect and will not be canceled without CDOT receiving written notice 30 days prior to cancellation. The Contractor must forward Certificates of Insurance for the required coverage to the Contracts and Market Analysis Branch before the Contract will be executed.

The Project Engineer will monitor cancellations of the insurance coverage. If coverage expires, the Project Engineer, with the approval of the Resident Engineer, will issue a written stop work order to the Contractor, and work must not resume until the Contractor furnishes a new Certificate of Insurance.

107.16 OPENING SECTIONS OF PROJECT TO TRAFFIC

The Contract will define the criteria for opening sections of the project to traffic, and subsection 107.16 of the *Standard Specifications* gives the Project Engineer authority to order the openings. Consider the following:

1. Contractor Delay. If it is necessary to order the opening of a section to traffic because the Contractor caused a delay in completing the work, the Contractor shall be responsible for all costs until final project acceptance, including the costs for damage caused by traffic.

2. Other Basis. If it is necessary to order the opening of a section of the project to traffic and the order is not based on Contractor delay, the Contractor is not responsible for damage caused by traffic. A change order must be executed to compensate the Contractor for associated delays and additional costs.

107.17 CONTRACTOR RESPONSIBILITY FOR WORK

Subsection 107.17 of the *Standard Specifications* defines the provisions by which the Project Engineer may relieve the Contractor of expenses for restoring damage to contract work caused by traffic and other elements. Consider the following guidelines:

1. Expense Relief Granted. If damage occurs to work on sections of the project where the Contractor has been granted relief from restoration expenses, the following two restoration options are acceptable:

    - Require the Contractor to repair the work, and pay for the restoration under the provisions of subsection 104.03 of the *Standard Specifications*.

    - Contact the Region Maintenance Superintendent to schedule the needed restoration work.

2. Expense Relief Not Granted. If damage occurs to work on sections of the project where the Contractor has not been granted relief from restoration expenses, the Project Engineer must determine what, if any, of the restoration expenses are attributable to the Contractor. This depends primarily on the extent to which the Contractor provided protection from a foreseeable cause of damage. In general, if the work was damaged by an unforeseeable cause, the Department will pay for restoration expenses. Consider the following guidelines:

   a. Unforeseeable Causes. Unforeseeable causes of damage are causes beyond the control of the Contractor that could not have been reasonably anticipated. For example, 100 mile per hour winds can cause major damage to a project. If the occurrence was deemed rare and unlikely, as demonstrated by historical weather data for the location and time of year, the costs for restoration should generally be borne by the Department.

   b. Foreseeable Causes. Foreseeable causes of damage are causes that can be reasonably anticipated by the Contractor, whether they are in the Contractor's control. For example, 100 mile per hour winds in the Boulder area are generally predictable from year to year based on the season. If such winds caused damage to a project in the Boulder area and the Contractor did not provide adequate and reasonable protection from this foreseeable event, restoration costs should be borne by the Contractor.

   c. Traffic. The cost of restoring damage to work caused by traffic is generally borne by the Contractor, because CDOT considers traffic a foreseeable cause of damage. However, there are instances where the restoration costs should be borne by the Department. The following examples are provided to clarify this policy:

      - The project is a hot bituminous pavement overlay. The traveling public damages a section of existing guardrail. The Department will pay for restoration of the damaged guardrail.

      - The project is a partial reconstruction that includes guardrail removal and replacement. The traveling public damages a section

of newly installed guardrail. The Contractor shall pay for the restoration of the damaged guardrail.

- The project is a hot bituminous pavement overlay. A Contractor supplier damages a section of bridge rail. The Contractor shall pay for the restoration of the damaged bridge rail.

107.18 – 107.22 RESERVED

107.23 ARCHAEOLOGICAL AND PALEONTOLOGICAL DISCOVERIES

107.23.1 Site Investigation

Ensure that the Contractor has been properly informed regarding the importance of preserving protected archaeological and paleontological sites. Protected sites should be clearly marked before construction begins.

107.23.2 Discovery During Construction

If archaeological or paleontological resources such as plant or animal fossils remains, chipped stone, pottery shards, purple bottle glass, or suspected human skeletal remains are encountered during construction, halt all activity that would otherwise disturb the discovery and immediately notify the CDOT Cultural Resources Staff (e.g., Staff Archaeologist or Paleontologist) in Environmental Programs of the Project Development Branch. CDOT Cultural Resources Staff will provide recommendations. Do not restart construction until directed to do so by the CDOT Cultural Resources Staff.

107.24 RESERVED

107.25 WATER QUALITY CONTROL

107.25.1 General

The following Section presents an overview of Federal and State requirements for water quality control within the State of Colorado. For further information, see the *CDOT Erosion Control and Storm Water Quality Guide* and subsection 107.25 of the *Standard Specifications*.

107.25.2 Contractor Responsibility

The Contractor shall comply with all governing Federal and State water quality control regulations and permit requirements and all Contract requirements associated with temporary and permanent water pollution control measures for streams, side ditches, lakes, ponds, and other water courses. The Contractor shall comply with action items documented by the Region or Headquarters Erosion Control Advisory Team with permission from and at the direction of the Project Engineer. The Contractor faces enforcement action by the Colorado Department of Public Health and Environment for permit violations and fines under the Section 208 disincentive for erosion control specification non-compliance. Where concrete washout sites will be used, they must be pre-approved by the Project Engineer. See the *CDOT Erosion Control and Storm Water Quality Guide* and subsections 208.02(i), 208.03(b), and 208.05(l) of the *Standard Specifications*.

107.25.3 Internal CDOT Coordination

The Environmental Programs Unit of the Project Development Branch will notify the Resident Engineer, the Project Engineer, and the Region Planning and Environmental Manager upon notification of an environmental concern from any Federal or State regulatory agency.

107.25.4 Permit and Reporting Requirements

To meet the Environmental Protection Agency's stormwater quality regulations (i.e., National Pollution Discharge Elimination System), the Colorado Department of Public Health and Environment enforces the Colorado Discharge Permit System. All construction activities, except those disturbing less than one acre of total land area that are not part of a larger common plan, must comply with these requirements. To facilitate processing, the Colorado Department of Public Health and Environment has issued a general permit, entitled *CDPS General Permit for Stormwater Discharges Associated with Construction Activity*. CDOT will obtain the stormwater permit, however, the Contractor is solely responsible for compliance with the permit requirements. The Contractor is also responsible for having an Erosion Control Supervisor on site to do the required inspections. The Erosion Control Supervisor shall document changes in the Stormwater Management Plan and have the changes approved in advance by the Project Engineer.

The Contractor shall be responsible for obtaining permits for construction groundwater dewatering unless already obtained by CDOT. The Contractor is again solely responsible for compliance with this permit, and if CDOT obtained the permit, the Contractor shall sign the name change form from the Colorado Department of Public Health and Environment and accept responsibility for the permit. If no discharge to State waters is planned, a construction dewatering infiltration permit from the Colorado Department of Public Health and Environment may be obtained allowing the Contractor to infiltrate the water back into the ground.

The Contractor must submit a written report describing the locations of all potential pollution sources. The report should include maps, spill contingency plans, and other relevant information.

107.25.5 Waste Disposal Practices

Before construction, ensure that the Contractor fully understands the contractual and legal obligations regarding waste disposal, and verify the proposed disposal methods and sites for compliance. Consider the following guidelines:

1. Legal and Safety Considerations. The Contractor is responsible for complying with all applicable Federal and State laws and safety regulations and any applicable local ordinances with respect to waste disposal and burning of debris, as governed by Section 107 and Section 250 of the *Standard Specifications*.

2. Burning. Burning of debris, without written approval from the Project Engineer, will not be permitted. If approved, verify that the Contractor is performing the operation as specified.

3. Temporary On-Site Storage and Containment. A suitable and properly prepared on-site location should be used to temporarily store waste and debris until it can be hauled to a suitable disposal site. Factors that should be considered include: waste composition, location, number of containers, lids, coverings, and drainage. If the Contractor uses a site on private property, written permission from the landowner is required and the Contractor shall provide the Project Engineer with a copy (see Section 200).

4. Disposal Site. CDOT maintains a task-order contract for disposal of all non-hazardous waste. When this service is used, the Project Engineer, or other authorized CDOT staff, is responsible for initiating task orders with the disposal facility for direct billing to CDOT. The Contractor will typically be responsible for transportation of the waste.

5. Hazardous Waste. Known and discovered hazardous waste on the project requires special treatment. See Section 250 for additional information.

107.25.6 Spill Prevention Practices

Spill prevention practices are generally specified on projects where chemicals and hazardous substances will be used. Refer to 5.2.3.1 of the *Erosion Control and Storm Water Quality Guide*.

SECTION 108
PROSECUTION AND PROGRESS

Section 108 of the *Standard Specifications* governs the prosecution and progress of the work performed by the Contractor.

108.1 SUBLETTING OF CONTRACT

The *Standard Special Provision, Revision of Section 108 – Subletting of Contract* requires the Contractor to perform a minimum of 30 percent of the Contract work with its own forces, excluding specialty items. Prior to subcontracting any work on the project, the Contractor must submit Form 205 – Sublet Permit Application to the Project Engineer for signature approval. See Section 120.10 for additional information.

108.2 NOTICE TO PROCEED

The Contractor shall not initiate work on the Contract prior to receiving the written Notice to Proceed.

108.3 SCHEDULE

Subsection 108.03 of the *Standard Specifications* requires the Contractor to submit a method statement and progress schedule. It is essential to ensure submittal and acceptance of the initial, project and updated schedules to evaluate potential delay claims.

The Contractor shall submit and the Project Engineer accept in writing the initial schedule before any work commences.

The Contractor shall submit the project schedule within 45 calendar days after the projected Engineer's acceptance of the initial schedule. Work shall not continue beyond 90 calendar days after the start of the contract time until the project schedule is accepted in writing.

The Contractor shall update the initial schedule or the project schedule monthly to reflect actual construction progress of all work activities on the project. Schedules shall be updated as of the cutoff date for the monthly progress pay estimate and submitted to the Project Engineer before the payment of the progress pay estimate is approved. The *Standard Special Provision* requires a Critical Path Method schedule. If a bar chart schedule is desired, the Project Engineer must ensure that the appropriate *Project Special Provision* is included in the Contract.

108.4 LIMITATION OF OPERATIONS

Subsection 108.04 of the *Standard Specifications* gives the Project Engineer authority to alter the sequence of work. Such authority should be exercised with discretion, because altering the sequence of work could increase Contractor costs and result in a claim. The alteration of the planned sequence of work should only be considered if it minimizes traffic interference and is essential to public convenience.

108.5 CHARACTER OF WORKERS; METHODS AND EQUIPMENT

108.5.1 Personnel and Equipment Considerations

Poor supervision, inadequate number of workers, and insufficiently maintained equipment contribute to poor progress and, in some instances, unsatisfactory work. Unsatisfactory work and poor progress frequently result in requests for time extensions and claims. The Project Engineer must document personal observations and those of other CDOT personnel regarding Contractor operations, equipment, and personnel to ensure that adequate information is available if it becomes necessary to evaluate claims and requests for time extensions.

108.5.2 Removal of Project Personnel

Subsection 108.05 of the *Standard Specifications* gives the Project Engineer authority to remove any Contractor or subcontractor personnel, including Superintendents and owners, if their work is not being performed in a proper and skillful manner. In such situations, discuss the matter with the Resident Engineer and the Region Program Engineer and, if removal is necessary, request in writing that the Contractor remove the personnel from the project. If the Contractor fails to comply with the request, the Project Engineer may suspend work with a written stop work order until the Contractor complies. Document the details of the circumstances leading to the decision. The notes must be factual without personal comment or opinion.

Standard Special Provision, Revision of Sections 101 and 108 – Workplace Violence outlines that any representative or employee of the Contractor, or any subcontractor, who commits an act of workplace violence on the project shall be sanctioned as provided by the Contractor's employment policies and, where appropriate, shall be reported to law enforcement authorities. At the request of either the Contractor or the Project Engineer, the Project Engineer and the Contractor shall meet to discuss appropriate actions to be taken against the representative or employee. Appropriate action may include removing the representative or employee from the project. If removal is warranted and the Contractor fails to remove the representative or employee, the Project Engineer may suspend the work by written notice until compliance is achieved.

Standard Special Provision, Revision of Sections 101 and 108 – Workplace Violence defines workplace violence.

108.6 DETERMINATION AND EXTENSION OF CONTRACT TIME

108.6.1 General

After the Final Office Review and the resolution of all design issues affecting the scope of work, the Project Engineer will use experience and good engineering judgment to determine the contract time that the Department will allow for completing the project.

The results of this analysis will be reported on Form 859 – Project Control Data (see Appendix B).

As needed, refer to the FHWA Technical Advisory No. T 5080.15, 10/15/02 - *CONSTRUCTION CONTRACT TIME DETERMINATION PROCEDURES* and consider the guidelines presented in the Sections that follow.

The link for this advisory is:
http://www.fhwa.dot.gov/legsregs/directives/techadvs/t508015.htm.

The Project Engineer should consider using project-scheduling software to facilitate the determination of contract time.

108.6.2 Methods of Determining Contract Time

Contract time is typically specified in working days; however, calendar days or a fixed completion date may be used if warranted by unique features of the project. The following methods are typically used by the Department for establishing contract time:

1. A + B Method. The A + B method considers the daily road user costs in determining the low bid. If this method is used, the Department will establish the unit price for each calendar day based on the daily road user costs and include this information in the bid documents. The Contractor bids the number of days it will use to complete the project. The low bid is determined by combining the total bid price of all Contract items and the total bid price for the number of calendar days the Contractor determines will be necessary to complete the project.

2. Incentive/Disincentive Clauses. Incentive clauses motivate the Contractor for early completion of the project. Disincentive clauses are intended to recover damages to the traveling public for late completion. The use of incentive and disincentive clauses will be determined on a project-by-project basis.

3. Delayed Start Date. Where a delayed start date is used, the contract time will be controlled by the long lead time that is required to obtain project materials (e.g., lighting and signal equipment, fabricated steel members). If this method is used, the Contract will specify a period for fabrication and delivery as well as one for

the number of working days allowed for construction. Time charges will begin at the end of the fabrication and delivery period.

4. Floating Start Date. Where a floating start date is used, the earliest and latest permissible start dates will be specified with the number of working days required for the project. The use of a floating start date will be determined on a project-by-project basis.

108.6.3 Factors Influencing Contract Time

Contract time will vary from project to project. Consider the following factors when determining contract time:

- urgency of the proposed improvement;
- impact on local businesses and property access;
- need for coordination with other projects;
- requirements for irrigation;
- impacts of scheduled special events and holidays;
- time needed for construction surveying;
- type of traffic management required;
- interruptions to traffic flow and required construction phasing;
- inconvenience to the traveling public, including the traffic volume affected;
- safety of both the public and the project workforce;
- seasonal impacts on construction activities;
- time required to obtain permits and mix designs;
- time required for material fabrication and delivery;
- concrete curing time, including pouring sequence and phasing;
- special sections and features requiring staged or phased construction;
- impact of local noise ordinances on construction activity; and
- the reasonableness of the time frame allowed for project completion.

When determining contract time, it will be necessary to establish production rates for items of work on the project. Note that accelerated production rates (i.e., those faster

than the average Contractor can perform) generally decrease contract time but will increase cost and limit competition. Production rates for items of work that are used to determine contract time should:

- be project specific, incorporating the special features and construction sequences of the project;

- represent the production achievable by an average Contractor, unless the work item is of a specialized or critical nature; and

- be based on a typical eight-hour workday, unless project priority or special requirements warrant the use of multiple shifts or night work.

Resurfacing projects are an exception. The Project Engineer should establish a schedule that allows the Contractor flexibility. A flexible schedule will result in the lowest price by allowing Contractors to make efficient use of their resources.

108.6.4 Guidelines for Preparing Form 859

Appendix B presents examples and guidance for completing Form 859 – Project Control Data. Use the following procedures when preparing the bar chart:

1. List Items of Work. List the items of work in the chronological order that they will be performed on the project.

2. Determine Controlling Items of Work. Determine the controlling items of work on the project. A controlling item is not synonymous with a salient feature. A controlling item will increase the project's time to completion if its duration increases. A salient feature is an item that may be of special or political interest to scheduling but will not affect the project's overall completion schedule.

3. Determine Critical Project Phases. Project phasing is generally established by hypothetically constructing the project. Each project phase will consist of one or more items of work, some of which may be controlling. A project phase becomes

critical if by increasing its duration the project's overall completion schedule increases. Consider the following when determining project phasing:

- scheduling of material fabrication and delivery,
- scheduling of sequential and concurrent construction activities,
- completing special project features, and
- the impacts of maintaining traffic on the facility.

It is likely that traffic management will affect construction phasing. Many projects require traffic to be maintained on one lane of existing pavement while an adjacent lane is being resurfaced. Once completed, the newly paved lane is opened to traffic while the remainder of the facility is being resurfaced.

4. List Controlling Items of Work. List the controlling items of work in chronological order on the bar chart of Form 859.

5. Determine Production Rates. Determine an estimated daily production rate for each controlling item of work identified. Consider the following when determining production rates:

   a. Information Sources. As needed, use the following sources of information when determining specific production rates for the project:

      - CDOT Engineering Estimates and Market Analysis Unit,
      - project diaries of similar projects in the same location,
      - experienced Region construction personnel,
      - experienced Region materials personnel,
      - method statements from similar projects, and
      - local contractors and contractor associations.

   b. Geographic Area. Consider the impacts that geographic location will have on production rates. For example, the daily production rate for unclassified excavation for a project located on the plains may be different than that for a project located in the mountains. The production rate for a project in Denver may be different than a project in a more rural location.

c. Quantities of Work. Consider the impact the project's magnitude will have in terms of the relative quantities of work required for controlling items.

d. Material Availability. Consider how the availability of materials will impact production rates for controlling items of work. Also consider factors such as material sources, crushing rates, and haul distance.

e. Traffic Delays. Consider the impact that production rates will have on traffic congestion through the construction work zone.

6. Determine Number of Workdays. To determine the number of workdays required to complete each controlling item of work, divide the quantity of work by the estimated daily production rate.

7. Prepare Bar Chart. Prepare a bar chart on Form 859 that represents the duration and sequence of each controlling item of work. A computer-scheduling program may be used in lieu of the bar chart on the back of Form 859. If a scheduling program is used to determine contract time, the data from the program may be transferred to the bar chart on the back of the form. The use of computer-scheduling programs should be considered on all large or complex projects.

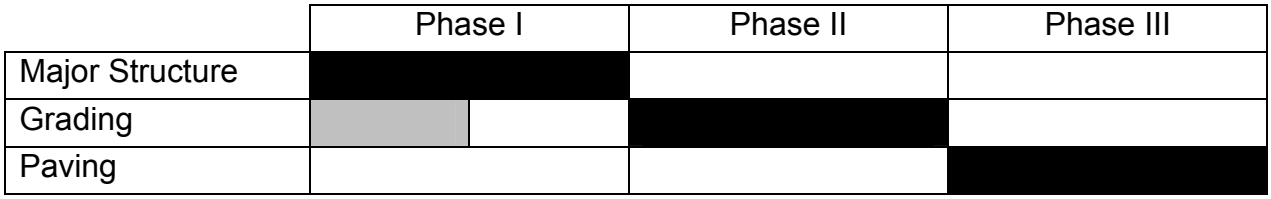
108.6.5 Guidelines for Charging and Reporting Project Time

108.6.5.1 Form 262 and Form 263

Project time charges will be determined and documented by the Project Engineer on either Form 262 – Weekly Time Count Report – Work Days or Form 263 – Weekly Time Count Report – Calendar Days, depending on the method used for the project. See Section 120.6.1 for additional information on documentation requirements.

108.6.5.2 Progress Schedule Considerations

Sound engineering judgment, experience, and careful examination of the Contractor's operations and progress schedule are required to properly determine project time charges. This method is the fairest and most equitable procedure for administering the Contract. Consider the progress schedule presented in Figure 100A:



EXAMPLE PROJECT SCHEDULE
Figure 100A

In Figure 100A, the critical path of the project is identified by the bars in black (i.e., Phase I – Major Structures, Phase II – Grading, Phase III – Paving). The controlling item of work in Phase I is the major structure, and any delay to this work will delay completion of the project. Because grading in Phase I is not a controlling item, any delay to this item will not affect project completion. The following observations should be made regarding project time charges:

- In Phase I, the determination of project time charges should be based on the Contractor's ability to effectively prosecute the work on the major structure.

- Full days should be charged when work on the major structure can be effectively prosecuted, whether or not the Contractor elects to work on the structure and even if the grading operation is completely shut down.

- No time should be charged if work on the major structure cannot be effectively prosecuted, even though the Contractor is able to effectively work on grading. It is possible for a project to appear active without warranting project time charges.

108.6.5.3 Charges for Full Working Days

Use the following guidelines to determine when a full working day should be charged to the project:

1. Minimum Hours of Daily Progress. A full working day should be charged when the Contractor effectively prosecuted the controlling item of work for at least six hours.
2. Contractor Elected Not to Work. Charge a full working day if the Contractor could have effectively prosecuted the controlling item of work for at least six hours, but elected not to. This criteria applies as long as the reason for not prosecuting the work was under the Contractor's control.

3. Contractor Elected to Delay Progress. Charge a full working day if the Contractor worked on the controlling item, but the actual rate of production was slower than normally achievable. This criteria applies as long as the reason for the delay was under the Contractor's control and typically occurs when the Contractor appears to be working but is actually performing an operation that is not progressing the controlling item, such as during clean-up operations.

4. Plant and Equipment Breakdowns. Charge a full working day if progress on the controlling item of work was delayed by plant or equipment breakdowns. Breakdowns are under the Contractor's control.

5. Material Delivery. Where material delivery delays the progress of the controlling item of work, charge a full working day if the delay was caused by:

    - Contractor not ordering materials in a timely manner;
    - suppliers reprioritizing their customer deliveries;
    - Contractor reordering and replacing materials rejected by CDOT;
    - financial problems of the Contractor, manufacturer, or supplier; or
    - causes foreseeable by the Contractor, manufacturer, or supplier.

6. Claims. If the Contractor notifies the Project Engineer of an intent to file a claim, continue to charge full working days, as appropriate. Extensions to contract time that are justified should be based solely on contractual and factual data.

108.6.5.4 Charges for Less Than Full Working Days

Use the following guidelines to determine when less than a full working day should be charged to the project, and provide an explanation for the decision on Form 262 or Form 263, whichever is appropriate for the method of contract time:

1. Delays Beyond Contractor Control. Charge less than a full working day if the prosecution of work on the controlling item was not active or active at less than full efficiency due to a delay caused by interference beyond the control and fault of the Contractor. In such situations, charge project time as follows:

    - Two to Six Hours of Effective Work. Charge a half day of project time if the Contractor was able to effectively prosecute the controlling item of work for two to six hours.

    - Less Than Two Hours of Effective Work. No time should be charged if the Contractor was only able to effectively prosecute the controlling item of work for less than two hours.

2. Adverse Weather Delays. Use the guidelines presented in Item #1 to charge less than a full working day if the prosecution of work on the controlling item was delayed by adverse weather. The recovery time required to attain the approximate condition of the work prior to the event should be recorded as unworkable weather.

3. Right-of-Way, Utilities, and Railroads. As a condition for advertisement and award, CDOT must certify that right-of-way, utility, and railroad work has been completed or properly coordinated with construction to avoid unnecessary delays. Coordination, if required, will be included in the contract time and *Project Special Provisions*. Charges for less than full working days generally will not be considered for such delays, because the Contractor should have accounted for these situations in its proposal. However, charges for less than full working days, as presented in Item #1, should be considered under the following conditions:

    - the construction work was delayed by right-of-way, utility, or railroad interference beyond the time frame established in the Contract;

- the Contractor did everything required by the Contract to minimize the delay; and

- CDOT was unable to exercise effective control of the situation, despite its best efforts.

108.6.5.5 Charges for Free Time

If “Free Time” is included in the *Project Special Provisions*, do not charge time for work performed during “Free Time.”

108.6.5.6 Challenges by the Contractor

If project time charges are challenged, the Contractor shall provide written notification to the Project Engineer within 30 working days of the period in contention.

108.6.6 Extension of Contract Time

If an event, action, or factor beyond the control and fault of the Contractor causes an extension to the ultimate project completion date, an extension of contract time may be warranted. Contract time should be extended if the Project Engineer determines that the delays have resulted from conditions beyond the control and fault of the Contractor. In evaluating the delays, the Project Engineer should compare actual production rates and the Contractor’s progress schedule and whether the difference is a result of circumstances beyond the Contractor’s control.

Consider the following guidelines when evaluating delays for contract time extensions:

1. Excusable Delays. Any delay that was beyond the Contractor's control and not caused by the Contractor's fault or negligence may be considered an excusable delay. Excusable delays are further defined as compensable (i.e., money) and noncompensable (i.e., time, but no money) as follows:

a. Compensable Delays. A compensable delay is an excusable delay for which the Contractor may be entitled to additional monetary compensation. For example, a design plan revision by CDOT caused a delay to a controlling item of work on the critical path, which resulted in a delay to project completion.

b. Noncompensable Delays. A noncompensable delay is an excusable delay for which the Contractor may be entitled to a contract time extension with no additional monetary compensation. Examples of noncompensable delays include acts of God, acts of the public enemy, fires, floods, area-wide strikes, freight embargoes, and unusually severe weather conditions. Noncompensable delays also include delays caused by fuel shortage and material delivery, if the delay is due to unusual market conditions such as industry-wide strikes, national disasters, and area-wide shortages. Consideration of compensation will be for time only, not money.

2. Nonexcusable Delays. Any delay that was reasonably foreseeable or within the Contractor's control is a nonexcusable delay, and no additional time or monetary compensation will be considered. For example, a delay caused by the Contractor not placing a material order in a timely manner would be nonexcusable.

An extension of contract time, if warranted, requires the execution of a change order, as discussed in Section 120.7.7.

108.7 RESERVED

108.8 Default of Contract and Termination of Contract

Because termination or default of contracts may adversely affect a Contractor's ability to work on future projects, it is important that CDOT uniformly and fairly evaluate the circumstances leading to these actions. Contract termination or default is a contract administration issue that rests with the Chief Engineer.

If situations arise that may lead to the termination of any design or construction contract or default of any contractor or consultant, the Resident Engineer/Project Manager will immediately notify the Project Development Area Engineer and the Program Engineer. The Resident Engineer will obtain preapproval from the Program Engineer and the Region Transportation Director will be prepared to discuss the circumstances leading to the default or termination with those individuals.

The Area Engineer will notify the Project Development Branch Manager, Contract and Market Analysis Branch Manager, and Attorney General's CDOT Representative.

The Area Engineer will coordinate the collection and review of documentation that will be used to make a decision. Based on information and input collected, the Contracts and Market Analysis Branch Manager will make a recommendation for appropriate action to the Chief Engineer. No contract will be terminated and no Notice of Intent to Default will be issued without prior approval of the Chief Engineer.

SECTION 109
MEASUREMENT AND PAYMENT

Section 109 of the Standard *Specifications* defines the methods used to compensate the Contractor for the work performed. Documentation required under Section 109 is extensive and is fully discussed in Section 120.

109.1 MEASUREMENT OF QUANTITIES

It is imperative that Project Engineers and Resident Engineers verify the accuracy of interim payments to Contractors. Justifying interim payments based solely on information submitted by the Contractor, (i.e. load counts), is unacceptable. The Project Engineer must independently verify that work has been completed pursuant to the specifications and the Resident Engineer is responsible to ensure that quantities are reasonable before authorizing the pay estimate.

The term, “estimated quantity”, means a quantity that is calculated approximately. It is the Project Engineer’s responsibility to calculate estimated quantities as accurately as possible so as not to overpay the Contractor.

109.1.1 Scale Certification

The Measurement Standards Section of the Colorado Department of Agriculture must license scales used by the Contractor. Each time a scale is installed at a new location, an approved company must check the scales and provide an in-service report before the scale can be operated. The governing criteria related to scale certification, based on State Statute and the Colorado Department of Agriculture, include:

- a basic tolerance of two pounds in 1,000 pounds;
- checking of scales once each year by the Colorado Department of Agriculture.
- renewal of scale license each year before June 30th; and

- prohibition of split weighing under *Colorado Revised Statue 24-91-103(2)*.

109.1.2 Requirements for Federal-Aid Projects

109.1.2.1 Verification of Manual Weighing Operations

On projects where loaded truck weights are entered manually on scale tickets, the certified weigher must be checked at least once, and more often as deemed necessary by the Project Engineer. These checks will be performed as follows:

1. Randomly Select One Truck. The Project Engineer will randomly select one loaded truck after it has been issued a scale ticket from the certified weigher.

2. Reweigh Loaded Truck. The loaded truck will be reweighed in the presence of the Project Engineer.

3. Check Tolerance. The scale reading of the reweighing will be compared to the weight reported on the certified weigher's original scale ticket. To be acceptable, the scale reading must be within plus or minus 200 pounds of the weight reported on the original scale ticket.

4. Determine Cause of Problem. If the comparison of the two weights is found to be out of tolerance, factors other than human error should be ruled out before consideration is given to replacing the certified weigher. The Project Engineer must assess this situation carefully on a case-by-case basis. It is recommended that both the Project Engineer and the Contractor Superintendent, or authorized designee, be present at the site during the scale inspection. Consider the following recommended procedures:

    a. Check for Malfunctions. Inspect the operation of the scale for malfunctions (e.g., lodged or jammed foreign objects, worn or broken parts). Repairs may be needed.

b. Check Calibration. Check the calibration of the scale for accuracy. Certified test weights, if available, may be used to ensure that the scale has not lost calibration. The Measurement Standards Section of the Colorado Department of Agriculture should be contacted if it is suspected that the scale is no longer calibrated.

c. Reweigh Additional Trucks. If previously weighed loaded trucks with scale tickets are still available at the site, two to three additional comparison checks should be performed and their tolerance verified. The suspect scale ticket may have been an isolated incident. In addition, consider having the certified weigher perform one of these checks, and observe the weigher's procedures and methods. Retraining may be necessary.

d. Other Factors. Once satisfied that the cause is not an anomaly, malfunction, or calibration issue, the Project Engineer should consider the facts and the severity of the problem before deciding to replace the certified weigher. Other factors may be at play.

5. Replace Certified Weigher. The Project Engineer must notify the Contractor in writing prior to replacing the certified weigher. Remember to check the certification credentials of the new weigher.

6. Notify Measurement Standards Section. All certified weighers that are replaced for inaccurate weighing should be reported to the Measurement Standards Section of the Colorado Department of Agriculture (303) 866-2845. The CDOT personnel assigned to report the incident should be knowledgeable of the facts and provide the following information to the Measurement Standards Section, because a regional scale inspector may need to return the call for investigation purposes:

- name,
- phone number,
- scale location,
- certified weigher's name,
- certified weigher's license number, and
- a brief description of the problem encountered.

109.1.2.2 Verification of Computerized Scales

The Project Engineer will verify the accuracy of computerized scales. Verification procedures are detailed in *Standard Special Provision, Revision of Section 109 – Measurement of Quantities*.

109.2 SCOPE OF PAYMENT

109.2.1 General

The Project Engineer may expect situations during construction that require work beyond the scope of the Contract. Such situations are not uncommon and must be evaluated on a case-by-case basis to determine if the Contractor should be paid additional compensation.

109.2.2 Incidental Work

It is seldom possible or desirable to develop plans that completely cover all Contract work in minute detail. Costs of design would be prohibitive and improvements of questionable value.

Compensation for all work necessary to properly complete the project shall be included in the Contract unit prices. Subsection 104.02 of the *Standard Specifications* defines conditions that may warrant additional compensation. Contractors generally will provide for minor contingencies in their bids. Only differing site conditions and/or significant changes in the scope of the work should be considered for additional compensation.

The Summary of Approximate Quantities in the plans shows the pay items for which the work and materials are to be paid. Work or materials that are essential to the project but for which there are no pay items included in the plans will not be measured and paid for separately but should be included in the work. This work or materials is usually minor in nature and reasonable for a Contractor to anticipate in preparing his bid. An example is removal of asphalt mat. If the Summary of Approximate Quantities did not include the

item and it is obvious by review of the plans or work site that this work is required, then no additional payment for this work should be made.

Only differing site conditions or significant changes in the character of the work as described in subsection 104.02 of the *Standard Specifications* should be considered for extra work. If, however, work is described and detailed with specifications that show a pay item as basis of payment and the designer has inadvertently omitted the pay item from the Summary of Approximate Quantities, the Project Engineer may make additional payment to the Contractor as in subsection 105.04 of the *Standard Specifications*. An example could be an expansion device shown in the plans with specifications that indicate the basis of payment is by the linear foot. If the designer failed to add the pay item or note that this device was included in the work it may be unreasonable to expect the Contractor to include this device in his bid. The Project Engineer may negotiate a change order to add a pay item for this work as per subsection 105.04 of the *Standard Specifications*.

109.3 RESERVED

109.4 COMPENSATION FOR CHANGES AND FORCE ACCOUNT WORK

109.4.1 Compensation for Extra Work

Compensation for extra work, as defined in subsection 104.03 of the *Standard Specifications*, must be authorized by a change order and paid for on a unit price, lump sum, or force account basis.

109.4.2 Force Account

Avoid the use of force account, particularly on work involving large sums of money. If a force account is warranted and the Contractor disputes (i.e., refuses to sign) a daily Form 10 – Inspector's Report for Force Account Work, the Project Engineer will require the Contractor to prepare a Form 10 that documents the items the Contractor believes

to be eligible for payment. The Contractor must furnish this Form 10 prior to starting the work in question on the next working day. See Appendix B for a sample Form 10.

109.4.3 Specialty Work

109.4.3.1 Specialty Firms

A "specialty firm" is a term that is used in subsection 109.04(e) of the *Standard Specifications*. It is a term that is not defined elsewhere in the Contract. Billings from a specialty firm are eligible for administrative loading. All other force account rules apply to specialty firms.

109.4.3.2 Specialty Items

Subsection 108.01 of the *Standard Specifications* uses the term specialty item. On Federal-Aid projects, FHWA Form 1273 – Required Contract Provisions – Federal-Aid Construction Contracts defines specialty items as follows:

> *Specialty items shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organization qualified and expected to bid in the Contract as a whole and in general are to be limited to minor components of the overall Contract*.

Subsection 108.01 of the *Standard Specifications* requires specialty items to be specified in the Contract.

109.4.3.3 Contract Administration Considerations

The following Contract administration procedures apply to specialty work:

- Form 205 – Sublet Permit Application is required for all specialty work;
- certified payrolls are required for all specialty work on Federal-Aid projects; and

- force accounts will be paid per subsection 109.04 of the *Standard Specifications*.

With regard to Contract administration, administer specialty firms and specialty items in the same manner as other subcontractors are administered on the project.

109.5 ELIMINATED ITEMS

Items that are not necessary to prosecute work on the project may be eliminated from the Contract using Form 105 – Speed Memo to notify the Contractor. If the Contractor has incurred costs from prosecuting the item, a change order must be executed to compensate the Contractor. However, a change order is not needed if costs have not been incurred. Elimination of items does not qualify for a Value Engineering Change Proposal.

109.6 PARTIAL PAYMENTS

109.6.1 Preparation and Processing of Estimates

The Project Engineer will prepare monthly partial payment estimates for the work performed during each month of the Contract. Consider the following:

1. Delayed Partial Payments. The Project Engineer will notify the Contractor, in writing, of the reason for any delay to a partial payment. The notification should be given in advance of the estimate cutoff date, if possible, so the Contractor will have time to correct the deficiency before the estimate is due. All Contractor requests to delay a partial payment to permit inclusion of a specific amount of work shall be made in writing. The Contractor shall notify each subcontractor who has performed work during the payment period of the reason for the delay.

2. Copies of Partial Payment Estimates. The Project Engineer will provide the Contractor with a copy of all partial payment estimates. The Contractor should provide a copy of the estimate to each subcontractor that has performed work during the period covered by the estimate. CDOT will assist subcontractors in

obtaining this information and will furnish the subcontractors with a copy of the estimate, if requested.

3. Partial Payment. The Resident Engineer will electronically transmit partial payment approval to Projects and Grants in Accounting. Projects and Grants will transfer the payment request to COFRS. The State Controller's Office then processes a payment warrant to the Contractor five to seven days after the Resident Engineer authorizes partial payment approval.

4. Electronic Funds Transfer. The Contractor can authorize CDOT to electronically transfer funds directly to its account. Forms are available from Projects and Grants by calling (303) 757-9571. The Contractor should be reminded of this option at the Preconstruction Conference. Funds are normally available in four to five days after the Resident Engineer authorizes partial payment approval.

5. Prompt Payment. *Standard Special Provision, Revision to Section 109 – Partial Payment* prohibits the Contractor from withholding retainage from subcontractors or suppliers.

6. Compensation for Overpayment for Subcontracted Item. *Standard Special Provision, Revision to Section 109 – Partial Payment, subsection 109.11*, requires the Project Engineer to compensate the Contractor if the Department makes an overpayment error that causes the Contractor to overpay a subcontractor and the Contractor is unable to recover the overpayment. The Contractor must meet all the specified conditions and return to CDOT any money they may recover at a later time.

   The Project Engineer should notify the Area Engineer if it is necessary to make a payment under this subsection. It is the Department’s intention to recover any payments made under this subsection from the appropriate subcontractor before they are permitted to work on another CDOT project.

109.6.2 Reduction of Retainage

When the Contract has been completed, the Contractor may request the Department to reduce the amount of retainage or securities withheld. Such requests must be made in

writing to the Project Engineer. The amount of withholdings may be reduced to a value of $1,000 or one-tenth of one percent of the Project Commitment Amount, whichever is greater. The Project Engineer may withhold a greater amount if a valid reason for doing so can be substantiated. CDOT will consider a reduction request only if all the following conditions have been met:

- the Contractor has completed the project,
- the Department has accepted the project.
- the Contractor has submitted all required forms,
- the Project Engineer has approved the final pay quantities, and
- a written consent has been received from the surety company.

If the Contractor meets the above requirements, the reduction should be made before submission of the final to the Region Finals Engineer. If the Contractor meets the requirements after submission of the final, the Region Finals Engineer may make this reduction as soon as all the paperwork is received.

The Project Engineer should have sufficient justification for withholding retainage. Contact the Project Development Area Engineer for guidance.

109.6.3 Subcontractor/Supplier Liens

If payment is not made in accordance with the Prompt Payment Act, *Colorado Revised Statute 24-91-103(2)* and *Colorado Revised Statute 38-26-107* permit subcontractors and suppliers to file liens against the Contractor. Such liens are different than claims for Contract adjustments, which are processed in accordance with subsection 105.17 of the *Standard Specifications*. Liens that are filed under the Prompt Payment Act will be processed in accordance with the intra-Department agreement between the Center for Accounting and the Area Engineers of the Project Development Branch. This agreement is illustrated in Figure 100B. Lien forms can be obtained from the Center for Accounting.

1. Line Items. A separate line item for each lien will be created on the estimate.

2. Final Estimate. The Region will not submit the final estimate to the Center for Accounting until all liens have been resolved.

PROCEDURES FOR HANDLING SUBCONTRACTOR AND SUPPLIER LIENS (CLAIMS) IN ACCORDANCE WITH THE REQUIREMENTS OF THE COLORADO PROMPT PAYMENT ACT COLORADO REVISED STATUTE 24-91-103(2)

1. When the Center for Accounting receives a properly completed lien (claim), the Center for Accounting will immediately fax a copy of the lien (claim) to the Resident Engineer in charge of the project and the Region Program Engineer. Prior to making further payments to the Contractor, the Resident Engineer will enter a line item on the estimate and withhold the amount of the lien (claim) from payments due the Contractor. The amount withheld shall be in addition to retainage and/or securities. The Region shall not submit the final estimate to the Center for Accounting until the lien (claim) has been resolved.

2. If the lien (claim) is released and the Contractor furnishes the Center for Accounting with the properly completed lien (claim) release, the Center for Accounting will immediately fax a copy of the lien (claim) release to the Resident Engineer and the Region Program Engineer. The Region will pay the amount withheld and zero out the lien (claim) line item.

3. If a law suit has not been filed and the Center for Accounting has not received a notice of lis pendens within ninety days after the final settlement date, the Center for Accounting will fax a lien (claim) release notice to the Resident Engineer and the Region Program Engineer. The Region will pay the amount withheld and zero out the lien (claim) line item.

4. If a lawsuit is filed and the Center for Accounting receives a notice of lis pendens within ninety days after the final settlement date, the Center for Accounting will immediately fax a copy of the lis pendens to the Resident Engineer and the Region Program Engineer. The Region will continue to withhold the lien (claim) amount.

5. If the lawsuit is settled out of court, the Center for Accounting will immediately fax a copy of the lien (claim) release to the Resident Engineer and the Region Program Engineer. If a court judgment is reached, the Center for Accounting shall consult with the Attorney General before faxing instructions to the Resident Engineer and Region Program Engineer, which must detail how and to whom payment shall be made. The Region will make payment in accordance with the instructions from the Center for Accounting.

I concur:

Controller
Center for Accounting

4/22/02
Date

I concur:

Manager
Project Development Branch

4-22-02
Date

INTRA-DEPARTMENT AGREEMENT
FOR PROCESSING SUBCONTRACTOR AND SUPPLIER LIENS
Figure 100B

All questions related to subcontractor and supplier liens should be referred to the Center for Accounting at (303) 757-9571.

109.7 PAYMENT FOR MATERIAL ON HAND (STOCKPILED MATERIAL)

Only material which meets Contract requirements and has been fabricated or processed and is ready for installation into the project is eligible for payment, with the following exception:

This section specifies that payment for structural steel (unfabricated milled plate) may be made on projects where the plan quantity of structural steel exceeds one million pounds. The Project Engineer may pay for 60 percent of the invoice cost of the structural steel (unfabricated milled plate) delivered to the fabrication plant. The stockpile location and/or fabrication plant do not have to be in the State of Colorado.

See Section 120 of this *Manual* for further information and documentation requirements.

109.8 RESERVED

109.9 ACCEPTANCE AND FINAL PAYMENT

109.9.1 Processing Procedures

As the project nears completion, the Project Engineer should discuss completion and cleanup requirements with the Resident Engineer and Maintenance Superintendent, including items requiring maintenance or removal such as temporary erosion control measures and permanent drainage features. To expedite final acceptance, a punch list should be provided to the Contractor when the work is nearly complete.

Once the punch list items have been substantially completed, the Project Engineer should schedule a Final Inspection review meeting. The suggested attendance for this

meeting includes the Project Engineer, Resident Engineer, Program Engineer, Contractor, Maintenance, specialty groups and local agencies/jurisdictions as necessary. On Full Oversight projects, the FHWA must be invited.
On the same day the Contractor has satisfactorily completed all work in accordance with the Contract, the Project Engineer will prepare and forward an Acceptance Letter to the Contractor. See Section 120.3.2 for additional guidance. A copy of the Acceptance Letter must be transmitted to the Region Finals Engineer, Projects and Grants Section of the Center for Accounting, Programs and Project Analysis, Program Engineer and the Resident Engineer.

109.9.2 Requirements for Federal-Aid Projects

Form 1212 – Final Acceptance Report is required for all Federal-Aid projects. The Resident Engineer will verify the proper completion of the following items:

1. FHWA Form 47. Statement of Materials and Labor Used by Contractors on Highway Construction Involving Federal Funds has been completed and submitted as required. See Appendix B for additional information.

2. Form 473. Letter of Materials Certification has been properly completed and submitted.

3. Right-of-Way. Has been inspected and is free of apparent unauthorized encroachments.

4. Safety Deficiencies. Project has been reviewed for obvious safety deficiencies.

Comments regarding liquidated damages and dollar amounts and time extensions associated with claim resolutions may be included in the remarks section of Form 1212. However, comments regarding corrective work or deficiencies should not be included on Form 1212, because such items must be corrected prior to final acceptance.

The Resident Engineer will sign Form 1212, and forward the original to the FHWA Operations Engineer and one copy each to the Region Finals Engineer and the Projects and Grants Section of the Center for Accounting.

109.10 COMPENSATION FOR COMPENSABLE DELAYS

Subsection 109.10 of the *Standard Specifications* establishes the basis for quantifying compensation for compensable delays. The Contractor must provide evidence that the delay was compensable in accordance with subsection 105.17 and subsection 108.06 of the *Standard Specifications*. All costs must be documented by the Contractor and reviewed and approved by the Project Engineer.

SECTION 120
DOCUMENTATION REQUIREMENTS

This Section defines the documentation required by CDOT to ensure that adequate records are maintained during contract administration. Where appropriate, examples have been provided to clarify written instructions. Appendix B and Appendix C present extensive examples with completion instructions for many of the letters, notices, and forms, including change orders, that are typically used to administer CDOT contracts.

120.1 INTRODUCTION

120.1.1 Definition

Documentation is a record, written or electronic, which includes measurements, calculations, and observations of events that occur during the administration of a highway construction contract.

120.1.2 Purpose

Documentation is required by law and is an essential part of contract administration. It is also necessary to ensure contract compliance and that the Contractor is properly paid.

120.1.3 Preparation and Processing Requirements

120.1.3.1 Document Preparation

Project records must be accurate, complete, and easily understood. Documents should be prepared in a manner that will allow individuals not familiar with the project to easily and accurately determine what was performed, even if reviewed several years later.

The Project Engineer may choose to complete the project documentation by utilizing SiteManager and including the information on Daily Work Reports (DWRs) or by using hard copies of 266s, transferring the information to the DWR and referencing the 266 in the DWR. Regardless of which method is chosen, all the required pay documentation must be provided.

All pay documentation that is not actually in SiteManager must be referenced in SiteManager so the documentation can be easily located.

120.1.3.2 Project Number and Project Code

All documents will contain the project number and project code (i.e., subaccount).

120.1.3.3 Original Source Document

The original source document is the document or electronic file on which the original information was recorded that supports the final pay quantity. Original information will include, as necessary, supporting calculations and measurements. The original source document must be attached to or referenced on the document that authorizes payment.

120.1.3.4 Hard-Copy Documentation

All hard-copy documentation must be signed and dated by the person who recorded the information.

120.1.3.5 Electronic Documentation

Electronic documentation in SiteManager® will be processed as follows:

1. Access Agreement. Each user must sign a SiteManager® access agreement to create an individual account. The access agreement provides a password for the individual to utilize when accessing SiteManager®. The access agreement

establishes that data entered into SiteManager® under each individual user's password is equivalent to signing the following statement:

> *The item(s) and material(s) were inspected and found to conform reasonably with the Contract Plans and Specifications except as noted.*

A copy of the access agreement can be obtained from the SiteManager® website at http://internal/sitemanager.

2. Username Entries. SiteManager® automatically records the name of the person entering project data. If a different person performed the measurements or calculations, enter this person's name in the proper record.

3. Hard Copies. At the Project Engineer's option, a paper copy of the daily work report or Form 266 – Inspector's Progress Report may be maintained in addition to the electronic version in SiteManager®. However, hard copies of supporting information that cannot be easily entered into the electronic version of the daily work report (e.g., measurements, charts, sketches) must be properly referenced in the daily work report and maintained as a separate document.

120.1.3.6 Photographs and Video Recordings

If photographs or video recordings are taken on a project, the following information must be included with the record:

- project number and project code;
- name of the person who took the picture or video recording;
- date and time the picture or video recording was taken;
- tape counter or indexing reference, if available; and
- location and station number.

120.1.4 Responsibilities

120.1.4.1 Resident Engineer

The Resident Engineer is responsible for assuring that complete and accurate documentation is compiled. The documentation is subject to Federal and State audits and reviews.

120.1.4.2 Project Engineer

The Project Engineer will compile, or cause to be compiled, the required documentation.

120.1.4.3 Project Inspector

The Project Inspector has the primary duty of ensuring that construction is performed in accordance with the Contract. The Project Inspector is the representative of the Project Engineer and will maintain complete and accurate records of the work performed, the materials used, the disposition of rejected materials, and the measurements of the items inspected.

120.2 RESERVED

120.3 CORRESPONDENCE

120.3.1 Letters

Letters for all correspondence outside the Department should be prepared on CDOT letterhead.

120.3.2 Acceptance Letters

Acceptance Letters (see Appendix B) for final project acceptance should, at a minimum, contain the following information:

- date and time of acceptance;

- documentation and forms that the Contractor must submit before the Project Engineer is permitted to reduce retainage;

- documentation and forms that are required from the Contractor before submittal of the final estimate for payment;
- date that the final estimate quantities will be available for Contractor review;

- name and telephone number of the CDOT contact person from whom the Contractor can obtain information regarding the final estimate; and

- recognition of any portion of work that exhibits an exceptional product or effort by the Contractor.

On the same day the project is accepted, forward the original Acceptance Letter to the Contractor and one copy each to the Region Finals Engineer, Program Engineer, Resident Engineer, Programs and Project Analysis and the Projects and Grants Section in the Center for Accounting.

The letter should be sent by certified mail, return receipt requested, or hand delivered. If hand delivered, the Contractor should sign a copy indicating receipt. The Acceptance Letter triggers the statutory requirement of advertising for final settlement pursuant to *Colorado Revised Statutes 24-70-101*. If all documentation required for finalization has not been received within 30 days, the Project Engineer should send the Contractor a written reminder.

120.3.3 Memoranda

Prepare all correspondence within the Department using a memorandum format with CDOT logo.

120.4 FORM 105 – SPEED MEMO

Use Form 105 – Speed Memo to document:

- directions and interpretations given the Contractor;
- instructions to Contractor for work formalized later with a change order;
- agreements between the Project Engineer and the Contractor; and
- transmittal of project documents and other project information.

The Contractor must sign each Form 105 – Speed Memo to acknowledge receipt, even if the Contractor does not agree with its content. If a Contractor refuses to sign the form, this refusal should be noted on the form. The form should then be immediately sent by registered mail to the home office address of the Contractor.

120.5 FORM 103 – PROJECT DIARY

The project diary should be prepared on Form 103 – Project Diary in either hand written or typed format. The Project Engineer is responsible for preparing Form 103. To ensure the precise recording of all Contract activities, the Project Engineer may require other CDOT personnel to prepare additional diaries. Consider the following guidelines:

1. Project Events. Document all events that occur during construction and the administration of the Contract, including:

    - work in progress,
    - labor and equipment used,
    - acceptability of materials used,
    - details of problems encountered, and
    - contacts with or directions issued to the Contractor.

2. Discussions. Document all discussions with Contractor personnel, property owners, CDOT Staff, and other agency personnel regarding the project.

3. Night Shift Work. Work on a night shift that begins before midnight and ends after midnight will be considered as occurring on the calendar day on which the shift ends. All documentation should be dated in accordance with this policy.

4. Audio and Video Recordings. Audio and video recordings may be used to supplement project diaries. If used, catalog the tape recordings so that they may be transcribed and indexed for future reference.

5. *Standard Specifications*. Figure 100C illustrates the minimum information related to the subsections of the *Standard Specifications* that should be included on Form 103 – Project Diary.

Subsection	Information to be Included on Form 103 – Project Diary
102.05	Prospective bidders (company and individual's name) who looked at the project, comments made, questions asked, and CDOT response.
104.02	Alteration of plans, character of work and quantities (including both anticipated and actual). Include a concise description of any changed condition, anticipated effect on Contract work underway, action required, and nature of increased work to the Contractor, including estimated time and cost to correct. Continue to document activities until the impacted work is completed.
104.03	Conditions leading to extra work.
104.04	Traffic conditions, roadway conditions, signing, flagging, detours, etc.
104.05	Use of materials found in the excavation. Conditions imposed on their use.
105.01	Directions or interpretations given to the Contractor.
105.03	Information leading to any decision on acceptance or rejection of work based on reasonable conformity.
105.04	Discrepancy in Contract documents and the decision as to which will be followed.
105.05	Objective comments on the competency of supervision and organization of Contractor. No comments should be included that could be perceived as derogatory.
105.06	Utility conflicts, status and details concerning any delay to Contract progress. Record the Contractor's effort to locate and protect utilities.
105.12	Unacceptable work – Include date and discussions leading to remedial action or rejection and ultimate resolution.
105.13	Problems concerning legal load restrictions.
105.14	Contractor efforts to maintain Contract work.
105.15	Project Engineer's action if such maintenance is not performed.
105.16	Actions taken in relation to partial or final acceptance. Include directions for completion of or correction of unsatisfactory work.
105.17	The Project Diary is the document most often referred to in the case of a Contract claim. If a claim is anticipated or has actually been started, detailed documentation covering all project activities and any impacts on the Contractor's operations should be recorded.
106.02	Material sources – Pit conditions before, during, and after removal of material; method of working; haul road; and any other problems noted. Contact with property owners.
106.05	Storage of Materials – Where stored, how and with whose permission. A Vested Interest Letter is required if the material is stored on private property. Record the condition of site at completion of project.
106.06	Method of Handling Materials – Damage and problems caused by transportation methods, production procedures, etc.
106.07	CDOT furnished materials. Record source, quality, cost, and handling.
106.08	Contacts made concerning non-domestic steel and actions taken.
107.01	Compliance with applicable laws. Comments by property owners or the general public.
107.10	Compliance with the *Manual on Uniform Traffic Control Devices* and the Traffic Control Plan.
107.16	Conditions and discussions related to opening portions of work to traffic, including CDOT and Contractor responsibilities.
107.17	Contractor efforts to protect work from damage.
108.01	Subcontractors working on the project.
108.03	Documentation of work progress as it relates to the Progress Schedule.
108.06	Clear statement explaining why time was or was not charged. To ensure consistency, it is recommended that only one person be designated to document weather, temperature, and other factors related to time charges.
108.08	Documentation of events leading to default or termination of the Contract must be carefully and concisely recorded.
108.09	
109.01	Inspection of scales and weigher certifications, as required.
109.07	Conformance to specifications and suitable storage conditions for materials on hand.

SUBSECTION INFORMATION TO BE INCLUDED ON FORM 103 – PROJECT DIARY

Figure 100C

120.6 REPORTS

120.6.1 Weekly Time Count Reports (Form 262 and Form 263)

Weekly time count reports provide a weekly statement of time charges to the Contract. Time charges must be made in accordance with subsection 108.06 of the *Standard Specifications*, appropriate for the method used to administer the Contract. See Appendix B for examples. Consider the following guidelines:

1. Work Days. Use Form 262 – Weekly Time Count Report – Work Days if contract administration is based on work days.

2. Calendar Days. Use Form 263 – Weekly Time Count Report – Calendar Days if contract administration is based on calendar days.

3. Fixed Calendar Date. If contract administration is based on a fixed calendar date, it is not necessary to use either Form 262 or Form 263.

4. Project Diary. Ensure that the project diary (i.e., Form 103) substantiates the daily assessment of contract time, especially when less-than-full-time charges are assessed.

5. Night Shift Work. Work on a night shift that begins before midnight and ends after midnight will be considered as occurring on the calendar day on which the shift ends.

6. SiteManager®. The SiteManager® Accessories feature includes Form 262 and Form 263. Use of these computerized forms is optional.

7. Suspension of Work. When a project is to be suspended in accordance with subsection 105.01 of the *Standard Specifications* or when less-than-full-time charges are assessed, the justification for the action must be documented on or attached to either Form 262 or Form 263, as appropriate. The documentation must include the reason the work was discontinued and when the work is expected to resume. The justification requirements for suspension will be the

same as that which would be required to support a change order to extend the project. When the Contractor requests the suspension, the Contractor must provide the required documentation to justify the suspension.

8. Contractor Refusal to Sign. Form 262 or Form 263, as appropriate, should be completed promptly and presented to the Contractor to sign and date weekly. If a Contractor refuses to acknowledge receipt by signing the form, this refusal should be noted on the form. The form should then be immediately sent by registered mail to the home office address of the Contractor. If the proposed time charges will be protested, the Contractor has 30 days to file the written protest.

120.6.2 Project Status Reports (Form 110 and Form 517)

A Form 110 or Form 517 is required for every construction project including Local Agency and enhancement projects. These forms have been computerized and the only information the Project Engineer is required to furnish is specific project information such as the current month's construction activities, final acceptance date, outstanding forms and/or documentation required of the Contractor, and a list of any claim and/or liens. In addition, the "Anticipated Completion" date must be reviewed and updated.

120.6.3 Project Financial Status Reports

120.6.3.1 Use of ProBE

The Project Engineer is responsible for monitoring the financial status of construction projects, as assigned. The electronic program ProBE calculates the current financial status of the project. To obtain the current project financial status, the report should be refreshed in ProBE after the projected quantities have been updated and the estimate has been run.

120.6.3.2 Requests for Additional Funds

If the projected completion cost is expected to exceed the project commitment amount for the current project budget, the Region is required to request additional funding by submitting Form 1186 – Contract Funding Increase/Decrease and Approval Letter (Funding Letter) to the CDOT Controller. This submission should be made at least two weeks prior to paying an estimate that will exceed the project commitment amount. The project commitment amount is equal to the amount of the Contract (i.e., bid amount) plus the projected amount of all planned force account work.

If the projected completion cost exceeds 115 percent of the latest Transportation Commission action, the Region is required to obtain Transportation Commission approval.

For further information, see *CDOT Procedural Directive 40.1 – Project Financial Status During Preconstruction and Construction*. Contact the Region Business Manager or the Center for Accounting for any needed assistance. See the example and instructions in Appendix B.

120.6.3.3 Processing of Funding Letters

A funding letter must be submitted and approved before any amount that exceeds the project commitment amount can be paid to the Contractor**.** The Region is responsible for determining when a funding letter should be submitted on a project (see Section 120.6.3.2). The following procedures should be used to process funding letters:

- The Region will complete the funding letter per the instructions and submit the completed funding letter to the CDOT Controller.

- If submitted electronically or faxed, the signed original hard copy must be immediately forwarded to the CDOT Controller.

- If the project has adequate funds, the CDOT Controller will approve and execute the funding letter.

- Once approved, the CDOT Controller will forward electronic mail notification and the approved hard copy to the Region.

- If there are inadequate funds for the project, the CDOT Controller will immediately notify the Region Program Engineer that the increase in funding was not approved.

120.7 CHANGE ORDERS

120.7.1 General Requirements

A change order is a construction-industry accepted term for a change in the scope, specifications, pay items, project limits, duration, or design of a project, as compared to the original Contract requirements. Change orders are legal documents that revise the terms of the original Contract between CDOT and the Contractor. A change order may also be used to supplement an existing agreement with an entity or a utility company; however, an agreement must first exist before a change order can be executed to modify the original agreement. Appendix C presents many examples of commonly occurring types of change orders.

120.7.2 Administrative Settlements

Every change order should be a fair and equitable agreement between CDOT and the Contractor. Change orders should not be affected by the personalities of either CDOT or Contractor personnel. Change orders at the Project Engineer/Region level must be based on a contractual basis using factual information to conform to Colorado Revised Statutes.

The Chief Engineer is the only CDOT individual with authority to make an administrative settlement between CDOT and a contractor. Region personnel cannot make administrative settlements. An administrative settlement is defined as a change order that is not based solely on a contractual basis using factual information.

Consider the following example: The Contractor submits a request for $100,000. The Project Engineer evaluates the request, reviews the Contract documents and is unable to support the request based on the facts and Contract requirements.

The Project Engineer considers the impacts that may result if the Contractor's request is denied and the Contractor files a claim. The Project Engineer and his staff are busy, and responding to a claim will require a great deal of time and effort.

It will probably be necessary to hire a claims consultant to assist in preparing the claim response, which will be expensive. If the claim is not settled and arbitration is necessary, costs will increase and additional time and effort will be required by the Project Engineer and his staff. The Project Engineer determines that the impacts of denying this request will be significant and doesn't have time to prepare a claim response.

Even though the request cannot be supported by the facts and Contract requirements, the Project Engineer makes a monetary offer to the Contractor. This is an administrative settlement regardless of the amount offered ($1,000 or $50,000) and cannot be made by Region personnel.

If the request cannot be supported by the facts and Contract requirements in accordance with subsection 105.17 of the *Standard Specifications*, the Project Engineer must deny the request. The Project Engineer should discuss denial of the request with the appropriate Area Engineer.

If a portion of the request is justified, the Project Engineer should execute a change order for the portion that is justified.

The Contractor must file a claim to pursue the request or the portion of the request that was not justified.

120.7.3 Preparation of Change Orders

120.7.3.1 Requirements and Responsibilities

The change order should be completed and signed by the Contractor prior to the start of the added or changed work. The Resident Engineer is responsible for approving all change orders. Refer to the pre-approval requirements in section 120.7.5.

In some cases, time constraints may prevent this from occurring. If it is necessary to commence work before the change order is completed, the Project Engineer must provide the Contractor with a written authorization to proceed. It is important that this authorization be as specific and accurate as possible to avoid further costs that may result from any confusion. The authorizing document should contain as much of the information required on the change order as possible. The Project Engineer may use a letter or Form 105 – Speed Memo to issue the authorization. The authorization must describe the specific work being authorized, the basis of payment, the applicable specifications, and the method of measurement. The basis of payment will be one of the following: Contract unit prices, agreed unit prices, lump sum or force account. When the basis of payment is agreed unit price or lump sum, the memo must include the actual agreed unit price or lump sum. The change order should be completed and executed as soon as possible.

The Form 90 – Contract Modification Order is used to document all changes to the original Contract, including minor contract revisions. The MCRs do not have to be submitted until the Final is submitted. It is acceptable to include more than one MCR line item on each Form 90.

120.7.3.2 Required Information

Change orders must be prepared in a clear and concise manner to effectively communicate to the Contractor the exact work to be performed, the applicable specifications, the basis of payment, and the impacts to contract time. Only contractual and factual information should be presented in the change order. Change orders will include the following information:

1. Heading Information. Ensure that the heading information on the Form 90 is correctly completed including the change order and/or minor contract revision line item reference.

2. Cost Adjustments. Include the estimated increase or decrease in project cost associated with the change order.

3. Opening Statements. The use of one of the following opening statements is required on all change orders

   - "You are hereby authorized to ... ."
   - "Your Contract is hereby modified to include … ."
   - "Your Contract is hereby revised to ... ."

4. Minimum Information. The change order must clearly describe, at a minimum, the following information:

   - description of work;
   - location of change;
   - description of materials, including quantities and specifications;
   - construction requirements including plan and specification references;
   - method of measurement; and
   - basis of payment.

5. Contract Time. Ensure that contract time is properly addressed in the change order. If no time will be granted, add the statement "No Additional Time" to the change order.

6. Attachments. If attachments are necessary, ensure that each attachment contains the project number and project code and is sequentially numbered and referenced in the change order. If new or revised plan sheets are required, ensure that they are referenced as attachments to the change order and sealed by the responsible designer, as discussed in *CDOT Procedural Directive 508.1 – Professional Engineer's Stamp*.

120.7.4 Statewide Uniformity

The Area Engineer is responsible for providing subject matter expertise, ensuring statewide uniformity, and monitoring change orders for completeness and conformance with established CDOT policies and procedures. The Area Engineer is not, however, authorized to approve change orders. The Project Engineer must contact the Area Engineer for advice and assistance on all Contract Modification Orders except those for Minor Contract Revisions. At a minimum, the following items will be discussed:

- circumstances precipitating the change order;
- items of work to be included in the change order;
- basis of payment and justification for the prices being authorized; and
- justification of any time extensions.

120.7.5 Pre-Approval Procedures for Change Orders

Regardless of the funding source, the Project Engineer must obtain pre-approval from the Resident Engineer before the Contractor signs a change order; and, upon notification, the Resident Engineer should consult with the Region Program Engineer in responsible charge of funding decisions.

For projects with Federal oversight, written pre-approval from the FHWA Operations Engineer is required for all change orders that include changes to specifications or major design changes that meet any of the following conditions:

- significant revisions to design features;
- sizable price adjustments;
- revisions to project scope or limits;
- changes to approved environmental features; or
- change orders that are estimated to cost more than $250,000.

The Resident Engineer must pre-approve the change order before the Project Engineer requests pre-approval from the FHWA Operations Engineer.

Other pre-approvals may also be required, as discussed in Section 120.7.7.

120.7.6 Letter of Explanation

A Letter of Explanation is required to justify each change order. It is acceptable to submit one letter of explanation for all of the MCRs. This letter is not distributed to the Contractor. Because the Letter of Explanation will provide sufficient justification, it is not necessary to provide a detailed explanatory narrative or justification on Form 90 – Contract Modification Order.

120.7.6.1 Content Requirements

The Letter of Explanation must contain sufficient information for a person unfamiliar with the project to review and understand the change without additional assistance (see Appendix C). The following information must be included in the Letter of Explanation:

1. Description of Work. Fully describe the modifications to be performed.

2. Explanatory Narrative. Provide a clear and detailed explanation of why the change is being made.

3. Measurement and Payment. Include the method of measurement and the basis of payment that will be used to pay for the work.

4. Contract Time. Explain the impact the change will have on contract time. If time will be added to the Contract, ensure that the letter thoroughly justifies the extension. Time extensions should only be granted if an analysis of the project schedule determines that the change will cause the Contractor to exceed the original contract time.

5. Price Justification. Include justification for each price to be paid for the work. See Section 120.7.6.2 for additional information on price justification.

6. Conversations and Concurrence. Include the dates and with whom (name and section) conversations were made and when concurrence was received from the responsible design engineer and any specialty units (e.g., Staff, Region, consultant). The Professional Engineer of Record should review and approve changes to design plan sheets. Also include the date when the change order was discussed with the Area Engineer (see Section 120.7.4).

7. Financial Status. Describe the financial status of the project. See Section 120.7.6.3 for documentation requirements.

8. Budget Action. Include an explanation of budget action as discussed in Section 120.7.6.3.

9. Status of Work. Include a notation regarding work status, such as “No work has started” or “Because of the emergency nature, work has commenced.”

120.7.6.2 Price Justification

When the proposed basis of payment is an agreed unit price or lump sum, a justification for the basis of payment must be included in the Letter of Explanation. The price must be justified by one or more of the methods discussed in this Section. Contact the Area Engineer, as needed, for advice and assistance.

The justification documentation must be attached to the Letter of Explanation and included with the original copy of the change order.

120.7.6.2.1 Contractor Cost Analysis

The Project Engineer may request that the Contractor furnish a detailed cost analysis. The Contractor is not required to provide a cost analysis. The cost analysis must include all costs for:

- labor,

- specific equipment,
- material, and
- an appropriate allocation of related fixed costs (i.e., overhead).

Fixed costs are usually offered as a percentage loading of the direct costs. This loading should be reasonable and justifiable.

The Project Engineer may use the cost analysis to justify an agreed unit price or lump sum, provided that the analysis is reviewed and the Letter of Explanation states that:

- The labor and equipment hours are reasonable.

- The labor rates are correct, and the equipment rates are reasonable, as compared to those presented in the *Rental Rate Blue Book for Construction Equipment*. If the Contractor will be renting equipment, actual rental rates are acceptable.

- The material quantities and prices are reasonable.

- The total cost, including overhead, is reasonable.

120.7.6.2.2 Independent Cost Analysis

The Project Engineer may prepare an independent force account analysis to justify an agreed unit price or lump sum. The unit price or lump sum justified by this method should not exceed the total cost determined by the Project Engineer's independent force account analysis.

120.7.6.2.3 *CDOT Cost Data Book*

Price justification should be performed by comparing the unit prices with those documented in the latest version of the *CDOT Cost Data Book*. If the proposed unit price is unreasonable or significantly greater than the average unit price in the *CDOT*

Cost Data Book, further justification must be provided. It may be necessary to review the detailed data for the item.

Occasionally, the price in the *CDOT Cost Data Book* will be sufficiently close to accept the Contractor's proposed price as reasonable. For example, the Contractor submits a price of $2,350 for an inlet, but the average price in the *CDOT Cost Data Book* is $2,268. This may be considered reasonable.

The prices presented in the *CDOT Cost Data Book* are average prices. It is unreasonable to expect the price comparison to be exact prior to acceptance. It may be reasonable to accept price deviations within five to ten percent.

Comparisons can be made based on the quantity involved, the project location, weighted averages and the range in prices in the *CDOT Cost Data Book*. Either average bid or award prices can be used. It is also reasonable to consider inflation and unusual project factors. The latest issue of the *CDOT Cost Data Book* should be used for these comparisons. Consider the following example:

Example of Weighted Average: Is $2.75/gallon a reasonable price for 500 gallons of Item 411-10255, Emulsified Asphalt (SS)?

From the 1998, *CDOT Cost Data Book* (English):

Project	Gal. X $/gal. =	Cost
NH0702-209, Eagle Rest Area	531 X $4.40 =	$2336.40
CC0251-144,Port of Entry-Trinidad	428 X $2.00 =	$856.00
STA0852-079, Louviers, N of Sedalia	422 X $2.00 =	$844.00
	1381 gallons	$4036.40

$4036.40/1381 gallon = $2.92/gallon. Therefore, $2.75 /gallon is reasonable.

It is not acceptable to simply state that the Engineering Estimates and Market Analysis Unit of the Contracts and Market Analysis Branch concurs with the agreed unit price or lump sum. The Engineering Estimates Unit may be contacted for advice and assistance on issues such as market conditions, inflation, site-specific cost fluctuations, and

guidance on analyzing cost data. The Project Engineer is responsible for justifying the prices paid for the work.

120.7.6.3 Budget Actions

The Project Engineer is required by Procedural Directive 40.1 to prepare an updated CDOT Form # 65 for active construction projects on a monthly basis. This is to be reviewed by the Resident Engineer prior to the time the Interim Estimate is paid to the Contractor. Procedural Directive 40.1 also requires that no active construction project exceed budgeted funds by more than five (5) percent.

The Region Program Engineer is responsible for funding decisions, which includes signing the change order and indicating the type of funds. The Region Program Engineer must also approve all increases to the current minor contract revision limit. The date and new limit (i.e. cumulative total) will be recorded by a letter or E-mail from the Region Program Engineer to the Project Engineer. Concurrence from the Region Program Engineer is to be obtained prior to exceeding each cumulative limit. The Project Engineer must include in the Letter of Explanation a description of the financial status of the project. The following table is made available to assist Project Engineers in addressing this requirement, and could be used in the Letter of Explanation:

(FOR EACH STATEMENT ON THE LEFT, CHECK ONE STATEMENT ON THE RIGHT)

The amount listed in PROJ'D TO COMPL column on Line [7] Project Commitment Amount*:	__ Does not exceed approved Project Commitment Amount**- ***No*** Form 1186 required __ Exceeds approved Project Commitment Amount**- ***Form 1186 Required*** __ Exceeds approved Project Commitment Amount** - ***Delaying funding letter until the projected quantities can be adjusted accurately***
The amount listed in PROJ'D TO COMPL column on Line [22] Total Cost of Project is*:	__ <5% Over Current Allotment*** - ***No Budget Action is required*** __ >5% Over Current Allotment*** - ***Budget Action is required***
The amount listed in PROJ'D TO COMPL column on Line [22] Total Cost of Project is*:	__ <15% Over Current TCA**** – ***No Commission Action required*** __ >15% Over Current TCA****– ***Commission Action is required***

Notes:

*Add to this amount the total cost of the CMO including CE costs.

**The approved Project Commitment Amount is the sum of the Awarded Project Commitment Amount (i.e. Line 7, AWARD column of Form 65 in ProBE) and any approved funding letters (CDOT Form 1186 – Contract Funding Increase/Decrease and Approval Letter).

***The Current Allotment is listed in Line 3, CURRENT column of Form 65 in ProBE.

****The Current TCA (TRANS COMM ACTION) is listed in Line 23 (top right corner) of Form 65 in ProBE.

If the table above is not used in the Letter of Explanation, all appropriate text from the table will be excerpted and included, based on the boxes checked above. For example:

If the first line is checked in the box above, the project has a surplus, and the following statement will be included:

"No Form 1186 is required."

See Section 120.6.3.2 for additional information

120.7.7 Types of Change Orders

The situations presented in this Section require change orders but are not all-inclusive. Other situations may apply. Major and minor changes are processed using the Form 90-Contract Modification Order. The Resident Engineer will determine the type of change order required for the change. In addition to other criteria such as whether a change is a major design change, it is recommended that a $25,000 limit be used for a Minor Contract Revision line item. Cost alone should not be used to determine if a change is major or minor. See Appendix C for complete examples.

120.7.7.1 Major Design Changes

A Contract Modification Order is required for major design changes, including:

- significant errors or omissions in the original design,
- significant design features that are unsuitable for field conditions,
- Value Engineering Change Proposals,
- significant increase in cost, and
- other unforeseen circumstances of a significant nature.

The Licensed Professional Engineer responsible for the design is required to stamp the new or revised design, in accordance with *CDOT Policy Directive 508.1 – Professional Engineer's Stamp*. The Project Engineer is responsible for incorporating the changes into the As-Constructed Plans (see Section 121.2.3).

During preparation, the Project Engineer will obtain the required concurrences before the Resident Engineer approves the change order. Depending on the nature of the change order, the following concurrences may be required:

1. Roadway Design. Major roadway design changes must have concurrence from the designer in responsible charge.

2. Structures. Major design changes to a structure must have concurrence from the Project Structural Engineer.

3. Typical Section. Major design changes to a typical section, including changes to the subgrade, must have concurrence from the Region Materials Engineer.

4. Compaction Specification. Prior concurrence from both the Area Engineer and the Materials and Geotechnical Engineer is required when a contract modification order is written to change the hot bituminous pavement compaction specification.

It is only necessary to note concurrences in the Letter of Explanation**.**

120.7.7.2 Differing Site Conditions/Significant Changes to Work

Differing site conditions and significant changes in the character of work, in accordance with subsection 104.02 of the *Standard Specifications*, can be complex; and the expertise of engineering and legal staff beyond the office of the Resident Engineer may prove to be invaluable. The Area Engineer is available to provide additional advice and assistance. Consider the following:

1. Differing Site Conditions. Subsection 104.02(a) of the *Standard Specifications* defines differing site conditions.

2. Claims. A claim situation may occur if the Contractor encounters conditions that differ materially from those indicated in the Contract. If the Contractor files a claim, refer to subsection 105.17 of the *Standard Specifications* for additional guidance.

3. Significant Changes in Character of Work. Subsection 104.02(c) of the *Standard Specifications* defines significant changes in the character of the work.

4. Contract Time. Subsection 108.06 of the *Standard Specifications* defines when the Contractor may be entitled to additional contract time.

120.7.7.3 Project Termini Extensions

The preparation and approval of a Project Termini Extension is a detailed process with very specific requirements. These procedures are stipulated in both state and federal statutes to ensure environmental regulation compliance, competitive bidding and to result in the best value for the State. It is very important that the Project Engineer follow the procedures for documentation and pre-approval (See Section 120.7.7.3.3). The justification of extensions is carefully scrutinized to ensure that the proposal is in the best interests of the State.

In accordance with subsection 104.01 of the *Standard Specifications*, a Contract Modification Order is required for all project termini extensions. There are two types to consider: Type I – Routine and Type II – Critical. Both types require written pre-approval by the Chief Engineer and the Project Development Branch Manager (see Section 120.7.7.3.3). The Contractor must not sign the change order nor commence work until pre-approval has been obtained. The Project Engineer must first determine which type is applicable and note the type in the title of the change order. Evaluation criteria and pre-approval procedures for each type are discussed in the Sections that follow.

120.7.7.3.1 Type I – Routine Project Termini Extensions

All of the following criteria must be met when processing a change order for a Type I Extension (See Section 120.7.7.3.3 for additional pre-approval requirements):

1. State-Funded Projects. The following criteria applies to change orders for Type I Extensions on State-funded projects:

    - The Contractor is willing to do the extra work.
    - The Contractor has obtained sufficient additional bonding and insurance for the additional work.
    - The need for the work was initially established during the design process, but the work was omitted because of funding constraints.

- The work constitutes a lengthening of the project, will be performed in a no-work section of the project, or is an added location for projects with various locations. In all cases the work is similar in kind and nature to the original Contract work.

- Project funds are available and the work can be completed at reasonable unit prices.

- Added work will be paid at Contract unit prices with minor adjustments that are considered necessary and desirable. No work will be paid by force account.

- The total value of the proposed Type I Extension does not exceed either 20 percent of the original Contract or $100,000, whichever is less.

- The value of all negotiated work (i.e., work which will not be paid for at Contract unit prices) does not exceed 20 percent of the value of the added work.

- The Region Environmental Manager has completed the necessary environmental clearances and permits and has given written concurrence.

- The Resident Engineer, Program Engineer and pertinent specialty groups have concurred with the proposal.

120.7.7.3.2 Type II – Critical Project Termini Extensions

All of the following criteria must be met when processing a change order for a Type II Extension (See Section 120.7.7.3.3 for additional pre-approval requirements):

1. State-Funded Projects. The following criteria applies to change orders for Type II Extensions on State-funded projects:

- The Contractor is willing to do the extra work.

- The Contractor has obtained sufficient additional bonding and insurance for the additional work.

- The proposed work is in reasonably close proximity to the project.

- The need for the work is of a critical nature for reasons of safety, structural adequacy, or design deficiency.

- Project or other funds are available to cover the cost of the proposed work.

- The cost of the proposed work is not expected to exceed 50 percent of the value of the original Contract.

- Performing the proposed work as a project extension will avoid the cost of preparing plans, advertising, and awarding a separate Contract. In order to justify a project extension, these costs should be at least ten percent less expensive than if the work were bid and completed under a separate Contract. The Project Engineer will prepare a cost estimate of the anticipated total cost of the proposed work, as if it were bid and performed under a separate contract.

  The Project Engineer shall submit an analysis to the Engineering Estimates and Market Analysis Unit of the Contracts and Market Analysis Branch (EEMA) comparing the proposed costs of the project extension to the costs if the work were bid as a separate contract. The EEMA may adjust the estimated costs to complete the work under a separate contract as necessary. If justified, the EEMA unit will concur that the anticipated cost savings to complete the work as a project extension is reasonable.

- The Resident Engineer and Program Engineer have concurred with the proposed design and the critical nature of the proposed extension.

- The Region Environmental Manager has completed the necessary environmental clearances and permits and has given written concurrence.

120.7.7.3.3 Pre-Approval Requirements for Project Extensions

1. Pre-Approval Procedures. Use the following procedures to obtain pre-approval for change orders for project extensions:

   - Written pre-approval by the Chief Engineer and Project Development Branch Manager is required for all project extensions.

   - The Project Engineer will submit to the Area Engineer a Letter of Explanation illustrating that the proposed extension meets all the criteria for a project extension, including required concurrences. The request must include "I Concur" signature-approval blocks for the Chief Engineer and the Project Development Branch Manager.

   - The Area Engineer will review the request to ensure it addresses all the project extension requirements and then forward the request to the Project Development Branch Manager for signature. The request will then be forwarded to the Chief Engineer for a decision.

   - The Chief Engineer will determine that the authorization of this work will not be at the expense of an identified priority needed elsewhere in the State.

   - The Area Engineer will obtain the required signatures and return the request to the Project Engineer.

   - The Region Program Engineer will make the Federal-Aid participation determination for all Federal-Aid projects after written approval has been obtained from the FHWA Operations Engineer.

2. Federal-Aid Projects. In addition to the criteria required for State-funded projects, written pre-approval is required from the FHWA Operations Engineer for use of

Federal funds for either type of project extension. The following are items that the Project Engineer should be prepared to discuss with the FHWA Operations Engineer:

- What is the reason for extending the project termini?

- Is the additional work programmed (i.e., included in the description of the original project or another project in the Statewide Transportation Improvement Program)?

- Does an environmental clearance exist for the extra work? Either the work must be covered by the original document for the original project or a new document must be prepared to cover the extra work. Guidance can be obtained from the Region Planning and Environmental Manager, and concurrence in any determination should be obtained from the FHWA Operations Engineer.

- What is the justification for not using competitive bidding?

120.7.7.4 Extensions of Contract Time

An extension of contract time requires a change order and is governed by subsection 108.06 of the *Standard Specifications*. There are two types of change orders regarding contract time extensions:

1. Contractor Request. If an extension of contract time is desired, the Contractor must forward a written request to the Project Engineer. The request must state how the work has been affected by items beyond the Contractor's control. The request must also include a revised progress schedule and supporting analysis showing how the work has been affected on the critical path to extend the completion of the project. If accepted, the Project Engineer may initiate a change order.

2. Extensions for Additional Work. Time extensions for additional work will be granted only when the added work will delay the completion of the project. No

time will be granted for work that can be completed concurrently with other work on the project. The Project Engineer must justify the time extension with an analysis showing how the work affects the critical path and extends the completion of the project. Upon completion of the analysis, record the amount of extra time granted on the change order, even if it is a zero adjustment.

120.7.7.5 Settlement of Contract Claim

Change orders for settlements of contract claims will be processed in accordance with *Standard Special Provision, Revision of Section 105 – Disputes and Claims for Contract Adjustments*. When the Chief Engineer settles a claim, the Area Engineer will provide sufficient information to the Region Program Engineer for the preparation of the change order.

120.7.7.6 CDOT Field Engineering Errors

A change order is required to correct a CDOT field engineering error and is eligible for Federal-Aid participation if the error could not have been reasonably anticipated or prevented. In addition to the requirements of Section 120.7.6, the Letter of Explanation will address the following:

1. Adequate Staffing. Include an explanation demonstrating that a sufficient number of field engineering personnel were available to fulfill the necessary construction engineering work.

2. Qualified Staff. Provide an explanation showing that the engineering personnel were sufficiently skilled and trained to understand the Contract.

3. Error Details. Provide specific information on the cause and the impacts of the error.

4. Corrective Actions. Describe the measures that were taken to prevent recurrence of a similar error.

120.7.7.7 Payment of Repairs

The Contractor shall be responsible for the maintenance and repair of all Contract items, unless the Project Engineer has relieved the Contractor of this responsibility in accordance with subsections 104.04, 105.14, and 107.17 of the *Standard Specifications* (see Sections 104.4, 105.14, and 107.17 of this *Manual* for additional information). The Contractor shall also be held responsible for damage to anything caused by his operations. If the Project Engineer grants relief from damage, a change order will be required to make payment for the damage and repairs. Consider the following:

1. Relief from Damage. CDOT will pay the Contractor for repair expenses under the following conditions:

    - The item damaged was not included in the Contract work, and the damage was sustained through no fault of the Contractor.

    - The damage to a Contract work item was through no fault of the Contractor, and the Project Engineer relieved the Contractor of responsibility in accordance with the governing *Standard Specifications*.

    - The damage to a Contract work item was due to an unforeseeable cause beyond the control of and by no fault of the Contractor. See Section 107.17 for additional information on unforeseeable causes.

    - To qualify for relief from damage due to a foreseeable cause, the Contractor must have attempted to reasonably protect the Contract work item from the foreseeable cause of damage. See Section 107.17 for additional information on foreseeable causes and conditional protection.

2. Letter of Explanation. In addition to the requirements of Section 120.7.6, the Letter of Explanation that accompanies the change order must include the following information:

- The reason the Contractor could not have foreseen the event that caused damage to the Contract work item.
- The normal precautions that were taken by the Contractor to prevent damage to the Contract work item.

120.7.7.8 Initiation or Extension of Utility Work

120.7.7.8.1 Initiation of Utility Work

A change order cannot be used to authorize utility work by a utility company that does not have an existing agreement with CDOT for the particular project on which the relocation is to be performed. When it is determined that relocation of an existing utility is essential to the satisfactory completion of the Contract within its intended scope and there is no existing agreement with the utility for the project, the following procedures must be used to authorize the utility work:

1. Notify Region Utilities Engineer.

2. Determine Reimbursement Eligibility. The Region Utilities Engineer will determine if the work is eligible for reimbursement in accordance with *23 Code of Federal Regulations 645.107, Subpart A*.

3. Non-Reimbursable. If the relocation work is not reimbursable, the Region Utilities Engineer will notify the utility to commence work and explain that it will be necessary for the utility to coordinate relocation work with the Project Engineer.

4. Reimbursable. If the relocation is determined to be reimbursable in accordance with *23 Code of Federal Regulations 645.107, Subpart A*, one of the following procedures must be used to accomplish the work:

    a. Work Performed by Utility. If the utility will do the work and bill the Contractor, the Contractor and the utility must agree on the terms and conditions for performance and payment of the work. A change order between CDOT and the Contractor will be executed that authorizes the utility work. Basis of payment will be a certified invoice from the utility to

the Contractor. The utility invoice will be the actual direct and related indirect costs of performing the work in accordance with established accounting procedures. Administrative compensation will be allowed per subsection 109.04(e) of the *Standard Specifications*.

b. Work Performed by Contractor. If the utility will allow the Contractor to perform the work and the Contractor is willing and capable, the Region Utilities Engineer will obtain a Contractor-Adjusted Utility Agreement from the utility, and the Project Engineer will execute a change order between CDOT and the Contractor to authorize the work.

120.7.7.8.2 Extension of Utility Work

If the cost of utility work will exceed the amount in the basic utility agreement, a change order is required to authorize the extension or overrun. The *Colorado Revised Statutes* requires a change order for every overrun or extension, no matter how insignificant. The Region Utilities Engineer is responsible for preparing the change order. The date of the change order must precede the date that the work was performed. Major overruns or extensions, as determined by the Region Utilities Engineer, require a supplemental utility agreement that must be approved before the work is accomplished.

120.7.7.9 Major Change to Traffic Control Plan

A change order must be used to authorize major revisions to the Traffic Control Plan included in the construction plans (e.g., addition of a crossover).

120.7.7.10 Acceptance of Non-Specification Materials

The Region Materials Engineer and the Materials and Geotechnical Branch should be consulted and concur in the use of non-specification material incorporated into the work. Justification should be in accordance with Section 105.3:

1. Items without an “F” Factor (see also Section 105.3.3.1.1). A change order must be prepared for an item that does not have an "F” factor. The change order will establish either a price reduction or an "F” factor. When an "F” factor is established, the price reduction will be calculated using the price reduction formula in the *Standard Specifications*.

2. Items with an “F” Factor and “P” Value > 25 (see also Section 105.3.3.1.2). A change order must be prepared for items with an "F” factor that have a calculated "P” value greater than 25. The change order must establish a price reduction based on engineering judgment.

120.7.7.11 Purchase of Materials

Consider the following when processing change orders for purchase of materials:

1. Conditions. A change order will be required for:

   - a materials purchase, such as gravel for a maintenance stockpile, from a Contractor who has a Contract with CDOT; and

   - Contractor purchased materials that were included in the Contract but not used on the project.

2. Change Order. The change order must include:

   - material specifications,
   - location and delivery requirements,
   - method of measurement, and
   - basis of payment.

3. Letter of Explanation. The Letter of Explanation must include:

   a. Justification. Justification for the material purchased.

b. Disposition. Proposed use of the material.

c. Account. Explanation of the account to the which the costs will be charged:

- If the material can be utilized by Maintenance, the material should be charged to the Maintenance Section. The Region Maintenance Superintendent must give prior approval.

- If the material cannot be utilized by Maintenance, it must be processed as a participating cost as follows:

  - If the material can be restocked, pay the restocking charge.

  - If the material cannot be restocked, pay the Contractor for the cost of the material. The material will become the property of the Contractor or the Department, as determined by the Project Engineer.

120.7.8 Situations Not Requiring a Change Order

Change orders are not required under any of the following conditions:

1. Deleted Items. A change order is not required if a Contract pay item is deleted, unless the Contractor is to be compensated for costs incurred before the item was deleted. The Contractor must be given written notification of the deletion.

2. Substitution of Materials. Substitution of materials, if allowed by the Contract, does not require a change order. Where materials are to be substituted, provide the Contractor with written permission using Form 105 – Speed Memo.

3. Price Adjustments. If a Contract formula is used to compute the price reduction for non-specification material, a change order is not required. A change order is

required to accept or correct non-specification material when the “P” factor is greater than 25 (see Section 120.7.7.10 and Section 105.3).

4. Additional Contract Items. A change order is not required to add items that are included in the Contract. Some examples include:

   - liquidated damages,
   - piling cutoffs,
   - supplier lien deductions, and
   - extra construction surveying.

   However, a change order is required for extra construction surveying if a rate different than that in the Contract is negotiated.

5. Force Account. A change order is not required for payment of planned force account to the Contractor unless the method of measurement or basis of payment is changed.

6. Field Revisions. The Resident Engineer will determine when a field revision constitutes a design change and requires a change order. Some examples of when field revisions do not require a change order include:

   - overruns or underruns of plan item quantities; and
   - minor adjustments to minor drainage structures, signs, fences, and walls.

   Field revisions must be properly documented on the As-Constructed Plans.

120.7.9 Distribution of Change Orders

120.7.9.1 General Requirements

The Region will distribute change orders as follows:

- Area Engineer, original change order with all attachments;
- Project Engineer, including all attachments;

- Resident Engineer, including all attachments;
- Region Program Engineer and Region Finals Engineer with all attachments; and
- Contractor, excluding the Letter of Explanation.

The Area Engineer will distribute change orders as follows:

- Records Center, original with all attachments; and
- Center for Accounting, change order only.

120.7.9.2 Projects with Federal Oversight

The distribution requirements presented in Section 120.7.9.1 apply to projects with Federal oversight; however, the following additional distribution requirements apply:

1. Major Design Changes or Changes Greater Than $250,000. For change orders greater than $250,000 or having major design changes, the Area Engineer will review and transmit the original change order with attachments to the FHWA Operations Engineer for approval. The FHWA Operations Engineer will return the approved original to the Area Engineer. The Area Engineer will distribute the signed copies.

2. Changes Between $100,000 and $250,000 with No Major Design Change. For change orders greater than $100,000 but less than $250,000 and with no major design changes, the Area Engineer will send a copy with all attachments to the FHWA Operations Engineer. FHWA approval is not required.

120.8 EMERGENCY CONSTRUCTION PROJECTS

120.8.1 Definition of Emergency Conditions

Fiscal Rule 2-2 of the State of Colorado Fiscal Rules defines an emergency as follows:

> An emergency is a situation that creates an immediate threat to public health, welfare, or safety, the functioning of state government, or preservation or protection of property. There is insufficient time to obtain a written waiver of the requirements for issuance of a commitment voucher pursuant to this fiscal rule before requiring goods or services to respond to the emergency.

If a situation does not pose an immediate threat to the public health, welfare, or safety, the functioning of state government, or preservation or protection of property, it is not an emergency and these procedures cannot be used.

120.8.2 Scope of Emergency Procedures

Fiscal Rule 2-2 of the State of Colorado Fiscal Rules requires specific actions in an emergency as follows:

> In an emergency, the head of an agency or institution, or his/her designee, may acquire goods and services necessary to respond to an emergency without execution of a state contract or purchase order, provided that such emergency procurements shall be made with such competition as is practicable under the circumstances. Disbursement may be made upon receipt of invoices, receipts, or other statements describing goods or services being purchased and the amount to be paid. Commitment vouchers shall be executed as soon as possible to define future performance obligations where required by the fiscal rules. As soon as practicable, and in no event later than the end of the next business day, a written report of the circumstances and the nature and value of the commitments shall be made to the chief financial officer of the agency and institution and to the State Controller.

In an emergency, only those goods and/or services that are necessary to respond to the emergency may be acquired without the execution of a state contract. Emergency procurements shall be made with such competition as is practicable under the circumstances. Once the emergency is ended, conventional contracting techniques must be used for any remaining work.

By declaring an emergency it is recognized by the State Controller, CDOT Controller, and CDOT upper management that time is of the essence. Because time is critical, the most cost effective procedure from a budget perspective may not be the most prudent course of action. The project manager must first focus on alleviating the immediate threat to the public health, welfare or safety, the functioning of state government, or the preservation or protection of property. The project manager must also make wise use of the state's resources.

120.8.3 Procedure for Emergencies

Fiscal Rule 2-2 grants the Executive Director the authority to obtain goods and services in an emergency without execution of a state contract. The Executive Director has delegated that authority to the Deputy Executive Director, Chief Engineer, Region Transportation Directors (RTD) and Maintenance Superintendents. Only the Executive Director or one of the delegates may declare an emergency pursuant to Fiscal Rule 2-2.

When an emergency occurs, the Region Authority (RTD or Maintenance Superintendent) should be notified of the nature of the emergency.

The Region Authority will:

1. Determine whether the emergency meets the requirements of Fiscal Rule 2-2.

2. Verbally approve procurement of a contractor and commencement of work prior to execution of a contract.

3. Designate a Project Manager who is the CDOT employee authorized to acquire the resources necessary to prudently respond to the emergency. The Project Manager is also responsible for oversight of the contractor’s activities.

4. No later than the end of the next business day after the emergency occurs, issue a written approval to procure a contractor and commence work prior to execution of a contract.

The Project Manager will:

1. Procure a contractor to deal with the emergency utilizing a process for the procurement that is as competitive as is practical.

2. Contact the Region Authority periodically to provide progress updates.

3. No later than the end of the next business day after the emergency occurs, submit a written request for emergency contracting to the RTD.

4. No later than the end of the next business day after the emergency occurs, submit a written report to the Controller.

5. Submit contracting information to the Agreements Unit or the Procurement Office as soon as practical.

The RTD will forward the written request for emergency contracting to the Chief Engineer for approval signature. Together they will determine the limits of the emergency work and the contracting method to be used for any work subsequent to the emergency. If the Chief Engineer is not available, the request will go to the Executive Director or Deputy Executive Director.

120.8.4 Contractor Selection for Emergency Work

Commensurate with the circumstances of the emergency, the most competitive process possible should be utilized to select a contractor. The following procedures will be used:

1. Preliminary Investigation:

   The Project Manager will perform the preliminary investigation and determine the best course of action. This involves determining what work needs to be done, how much needs to be done, and how it will be paid. For many emergency responses, the rapid response required and the unknown details of the work will dictate that the work be done on a force account basis. The cost of the work can

be estimated using pay items and quantities, force account analysis, or a combination of both. The following items must be determined:

- The scope and nature of the emergency work,
- Start date and time frame for completion,
- Pay items and estimated quantities (where appropriate),
- Estimated cost,
- Method of measurement and basis of payment.

2. Solicitation

As circumstances allow, bids should be solicited by phone or fax from at least three qualified contractors that can respond quickly. It is acceptable to solicit a bid from a contractor already working in the area. If the circumstances of the emergency, such as time constraints, limited interest, or lack of qualification makes it impractical to solicit three bids, the reason must be documented.

It is not proper to merely issue a CMO to a contractor nearby. If the work was not contemplated by the original solicitation for that contractor, then it is beyond the scope and the price agreed to in that contract. Issuing a CMO in such a situation may violate CDOT procedures and State Statutes applicable to government contract bidding. In such a situation, the work must be done under a separate contract. A nearby contractor may do the work, but a new contract would be needed for the new work.

3. Force Account Work

If force account is necessary, the work should be paid for in accordance with subsection 109.04 of the *Standard Specifications.* If doing so is not reasonable, then documentation must be provided explaining the rationale for exceeding labor and equipment rental rates. For example, the emergency may justify non-stop work activity for a short duration, which generally warrants higher rates. Contact the Engineering Estimates and Market Analysis Unit of the Contract and Market Analysis Branch, as needed, for assistance in justifying rates.

4. Work Authorization

A written authorization on CDOT Form 105 – Speed Memo, must be given to the Contractor performing the emergency work **prior to** the commencement of work. The Contractor must sign and return the authorization before proceeding. The written authorization must include the following:

- Scope of work and project limits,
- The required time to start work,
- Expected duration of the work,
- Estimated quantities,
- Method of measurement,
- Basis of payment, and
- Estimated total cost of the work.

If payment will be by force account, include either the agreed rates for labor and equipment or the provisions of subsection 109.04, whichever is applicable.

The Form 105 must include the following statement at the end of the memo, "By signature below, the Contractor agrees to perform the work and be compensated as detailed above."

120.8.5 Project Manager Responsibilities by the End of the Next Business Day after the Emergency Occurs

1. Written Request

The Project Manager must submit a written request for emergency contracting to the Region Authority. The written request must include the items listed below.

- A justification that an emergency exists in accordance with Fiscal Rule 2-2 (The explanation must be complete enough to describe the problem and how it qualifies as an emergency.)

- An explanation of why the normal procurement procedures will not permit procurement of a contractor quickly enough to address the emergency. (The request should state the time that will be required to obtain a contractor using the normal procurement process and why the emergency requires a quicker response)

- The scope of the emergency work, the limits of the project and the estimated cost.

2. Report to Controller

The Project Manager must make a written report of the circumstances and the nature and value of the commitments to the CDOT Controller and to the State Controller. Such report may be made via e-mail (mccullarg; and phil.holtmann@state.co.us).

120.8.6 Contracting Information

As soon as practical, the Project Manager must submit the following information to the Agreements Unit of the Contracts and Market Analysis Branch or to the Procurement Office, whichever is appropriate, for the preparation and execution of the emergency contract:

- A copy of the request for emergency contracting approved by the Chief Engineer.

- All required procurement documentation and a description of the method used to select the Contractor, including an explanation if less than three contractors were solicited, and any reasons for deviating from Department policy.

- The basis of payment for the contract.

  (1) When the work is to be paid on an agreed unit price or lump sum basis, submit the agreed prices, units, and estimated quantities, including justification for using the agreed unit price or lump sum basis.

(2) When force account is used, submit justification for payment in accordance with subsection 109.04 of the *Standard Specifications*. If the hourly rates to be paid for labor and equipment exceed those that would be paid in accordance with subsection 109.04, submit the agreed to rates and the justification for using the higher rates.

120.8.7 Contract

1. Payment Prior to Contract Signing

Disbursement may be made upon receipt of invoices, receipts or other statements describing the goods or services utilized and the amount to be paid. However, a Contract must be executed as soon as possible to define future performance obligations.

2. Preparation and Execution of Contract.

The Agreements Unit or the Procurement Office will prepare and execute the appropriate contract document as soon as practical after the emergency occurrence.

3. Administration of the Emergency Contract

The appropriate CDOT region will administer the Contract for the emergency work in accordance with CDOT policies and procedures.

120.8.8 Immediate Response

This procedure is to be used for immediate response to the emergency situation. Once the situation no longer constitutes an immediate threat to public health, welfare, or safety, the functioning of state government, or preservation or protection of property, it is no longer an emergency. Continuing work after dealing with the emergency requires evaluation of the situation and a decision of what contracting method to use for work subsequent to the emergency.

120.9 DISADVANTAGED BUSINESS ENTERPRISE FORMS

120.9.1 Form 713

Form 713 – Contractor DBE Subcontractor, Supply and Service Contract Statement must be placed in a sealed envelope and marked "Confidential" and submitted to the Project Engineer. Form 713 will be prepared as follows:

1. Subcontract Information. Form 713 must be completed for every Disadvantaged Business Enterprise subcontractor used on the project. The Contractor must complete and attach Form 713 to Form 205 – Sublet Permit Application. The information on Form 713 may cover more than one Form 205.

2. Supply/Service Information. Form 713 must be completed for every Disadvantaged Business Enterprise supply/service firm used on the project. The Contractor must complete the bottom portion of Form 713 for every Disadvantaged Business Enterprise supply/service firm. The Project Engineer will submit a copy of Form 713 to the Region EEO/Civil Rights Specialist. After processing, the Region EEO/Civil Rights Specialist will forward a copy to the Program and Project Analysis Unit of the Contracts and Market Analysis Branch.

120.9.2 Form 714

All bidders on CDOT projects must submit with their bid a fully executed Form 714 – Underutilized DBE Bid Condition Assurance for Federal-Aid/Non-Federal-Aid Projects and a list of proposed Underutilized Disadvantaged Business Enterprise subcontractors. Form 714 certifies the bidder's intended percentage of Disadvantaged Business Enterprise participation and the names the proposed Disadvantaged Business Enterprise subcontractors. Upon request, the Contracts and Market Analysis Branch will distribute the form to the Business Programs Office. There is generally no field involvement with respect to Form 714.

120.9.3 Form 715

For each proposed Underutilized Disadvantaged Business Enterprise, all successful bidders on CDOT and Local Agency projects must submit to the Business Programs Office, no later than 4:00 p.m. the day after the date of the bid, a fully executed Form 715 – Certification of Proposed Underutilized DBE Participation. Each Form 715 will certify:

- the items of work that will be subcontracted to the Underutilized Disadvantaged Business Enterprise;
- the dollar value of the subcontract for the Underutilized Disadvantaged Business Enterprise;
- the total dollar amount of all Underutilized Disadvantaged Business Enterprise subcontracts on the project; and
- the percent of the total Contract bid amount that represents the total dollar amount of all Disadvantaged Business Enterprise subcontracts on the project.

The Business Programs Office will make distribution as follows:

- Program and Project Analysis Unit of Contracts and Market Analysis Branch,
- Region EEO/Civil Rights Specialist,
- Resident Engineer, and
- Project Engineer.

120.9.4 Form 718

A Contractor who is the apparent low bidder on a CDOT project and fails to meet the Underutilized Disadvantaged Business Enterprise goals of the Contract must complete and submit Form 718 – DBE Good Faith Effort Documentation to the Business Programs Office no later than 4:00 p.m. the day after the bid opening. Form 718 documents the Contractor's good faith efforts to meet the Underutilized Disadvantaged

Business Enterprise goals and will be used to determine if the Contract will be awarded. There is generally no field involvement regarding Form 718.

120.9.5 Form 719

Form 719 – DBE Participation Summary is prepared by the Business Programs Office and summarizes the Underutilized Disadvantaged Business Enterprises listed on Form 715. It shows whether the Contractor has met the Underutilized Disadvantaged Business Enterprise goals of the Contract or has submitted Form 718 – DBE Good Faith Effort Documentation toward award of the Contract. There is generally no field involvement regarding Form 719. The Business Programs Office will make distribution as follows:

- Contracts and Market Analysis Branch,
- Region EEO/Civil Rights Specialist,
- Resident Engineer,
- Project Engineer.
- Office of Public Relations, and
- Program and Project Analysis Unit of Contracts and Market Analysis Branch.

120.9.6 Form 863

Form 863 – DBE Contract Goal Recommendation is used by the Region EEO/Civil Rights Specialist to establish the Underutilized Disadvantaged Business Enterprise goals of the Contract on every CDOT and Local Agency project. The Region Transportation Director, or designee, must also approve Form 863.

120.10 SUBLETTING OF CONTRACT WORK

Subletting of contract work will be performed in accordance with subsection 108.01 of the *Standard Specifications*. The Contractor may sublet no more than 70 percent of the

Contract work per *Standard Special Provision, Revision of Section 108 – Subletting of Contract*.

120.10.1 FHWA Form 1273

Item VII. 4. of FHWA Form 1273 – Required Contract Provisions – Federal-Aid Construction Contracts states the following:

> *No portion of the Contract shall be sublet, assigned or otherwise disposed of except with the written consent of the state highway agency contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the Contract. Written consent will be given only after the state highway agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the Prime Contract.*

On Federal-Aid projects where FHWA Form 1273 is applicable, the Contractor certifies on Form 205 – Sublet Permit Application that FHWA Form 1273 is attached to and incorporated in every subcontract and purchase order. The Federal Highway Administration considers contract work to include all work performed by rented or leased equipment, with or without an operator.

120.10.2 Form 205

The Department assures compliance with subsection 108.01 of the *Standard Specifications* by requiring on all projects the completion, certification, and submission of Form 205 – Sublet Permit Application. CDOT also uses Form 205 to track and monitor subcontracting percentage and compliance with Disadvantaged Business Enterprise requirements.

The Contractor shall complete and submit an original Form 205 to the Project Engineer for each subcontractor on the project, but the subcontractor may not begin work until

Form 205 has been approved. The Project Engineer will consult with the Region EEO/Civil Rights Specialist prior to approval.

The Contractor must submit a revised Form 205 if items of work are added to the subcontract. It is unnecessary to revise the Form 205 for over runs and under runs. This information is used by EEO to track Contractor compliance with good faith efforts.

To expedite a subcontractor's start date, the Contractor may fax a signed copy of Form 205 to the Project Engineer for signature approval. If this method is used, the Contractor must not delay in forwarding the signed original of Form 205 to the Project Engineer.

The Contractor must execute a written agreement with the subcontractor that includes all relevant State and Federal provisions, before the subcontractor begins work.

The following procedures should be utilized to ensure compliance with subsection 108.01:

1. Material Suppliers. Determine if the work to be performed by a firm or individual is part of the construction Contract or is supply of material. Although, material suppliers do not require a subcontract or Form 205, CDOT is responsible for tracking those that are considered either Underutilized or Disadvantaged Business Enterprises. For these types of suppliers, the Contractor must submit Form 713 – Contractor DBE Subcontractor, Supply and Service Contract Statement. Material suppliers are exempt from the provisions of the Davis-Bacon Act and are not required to submit payrolls.

2. Subcontractors. If a firm or individual subcontractor performs the work, a written subcontract, approved Form 205, and certified payrolls are required, subject to the following conditions:

    a. Owner/Operator Truck Drivers. The U.S. Department of Labor takes a non-enforcement position on drivers who own their own trucks, thus Davis-Bacon wages are not required. An owner/operator is defined as an owner driving a truck that is registered in the owner/operator's name. Truck drivers who are owner/operators must, however, appear on a

certified payroll. The owner/operator's name, address, and Social Security number must be included on the payroll with the notation "owner/operator" listed under the wages column. Owners of other types of equipment must comply with Davis-Bacon requirements. Contractors may either:

- include owner/operators on the Contractor's payroll with the required information, or

- submit Form 205 for the owner/operator and have the owner/operator certify and submit its own payroll.

b. Truck Drivers and Site of Work Considerations. Truck drivers who are not hauling on the site of work, from the site of work, or to the site of work are not covered by the requirements of the Davis-Bacon Act. The Department recognizes the following definition of site of work:

> *Site of Work: The site of work shall be defined as the physical location where the project exists and any adjacent property that is set up to service the project. If the staging area, pits, or plants can be accommodated on the project site or on adjacent property, but are located elsewhere for the purpose of circumventing the payment of predetermined wage, the site of work shall include the service area. For the purposes of determining site of work, adjacent shall be defined as "lying near or close to; sometimes, contiguous; neighboring. Adjacent implies that the two objects are not widely separated, though they may not actually touch."*

Project Engineers should contact the Contracts and Market Analysis Branch at (303) 757-9541 for assistance in making determinations.

c. Other Truck Drivers and Construction Personnel. All other truck drivers and construction personnel are covered by Davis-Bacon requirements and must appear on certified payrolls in accordance with the following:

- When the Contractor or subcontractor does not own the trucks or equipment, the truck drivers and equipment operators may appear on a Contractor or subcontractor certified payroll with wages shown. This includes concrete pumpers and crane operators.

- If the truck drivers or operators do not appear on the Contractor payroll, a written subcontract and completed Form 205 must be executed, and the truck drivers or equipment operators must appear on the subcontractor payroll.

120.10.3 Use of Form 205 for Leased or Rented Equipment

The following information defines the requirements for using Form 205 for leased or rented equipment:

1. Operators on Payroll. If the Contractor or subcontractor rents or leases equipment, Form 205 – Sublet Permit Application is not required if the operator:

   - is considered part of the Contractor or subcontractor organization, and
   - will appear on the Contractor or subcontractor payroll.

   This criteria applies whether or not an operator is supplied with the equipment.

2. Operators Off Payroll. If the Contractor or subcontractor rents or leases equipment with an operator, Form 205 is required if the operator:

   - is not considered part of the Contractor or subcontractor organization, and
   - will not appear on the Contractor or subcontractor payroll.

   The equipment subcontractor must have an approved Form 205, and the operator must appear on the equipment subcontractor payroll.

3. Federal-Aid Projects. On Federal-Aid projects, all employees performing contract work must appear on a payroll and be paid the predetermined minimum wage. This applies regardless of:

   - who rents or leases the equipment;
   - whether the equipment is rented or leased, with or without an operator; or
   - whether or not the equipment or operator are considered part of the Contractor or subcontractor organization.

120.10.4 Review, Approval, and Distribution of Form 205

120.10.4.1 Project Engineer Review

The Project Engineer will check the following items before submitting Form 205 – Sublet Permit Application to the Region EEO/Civil Rights Specialist:

1. Form 713. If the Contractor submits Form 205 for a subcontractor that is a certified Disadvantaged Business Enterprise, a completed Form 713 – Contractor DBE Subcontractor, Supply and Service Contract Statement must be placed in a sealed envelope, marked “Confidential,” and forwarded with the submittal.

2. Form 715. Compare Contract work items on Form 205 to those on Form 715, which represents the commitment to subcontractors that are certified Underutilized Disadvantaged Business Enterprises. Disadvantaged Business Enterprise subcontract amounts will be monitored using Form 205 and Form 713.

3. Partial Items. If partial items of work are sublet (e.g., the "Drive Only" portion of a bridge piling item), the percentage of the Contract unit price that is being sublet must be placed in the percent of original bid price column.

4. Other Checks. Check that all Contract unit prices, extensions, totals, and percentage calculations are correct.

120.10.4.2 Project Engineer Approval

The Project Engineer will sign and date Form 205, which constitutes approval to sublet portions of the Contract.

120.10.4.3 Region EEO/Civil Rights Specialist Review

The following items are the responsibility of the Region EEO/Civil Rights Specialist:

1. Debarment and Suspension. Check all proposed subcontractors for debarment or suspension. A list of Federally debarred Contractors, CDOT-debarred, CDOT-suspended Contractors, and interlocking ownership Contractors is available at http://www.arnet.gov/epls. Form 205 will not be approved if a Contractor has been debarred or suspended or there is reason to believe such action is being considered. The Region EEO/Civil Rights Specialist will immediately notify the Project Engineer and the Contracts and Market Analysis Branch Manager. For additional assistance, call (303) 757-9540.

2. Disadvantaged Business Enterprise Goals. Check the back of the application to verify whether goals will be met, and randomly check the listed Disadvantaged Business Enterprise subcontracts for compliance.

3. Subcontractor Information. Check the subcontractor information block, and verify the certification number and expiration dates listed for Disadvantaged Business Enterprise subcontractors.

4. Send Form 205 to Project Engineer. Sign and date Form 205 affirming that the information in Items #1 through #3 have been reviewed. Forward Form 205 to the Project Engineer.

120.10.5 Replacement of Subcontractor

If it is necessary to replace a subcontractor that is a certified Underutilized Disadvantaged Business Enterprise, the Contractor must follow the procedures in the *Standard Special Provisions* included in the Contract. Although only the underutilized subcontractors listed on Form 715 are afforded such protection, it is never permissible to allow any subcontractor to be replaced on the basis of discrimination. Report potential cases immediately to the Region EEO/Civil Rights Specialist.

120.11 PROGRESS SCHEDULE/METHODS STATEMENT

The Contractor is required to submit methods statement and progress schedules in accordance with subsection 108.03 of the *Standard Specifications*.

120.11.1 Progress Schedule

Consider the following guidelines when processing progress schedules:

1. Purpose. The progress schedule is used to evaluate the potential for modifying contract time, in accordance with subsection 108.06, and to evaluate claims, in accordance with subsection 105.17 of the *Standard Specifications*.

2. Submittal. The Contractor shall submit either the bar chart or the critical path method 90-day project schedule at least five working days prior to the start of work.

3. Review and Acceptance. The Project Engineer will carefully review the schedule and either return it to the Contractor for revision or provide initial written acknowledgment of receipt. No schedule will be accepted that shows completion of work after the authorized number of workdays or the specified fixed completion date of the Contract. If the Critical Path Method is used, no work will be permitted beyond the first 90-day period until the project schedule has been submitted and accepted. On large complex projects with a potential for claims, the Project

Engineer may want to utilize a non-project specific claim consultant in the Project Development Branch to assist with schedule reviews.

4. Schedule Updates. As the work is prosecuted, the Contractor shall prepare and submit monthly progress schedules that reflect the actual work performed. Progress payments will not be processed if the progress schedule has not been received by the Project Engineer on or before the payment cut-off date (see Section 109.6.1).

5. Lagging Schedules. If it appears that the actual progress is significantly lagging, the Project Engineer will forward written notification to the Contractor requesting submittal of a schedule that shows how the project will be completed on time. The Project Engineer will withhold progress payments if the Contractor fails to furnish the revised schedule within 15 days of receiving the written request.

120.11.2 Methods Statement

The methods statement is a narrative description of all work necessary to complete each salient feature listed in the *Special Provision – Commencement and Completion*. See subsection 108.03 of the *Standard Specifications* for formatting requirements. The methods statement will be submitted with the progress schedule at least five days prior to the start of work. The Project Engineer should review the methods statement and either return it to the Contractor for additional information or provide written acknowledge of its receipt. Appendix B illustrates an example. Note that all information contained in the methods statement is proprietary and must be kept confidential.

120.12 MATERIALS

The requirements for materials documentation is presented in the *CDOT Field Materials Manual*. The Project Engineer must comply with the documentation requirements.

120.12.1 Nuclear Gauges

Chapter 800 of the *CDOT Field Materials Manual, Documentation Chapter,* addresses the proper use and storage of nuclear gauges that are used to perform various materials testing. A radiological monitoring device must be worn by all personnel that operate testing equipment with a nuclear source (i.e., moisture/density gauge, asphalt content gauge), in accordance with *CDOT Procedural Directive 89.2 – Medical Monitoring for Hazardous Materials Workers*. See Chapter 800 of the *CDOT Field Materials Manual* for additional guidance.

120.12.2 Field Laboratory Test Results

If material test results are found to be outside specified limits, the Contractor should be immediately notified using Form 626 – Field Laboratory Test Results. This will enable the Contractor to take corrective action in a timely manner to address non-complying materials. Form 626 is normally prepared by the Project Materials Tester, signed and dated by the Project Engineer, and presented to the Contractor for acknowledging signature. The completed and signed Form 626 is distributed to the Contractor, Project Engineer and the Project Materials Tester.

120.12.3 Calculation for Price Reduction

When the materials furnished, the work performed, or the finished product does not conform to the Contract, the material or work will be evaluated for price reduction according to subsection 105.03 of the *Standard Specifications*. Use the latest version of the price reduction software to perform the calculations. Check the data input carefully. Include the printout in the final pay quantity documentation, and enter the price reduction on the pay estimate as a negative dollar amount. Record the out-of-specification material on the appropriate materials summary report, and attach a copy of the printout from the price reduction software.

120.12.4 Concrete Batch Plants and Trucks Mixer Certification

120.12.4.1 Truck Mixer Certification

The Contractor is required to obtain certification from the concrete supplier that truck mixers are acceptable based on the requirements defined in subsection 601.07(c) of the *Standard Specifications*. Form 46 – Concrete Truck Mixer Inspection Certification will be used to document this information and certify all trucks to be used on the project. See Appendix B for a sample Form 46. This certification shall be completed whenever the Contractor purchases a mixer truck. The Contractor shall provide the Project Engineer with a copy of this certification with the correct date and current project number for each project. The Contractor will be required to complete a new certification only if flights are changes and the wear marks are different than when the original certification was completed. Ready Mix supplier signature approval is required. During the project, spot checks of truck mixers should be performed and documented in the project diary.

120.12.4.2 Batch Plant Certification

Prior to initiating concrete placement, the Project Engineer will ensure that the batch plant has current scale and water-meter certifications. The condition of batching equipment and material storage areas should also be inspected for compliance in accordance with the requirements defined in subsections 601.07 and 106.05 of the *Standard Specifications*, respectively. Record this information in the remarks section of Form 46 – Concrete Truck Mixer Inspection Certification or in the project diary.

120.13 CONFERENCES

Section 120.13 discusses several types of conferences that are typical of CDOT construction projects. Appendix A presents sample conference agendas that may be used “as is” or as a guide in developing customized agendas for the Region or project.

120.13.1 Preconstruction Conference

120.13.1.1 Purpose

As soon as practical after a Contract is awarded, the Project Engineer will arrange a Preconstruction Conference with the Contractor to discuss the prosecution of work. The Preconstruction Conference is a good opportunity to review with the Contractor the Department's expectations and the details of the project before construction begins.

120.13.1.2 Notification Letter

A Preconstruction Conference Notification Letter should be prepared and forwarded to the Contractor. The letter should include the meeting date, time, and location, and also an itemized list of all information and documentation that CDOT needs from the Contractor before the conference and the date this information is due. Ensure the due date provides the Department with sufficient time to adequately prepare the conference agenda. See Appendix A for examples of both letter and fax notifications.

120.13.1.3 Preconstruction Conference Agenda

The Preconstruction Conference should follow a carefully prepared agenda, similar to the example presented in Appendix A. Emphasize at the Preconstruction Conference that, regardless of who is responsible for the cost of repair or maintenance, both CDOT and Contractor personnel are responsible for ensuring that all dangerous situations are immediately corrected. Prompt notification of the Project Engineer and correction by the Contractor are important.

120.13.1.4 Distribution of Meeting Minutes

After the Preconstruction Conference, a completed copy of the agenda and the minutes of the meeting should be forwarded to each attendee, including the FHWA Operations Engineer for all projects with Federal oversight.

120.13.2 Hot Bituminous Pavement Pre-Paving Conference

Paving operations on projects that will use large quantities of asphalt paving material should be coordinated by the Project Engineer prior to starting the paving operation. A Pre-Paving Conference that involves all affected parties should be scheduled so that critical elements of the paving operation (e.g., traffic control) can be discussed and resolved before the operation begins. The meeting should be facilitated using a Conference Agenda similar to the one presented in Appendix A for the Hot Bituminous Pavement Pre-Paving Conference. After the conference, a completed copy of the agenda and the minutes of the meeting should be forwarded to each attendee, including the FHWA Operations Engineer for all projects with Federal oversight.

120.13.3 Concrete Pavement Pre-Paving Conference

The Project Engineer should conduct a Pre-Paving conference before concrete paving operations begin. Attendees should include all parties involved in the work. The meeting should be facilitated using a conference agenda similar to the one presented in Appendix A for the Concrete Pavement Pre-Paving Conference. After the conference, a completed copy of the agenda and the minutes of the meeting should be forwarded to each attendee, including the FHWA Operations Engineer for all projects with Federal oversight.

120.13.4 Structural Concrete Pre-Pour Conference

The Project Engineer should conduct a Pre-Pour Conference prior to placement of significant quantities of structural concrete on the project. Attendees should include all parties involved in the work. The conference should be held prior to placement of concrete for major structures, particularly bridge decks. The meeting should be facilitated using a conference agenda similar to the one presented in Appendix A for the Structural Concrete Pre-Pour Conference. After the conference, a completed copy of the agenda and the minutes of the meeting should be forwarded to each attendee, including the FHWA Operations Engineer for all projects with Federal oversight.

120.13.5 QC/QA Conferences for Asphalt and Concrete Pavements

The QC/QA specifications provide for incentive/disincentive payments, and it is important that Contractor quality control personnel and CDOT Quality Assurance personnel understand their respective duties and responsibilities. As such, a QC/QA Conference should be held prior to beginning each paving project governed by QC/QA specifications. The QC/QA Conference may be held simultaneously with the Pre-Paving Conference. The meeting should be facilitated using a conference agenda similar to the samples presented in Appendix A for hot-mix asphalt and concrete pavements. After the conference, a completed copy of the agenda and the minutes of the meeting should be forwarded to each attendee, including the FHWA Operations Engineer for all projects with Federal oversight.

120.13.6 Pre-Survey Conference

The purpose of the Pre-Survey Conference is to discuss the construction surveying and survey monumentation requirements of the project and to coordinate schedules. This meeting will be held prior to commencing survey work, and the *CDOT Survey Manual* includes sample agendas to facilitate the meeting. Attendees generally include: Superintendent, Survey Party Chief, Professional Engineer or Land Surveyor in responsible charge of the survey work, Project Engineer, Project Survey Inspector, and Region Survey Coordinator. After the conference, a completed copy of the agenda and the minutes of the meeting should be forwarded to each attendee, including the FHWA Operations Engineer for all projects with Federal oversight.

120.14 PIT PAYMENTS (Royalty Fees)

120.14.1 Pit Materials Report and Receipt

When CDOT holds the "Option to Buy Material" on the pit, Form 570 – Pit Materials Report and Receipt will be used to document interim and final payment by the Contractor to the pit owner. Form 570 should be used as follows:

1. The Project Engineer will provide the Contractor with a signed Form 570 documenting the pit quantities and the current payment due the pit owner.

2. The Contractor shall return this form to the Project Engineer with a check payable to the pit owner for the amount shown.

3. The Project Engineer will make payment to and obtain a signature from the pit owner.

4. The Project Engineer will make distribution of the signed Form 570 to the Region Program Engineer, Region Materials Engineer, Resident Engineer, Contractor, and pit owner.

5. Final payment will be processed in the same manner as described in Step #1 through Step #4, except that the Region Finals Engineer must verify the final quantities before final payment to the pit owner is made. A copy of the final Form 570 will be submitted to the Records Center.

120.14.2 Physical Pit Condition Certification

If CDOT holds the "Option to Buy Material," a Form 789 – Physical Pit Condition Certification will be used to document the pit owner's final acceptance of the physical condition of the pit, as required by the Contract. Form 789 should be completed and the owner's acceptance signature obtained by the Project Engineer as soon as practical after completion of the work in and around the pit site. A copy of Form 789 will be submitted to the Records Center.

120.14.3 Mining Permits

If the Contractor uses material from any source, the Contractor is required to furnish the Project Engineer a mining permit from the Mined Land Reclamation Division or a letter from the Mined Land Reclamation Division stating that no permit is required. This must be accomplished before the material is excavated. If the source is an available source

for the specific project and CDOT holds a current mining permit, no further action will be required by the Contractor.

120.15 INTERIM CONTRACT PAYMENTS

Section 120.15 provides recommended procedures for documenting the method of measurement and basis of payment for interim pay estimates. Documentation may be provided on either hard copy or electronic forms. See Section 121 for information on documenting final pay estimates. Contractors or subcontractors can access the pay estimate at http://www.dot.state.co.us/payestimates/pay.htm. The user is “contractor" and the password is "promptpay".

120.15.1 Documentation for Contract Pay Items

120.15.1.1 General

A series of CDOT numbered forms have been developed to facilitate documentation of the various pay items included in contracts. Use of these forms, either hard copy or electronic, is encouraged to organize documentation. The general use of hardbound field notebooks for pay item documentation is discouraged due to the large volume of irreplaceable documentation that would be lost if a field book were destroyed or misplaced. The project diary should not be used to document pay items.

Pay documentation should be entered in the Daily Work Report in SiteManager®. Use the various inspection forms for sketches, tabulations, calculations and comments directly related to the payment of contract items. These forms should be electronically attached to (or referenced in) the Daily Work Report in SiteManager®. The SiteManager® equivalent to a Form 305 – Project Record Item Sheet is titled the Item Quantity Summary. An acceptable alternative to using the Item Quantity Summary in SiteManager® is to maintain a Form 305 hard copy.

120.15.1.2 Quantity and Payment Considerations

The Project Engineer is required to approve all progress payments based on the interim quantities documented during the prosecution of work. Two documentation methods may be used, and the method selected for each pay item should minimize the time required to prepare and submit final quantities:

1. Method One – Measured or Counted Quantities. Method One should be used for pay items that can be measured or counted as the work progresses, especially those that cannot be determined after completion of the work (e.g., reinforcing steel). The source document will be used to support payment of actual quantities as the work is performed. Quantities of this type will be automatically posted to the Item Quantity Summary in SiteManager®, which is equivalent to Form 305 – Project Record Item Sheet. All source documentation and the Item Quantity Summary, or Form 305 if used, must be submitted with the final.

2. Method Two – Estimated Quantities. Method Two should be used when the actual quantity of the pay item cannot be determined as the work progresses (e.g., earthwork). The source document will be used to support payment of estimated quantities, which will be automatically posted to the Item Quantity Summary in SiteManager®. If Method Two is used, the final quantity of the pay item will be measured as indicated in the Specifications.

   The term, “estimated quantity”, means a quantity that is calculated approximately. It is the Project Engineer’s responsibility to calculate estimated quantities as accurately as possible so as not to overpay the Contractor. Consider the following:

   It is unacceptable to rely on load counts alone to justify interim payments. Interim surveys or quantities calculated based on cross section estimates may be used to support earthwork payments.

120.15.2 Methods of Measurement

Figure 100D illustrates methods of measurement for interim and final pay item quantities. This table is a guide. Refer to the Plans and Specifications for additional information.

ITEM TYPE	INTERIM	FINAL
201 – Clearing and Grubbing	Percent of lump sum.	Item is complete. If lump sum, include beginning and end dates.
202 – Removals	If lump sum, a percent of lump sum.	The total of the removal, whether a counted item, measured item or lump sum.
203 – Excavation and Embankment	Based on a calculated estimated quantity.	Plan amount, after being checked for omissions or any cross-section taken on the project.
206 – Structure Excavation/Backfill	A percentage based on the original calculations.	Plan quantity unless changes or errors are found.
207 – Topsoil	A percentage based on the original calculations.	Plan quantity unless changes or errors are found.
208 – Erosion Control	Actual amount used.	Actual amount used.
209 – Watering	Actual amount used based on certified meters.	Actual amount used based on certified meters.
210 – Resets	A reasonable percentage based on the whole amount.	Item is complete. If lump sum, include beginning and end dates.
212 – Seeding and Fertilizing 212 – Sodding	A percentage based on the original calculations.	Plan quantity unless changes or errors are found.
213 – Mulching	A reasonable percentage based on the whole amount.	Plan quantity unless changes or errors are found.
214 – Planting	Actual amount placed.	Actual amount placed.
215 – Transplanting	Actual amount placed.	Actual amount placed.
216 – Soil Retention Covering	Actual amount placed.	Actual amount placed.
217 – Herbicide Treatment	Actual amount measured.	Actual amount measured.
300 – Bases	Total quantity placed.	Total quantity placed.
400 – Pavements	Total quantity placed.	Total quantity placed based on certified tickets.
500 – Structures	Percent of plan quantity.	Plan quantity unless changes or errors are found.
500 – Piling	Actual measurements of piling and any welds.	Actual measurements of piling and any welds.
630 – Traffic Control Items	Payment per special provision.	Final measurement and/or count.

METHODS OF MEASUREMENT

Figure 100D

120.15.3 Force Account Work

120.15.3.1 Definition

A force account is a time and materials method of payment based on established hourly rates and the quantities of labor, materials, and equipment that are used to complete the work.

120.15.3.2 Force Account

A force account should only be used when the Project Engineer and the Contractor cannot agree on an agreed price for the work (i.e., unit or lump sum), or the nature of the work is such that it is not possible to determine an agreed price. The Department discourages the use of force account, because it increases the costs to the Department and removes the Contractor's incentive to efficiently complete the work. This is an especially important consideration for work involving large amounts of money.

120.15.3.3 Importance of Converting Force Account to Fixed Price

If a force account is currently in effect, the Project Engineer should be monitoring the work for an opportunity to convert this time-and-materials method of payment to one that is more suitable to the Department (i.e., agreed price). At some point during the work, a force account can often be converted to an agreed price, because both the Project Engineer and the Contractor have a better understanding of the scope and costs involved. Unless the estimated cost is less than $2,000, the Project Engineer should attempt to negotiate with the Contractor to determine if an agreement can be reached on an agreed price for the remaining work. If such an agreement can be reached, payment should be made as follows:

1. Payment for Work Already Completed. The work already completed will be paid for as force account.

2. Payment for Remaining Work. Reimbursement for the remaining work should be paid for at the agreed price (i.e., unit price or lump sum).

120.15.3.4 Initiating Force Account Work

Force account work that is not already included in the Contract (i.e., planned force account) must be authorized by a change order. The added item code should begin with a “700” prefix. Force account work is administered differently than other pay items. The Project Engineer, not the Contractor, is responsible for directing the work. Before force account work begins, the Project Engineer must discuss with the Contractor and reach agreement on many work-related issues. Although this will be performed in a cooperative manner, the Project Engineer is authorized to make all final decisions regarding the work. Consider the following guidelines:

1. Scope of Work. Discuss the scope of work to ensure that the Contractor fully understands what the work is to accomplish, including limits, expectations, and acceptance.

2. Construction Methods. Discuss with the Contractor the most efficient construction methods and procedures available to complete the work, and emphasize that the work is to be performed in an efficient manner.

3. Efficiency Improvements. Both the Project Engineer and the Contractor should continually monitor the progress of the work to determine if better methods are available to improve efficiency and reduce costs. In reality, such analyses will be the primary responsibility of the Project Engineer; and, where improvements can be made, the Project Engineer is authorized to require changes to the Contractor’s operations.

4. Conversion to Unit Pricing. Similar to efficiency improvements, both the Project Engineer and the Contractor should continually monitor the operation for the opportunity to convert the force account to unit pricing. In reality, such an effort will be the primary responsibility of the Project Engineer. See Section 120.15.3.2 for additional information on this topic.

5. Labor Issues. Discuss with the Contractor the most efficient use of manpower available to complete the work. If practical, utilize manpower that is available on the project. In most cases, this will be the most efficient procedure, but ensure that it does not adversely affect the prosecution and progress of other Contract work. In addition, ensure that the Contractor has a clear understanding of the number and classification of workers required (e.g., four laborers, three operators, and one foreman) and the number of hours to be worked each day.

6. Materials. Discuss with the Contractor the material issues related to the force account work, including:

   - required types,
   - available sources,
   - quantities and rate of use,
   - pricing, and
   - acceptance criteria.

7. Equipment. Discuss with the Contractor the most efficient use of the equipment available to complete the work. If practical, utilize equipment that is available on the project. In most cases, this will prove to be the most efficient, but may warrant a cost comparison to mobilizing more efficient equipment. The quantity of work will be a major consideration in this analysis. For example, if required only for a few hours, equipment available on the project may be the best choice, even if efficiency is discounted. However, if required for several weeks, it would probably be prudent to consider mobilizing more efficient equipment. Ensure that Contractor clearly understands what is required with respect to:

   - owned, leased, or rented equipment and any mobilization required;
   - equipment type (e.g., scraper, backhoe, haul truck);
   - size of equipment (e.g., five cubic yard, 15 cubic yard);
   - number of each equipment type required (e.g., one each, 20 each);
   - starting date required for each type of equipment; and
   - the hours the equipment is required each day.

120.15.3.5 Form 10

Force account work will be recorded daily on Form 10 – Inspector's Report For Force Account Work and is the source document for the pay item. Several key pieces of information must be recorded, and the preparation of Form 10 must be thorough. Consider the following when preparing Form 10:

1. Form Capacity. Form 10 has sufficient space to record five days of force account work. The dates recorded do not have to be consecutive.

2. Signature Approval. At the end of each work day, representatives of the Contractor and/or subcontractor must initial the daily record that has been documented on the Form 10.

3. Employee Names. Employee names must be recorded exactly as they appear on certified payrolls, either Contractor or subcontractor.

4. Equipment Data. The following information must be recorded on Form 10 for each piece of equipment used for the force account work:

    - description;
    - equipment number from Form 580;
    - equipment disposition (i.e., designated operation or on standby);
    - hourly equipment rental rate from Form 580; and
    - hours the equipment was used.

5. Supporting Information. Supporting information related to work progress, conversations with the Contractor, decisions, and any problems encountered should not be recorded on Form 10, but should be documented in the Project Inspector's diary (i.e., Form 103).

Upon completing Form 10 (i.e., five days of force account work entries), a copy should be forwarded to the Contractor. The Contractor shall use the copy of Form 10 to prepare the billing for the force account work. See Appendix B for a sample Form 10.

120.15.3.6 Form 580

Form 580 – Equipment Rental Rate Determination Request will be used to calculate equipment rental rates and must be retained with the force account documentation. Ensure that all required information is provided. See Appendix B for detailed information on completing the form.

120.15.3.7 Standby Equipment Rental Rates

As approved by the Project Engineer, standby equipment rental rates will be used to reimburse the Contractor for ownership costs and will be based on the *Rental Rate Blue Book for Construction Equipment*. Contact the Region, as needed, for assistance in determining these rates. Consider the following guidelines before approving use of standby equipment rental rates:

- If the equipment is idle because of a mechanical failure, there is no obligation for reimbursement.

- If the equipment is used for other non-force account work, standby rates should not be used.

- If equipment has been ordered available for work but is idle through no fault of the Contractor, standby rates should be used.

- If the cost for holding the equipment on site is less than the cost for removal and remobilization, standby rates should be used.

- If equipment is not mobilized under its own power, reimbursement will include the standby rate for mobilization, including disassembly and reassembly, if applicable; and, the hauling unit rental rate.

- Standby rates are not applicable to small tools.

120.15.3.8 Reimbursement for Leased or Rented Equipment

The Contractor will be reimbursed for leased or rented equipment as follows:

1. Actual Costs. If the cost can be substantiated by a certified invoice, the Contractor will be reimbursed for the actual cost of leased or rented equipment. It is possible for the hours on the invoice to differ from those on Form 10. For example, the Contractor may have had to pay for a minimum of eight hours, even though the piece of equipment was only used for six. The Contractor will be reimbursed for the actual cost of the eight hours.

2. Operating Costs. If operating costs are excluded from the rental or lease agreement, the Contractor will be reimbursed for the cost of operating the equipment. The rate of reimbursement for operating costs will be based on the *Rental Rate Blue Book for Construction Equipment*. Operating costs only apply to hours of actual operation.

3. Overhead Rates. The Contractor will be reimbursed for overhead costs at a rate of 10 percent per subsection 109.04.

4. Negotiated Equipment Rental Rates. Negotiated equipment rental rates may be used if they are less than those published in the *Rental Rate Blue Book for Construction Equipment*, including operating costs. Justification for negotiated rates must include the equipment number and rental rate from Form 580.

5. Rental Rates for Small Tools. Small tools are generally valued between $500 and $2,000. The rental rate for small tools will be $2 per hour of use. Standby rates do not apply to small tools per subsection 109.04 of the *Standard Specifications*.

6. Reimbursement for Fast-Wear Expendable Parts. If substantiated by a certified invoice, items such as saw blades, tooth-bits for saws, pavement breakers, and other similar equipment will be reimbursed at invoice cost. Payment will be made based on the percentage of wear caused by the work. The 15 percent loading for materials specified in subsection 109.04(b) of the *Standard Specifications* does not apply to fast-wear expendable parts.

120.15.3.9 Payment Procedures for Force Account Work

Before payment is made for force account work, subsection 109.04 of the *Standard Specifications* requires the Contractor to submit an itemized bill. In lieu of the Contractor submitting an itemized; however, the Project Engineer may choose to calculate the cost of the force account work. Consider the following when processing payment for force account work:

1. Review and Approval. The Project Engineer must review all force account invoices based on certified payrolls and the approved copies of Form 10. Pay the invoice on the estimate and submit the original document to the Finals Engineer. This should be performed on a monthly basis as the work progress. Do not backlog force account bills until finalization.

2. Certified Invoices. Certified invoices from the Contractor must support billings for the following items:

   - materials,
   - rented or leased equipment, and
   - specialty firms.

3. Certification Statement. Certified invoices must contain the following statement, which has been signed by the Contractor:

   "We certify, by photocopy of this invoice, that the quantity of material/rental or lease/specialty work, represented by this invoice was purchased and received for CDOT Project No. _____ and that the prices shown are actual costs."

   _____ _____

   Contractor Date

4. Certified Payrolls. The Contractor must furnish certified payrolls for the labor used on the force account work, even though certified payrolls may not be required by the Contract (e.g., State-funded projects).

5. Employee Pay Rates. Employee pay rates will not exceed the normal pay rate nor the prevailing wage for the area (e.g., the Contractor cannot double the normal pay rate for employees on force account).

6. Salaried Foremen. If a salaried Foreman is being used on force account work, the Contractor must furnish a payroll certifying the Foreman's pay rate and fringe benefits.

7. Superintendent Wages. Superintendent wages are included in the loading and should not be paid for separately, unless previously approved by the Project Engineer before the expense was incurred. This may be applicable where the only work on the project is the force account work added by change order.

8. Supplemental Payrolls and Billing Corrections. If certified payrolls do not agree with Form 10, the Contractor must submit a supplemental payroll or a new force account billing to correct the error. Minor errors may be corrected on billings and a copy returned to the Contractor, but under no circumstance should certified payrolls be returned for correction.

9. Loading. Loading will be applied as follows:

    a. Actual Wages. Actual wages and fringe benefits that are paid directly to the employee will be loaded 67 percent.

    b. Material Costs. A loading of 15 percent will be applied to material costs, including applicable transportation costs.

    c. Fast-Wear Expendable Parts. Loading will not be applied to fast-wear expendable parts.

    d. Administrative Loading. In accordance with subsection 109.04 of the *Standard Specifications*, administrative loading will be applied to the total force account work for subcontractors, specialty firms, utilities, and railroads.

10. Mathematical Checks. All calculations will be checked. Minor errors can be corrected by the Project Engineer and a copy returned to the Contractor.

11. Approval and Submittal. When the billing has been completely checked, it should be approved by the Project Engineer and submitted to the Finals Engineer. Submittal will include the following original documents as necessary:

    - Form 10,
    - Form 580,
    - Contractor billings,
    - subcontractor billings,
    - certified invoices for materials,
    - statement of materials taken from stock,
    - certified invoices for specialty firms, and
    - certified invoices for equipment rentals or leases.

12. Alternative Documentation Method. Alternatively, the Project Engineer will calculate the cost of the force account work before approving payment. If this method is used, the Project Engineer will use the following data to calculate the cost of the force account work:

    - Form 10,
    - Form 580,
    - certified payrolls, and
    - certified invoices.

    Items #1, #10, and #11 are not applicable to this payment procedure. After calculation by the Project Engineer, all documentation will be sent to the Region Finals Engineer.

120.15.4 Stockpiled Material

Payment will be made for stockpiled material only after testing, receipt of all Certificates of Compliance, and acceptance by the Department (see Section 109.7). The Contractor must submit the following documentation, which the Project Engineer will retain in the project file:

1. Certified Invoice. A certified invoice for purchased material must contain the following statement, which must be signed by the Contractor:

   "We certify, by photocopy of this invoice, the quantity of material represented by this invoice was purchased and received for CDOT Project No._____, and the prices shown are actual costs."

   _____ _____
   Contractor Date

2. Cost Analysis. A cost analysis must be provided by the Contractor in accordance with subsection 109.07 of the *Standard Specifications*. An example cost analysis follows:

   We (Contractor) request payment for 1,740 linear feet of HP 10x57 Steel Piling at the invoice cost of $8.97/linear foot. The following is a cost analysis showing sufficient funds remain to install the material:

Invoice Cost:	$8.97/linear foot
Labor to Install:	$3.58/linear foot
Equipment to Install:	$14.42/linear foot
Total Cost:	$26.97/linear foot

   The total cost is less than the $30.00/linear foot bid price, and the total amount requested for stockpile payment is $15,607.80.

   _____ _____
   Contractor Superintendent Date

   _____ _____
   Subcontractor Superintendent Date

   The Project Engineer will review this analysis for reasonableness. If the analysis is considered reasonable, the Project Engineer will sign and date it. Otherwise, it will be returned to the Contractor for further information or revision.

3. Letter of Vested Interest. If the site is not on the project or state-owned property, a Letter of Vested Interest from the owner and/or lessee of the property will be required. If the storage site is owned or leased by an entity (e.g., a city, county, transportation district), the Letter of Vested Interest will be signed by the entity employee who is responsible for that site. See Appendix B for an example.

120.15.5 Partial Payments

Partial payments to the Contractor are made once each month as the work progresses. Consider the following guidelines:

1. Retainage/Securities. The amount to be retained from partial payment, per specification, is automatically calculated. Subsection 109.06 of the *Standard Specifications* explains procedures to be used for reducing retainage or securities. The Contractor may provide securities in lieu of cash retainage to be withheld from payments. The Project Engineer will ask the Contractor if he intends to provide securities in lieu of retainage at the Pre-Construction Conference. After the securities have been deposited, the pay estimate computer program automatically posts them to the estimate. Questions concerning procedures for depositing or posting securities should be directed to the Projects and Grants Section of the Center for Accounting at (303) 757-9560.

2. Mobilization. Appropriate payment is made automatically by the pay estimate computer program. No additional documentation need be maintained.

3. Traffic Control Devices. The number of devices actually used needs to be reported. The payment amount is automatically calculated by the pay estimate computer program in accordance with subsection 630.15 of the *Standard Specifications*.

4. Price Reductions. Price reductions should be added to the estimate as a negative dollar amount in the pay item section.

5. Supplier Claims. Supplier claims should not be included as an adjustment to retainage. A separate line item with a negative dollar amount should be used.

6. Liquidated Damages. Liquidated damages should be added to the estimate as a negative dollar amount in the construction engineering bid item section of the estimate.

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SECTION 121
FINAL PROJECT RECORDS

121.1 GENERAL REQUIREMENTS AND RESPONSIBILITIES

Documentation requirements are discussed in Section 120. Section 121 discusses final project records and requirements for preparing and checking final plans and estimates. Although this Section presents commonly encountered situations, the Project Engineer should contact the Region Finals Engineer for assistance when exceptions are encountered.

121.1.1 General Requirements

The following general requirements apply to project finalization:

1. Final Quantity Records. Acceptable documentation will be the original record that supports the final quantity. All final measurements and quantities should be identified to distinguish them from interim measurements or quantities.

2. Signature Approvals. Hard copy documentation is not complete until it is signed or initialed and dated by the originator. The authorized SiteManager® Access Agreement fulfills this signature requirement for documentation in SiteManager®.

3. Documentation Formats. Final pay quantity documentation may be submitted using any reasonable format. The following are examples of acceptable formats:

    - CDOT numbered forms, bound and indexed;
    - Contractor scale tickets, totaled and checked;
    - data processing output, checked and signed;
    - drawings and calculations, checked and signed; and
    - plan and cross-section sheets, checked and signed.

4. Review and Payment. The preparation and checking of final plans and estimates must allow the final payment authorization to be submitted to the Center for Accounting within 75 calendar days after receiving all Contractor submittals and resolving all Contractor claims and supplier liens.

121.1.2 Responsibilities of the Project Engineer

As the representative of the Chief Engineer, the Project Engineer has the responsibility for proper documentation, including final documentation, on the project. The Project Engineer will ensure that CDOT documentation procedures are followed.

It is highly recommended that an individual other than the person determining quantities perform a check of complex calculations. The Project Engineer is responsible for ensuring that all quantities have been reviewed before the final estimate is paid.

The Project Engineer is responsible for ensuring that final documentation is completed in a timely manner. The Project Engineer will actively pursue completion of the final, even if the Contractor has not submitted all required paperwork. If the Project Engineer completes the final documentation and the Contractor has not submitted the required paperwork (e.g., Form 17, FHWA Form 47, Buy America Certification Letter, Certificates of Compliance, certified payrolls), the final will be submitted to the Region for checking. See Appendix B for a sample Buy America Certification Letter.

121.1.3 Responsibilities of the Region Finals Engineer

The Region Finals Engineer is responsible for:

- providing guidance in the Region to ensure uniformity in project documentation, specification interpretation, and application of contract administration software;
- auditing project administration and documentation for conformance to CDOT policies and procedures;
- reviewing conformance to CDOT specifications and engineering practices;

- auditing calculations to ensure accurate and uniform application of specified methods of measurement and basis of payment; and

- authorizing final payment to the Contractor.

121.2 PROJECT FINAL PROCEDURES

121.2.1 Basis of Payment Documentation

The following presents the final documentation required by specified basis of payment (see Appendix B for sample forms):

1. Lump Sum. Document the date work was started and completed.

2. Each. Document the final quantity as counted in the field.

3. Linear Foot. Document the final field-measured length or plan quantity, as per specification.

4. Ton (Measured by Weighing). Documentation for items such as hot bituminous pavement or aggregate base course should be documented as follows:

    a. Scale Tickets. Include in the final documentation the daily envelopes containing scale tickets and tapes. Ensure that all manual entries and calculations are checked. Envelopes and scale tickets should be labeled with the following information:

        - date and project number;
        - material;
        - location of spread (e.g., scale ticket, Form 282, spreadsheet);
        - total; and
        - signature of person responsible for quantities and spread data.

    b. Certifications. Attach one copy of scale and weigher certifications and vehicle identification sheets with the applicable pay item documentation

that is submitted to the Region. The vehicle identification sheets furnished by the Contractor must contain the following information:

- vehicle number,
- vehicle length,
- tare weight,
- number of axles, and
- other information relative to determining legal weight.

5. Ton (Asphalt Cement). Use Form 266 – Inspector's Progress Report. Include invoice or tank stabs, if used. Meter readings are acceptable.

6. Area (e.g., Square Yard). Use Form 266, final measurements, drawings, and calculations.

7. Hour or Day. Use Form 7 – Weekly Report on Miscellaneous Pay Items.

8. M-Gallon (e.g., water for landscaping). Form 7, if used, will include truck number, capacity, number of loads, etc. Capacity will be determined by measuring and calculating tank volume. Also include Form 20 – Daily Water Report.

9. Gallon (e.g., prime and tack coats, pavement marking paint). Use tank stab readings, meter readings, or truck weight data. Calculations for conversions and rate-verification calculations must be included.

10. Pound (e.g., structural steel, reinforcing steel). Quantity will be based on plan quantity or recalculation of field changes or errors.

11. Area (e.g., seeding, fertilizer, mulching). Ensure that tags are attached, either original or copy. Quantity will be based on plan quantity or recalculation of field changes or errors.

12. Volume (e.g., cubic yard for earthwork). Quantity will be based on plan quantity or, if field changes are made or a plan error is found, one of the following:

- recalculation based on field change or error;

- computer output check, signed and dated;
- final measured dimensions and calculations, checked and signed; or
- field notes or plotted cross-sections and calculations, checked and signed.

Note that load count is not an acceptable method of documenting final pay quantities for earthwork.

13. Volume (e.g., cubic yard structure earthwork). Quantity will be based on plan quantity or, if field changes or a plan error applies, one of the following:

- recalculation based on field change or error;
- computer output – checked, signed, and dated;
- final measured dimensions and calculations, checked and signed;
- field notes or plotted cross-sections and calculations, checked and signed;
- design-aid factor and source identified with number and date; or
- pro-ration – plan versus final structure length.

14. Volume (e.g., cubic yard for structural concrete). Quantity will be based on plan quantity or recalculation based on change or error.

121.2.2 Documentation for Pay Items

Final quantities for pay items should be determined as soon as they are completed to ensure that final estimates can be completed promptly. Rounding and appropriate significant figures of final estimate quantities are discussed in Section 121.2.5. The following Sections discuss the documentation requirements for key pay items.

121.2.2.1 Excavation and Embankment (Section 203)

Items paid by volume will not be remeasured but will be the quantities designated in the Contract. Exceptions will be made when field changes are ordered or when it is determined that there are discrepancies on the plans in an amount of at least plus or minus two percent. The Contractor should be immediately notified of any deviation in

quantities. All accepted excavation and borrow will be measured in their original position.

121.2.2.2 Structural Excavation and Backfill (Section 206)

Structural excavation and backfill generally should be the quantities shown on the plans. Only major errors and changes, which significantly alter quantities, should be considered. Nominal changes in length, depth, and location do not require recalculation, and minor changes that will not significantly change the cost of installation should not be considered as a basis for alteration of pay quantity.

121.2.2.3 Bases and Pavements (Sections 300 and 400)

When payment is by the ton, an envelope containing the Contractor's scale tickets, daily tare weights, and one of the following methods is required: Two adding machine tapes each signed by a different individual, one hand-checked adding machine tape checked and signed by two different individuals, checked Form 282, or a checked printout from a computer spreadsheet must be made daily and submitted with the final estimate to the Region. Reasons for partial loads or voided tickets must be stated on the ticket. Scale certification, weigher certification, vehicle number and length list may be included in the envelopes or with the pay item documentation submitted to the Region. When the base material is measured by the cubic yard, documentation will include standard volume calculations.

121.2.2.4 Piling (Section 502)

Field notes will record piling heat number, cut-off location and lengths, number of splices, and final penetration in accordance with Section 502 of this *Manual*. Special attention will be given to the reuse of steel cut-offs to prevent double payment. Each pile cut-off will be marked so that if a cut-off is reused, its original location can be identified and double payment can be prevented. Individual cut-offs will be measured to the

nearest one-tenth of a foot. Final quantities will be tabulated to the nearest foot. Cut-offs will be paid under a separate line item at the rate shown in Section 502.

121.2.2.5 Concrete Slope and Ditch Paving (Section 507)

Payment for concrete slope and ditch paving will be based on final field measurements and calculations. Calculations involving thicknesses of four inch, eight inch, etc., will be made using the fraction (1/3, 2/3, etc.).

121.2.2.6 Structural Steel (Section 509)

The weight of structural steel will not be remeasured or recalculated, but will be the quantities shown on the plans. Exceptions will be for changes in design or for any error in excess of specified limits in the total weight shown on the plans.

121.2.2.7 Structural Concrete (Section 601)

Structural concrete will not be remeasured but will be the quantities shown on the plans, except when field changes are ordered or it is determined there is an error in the plan quantity in excess of the specified limits. If recalculation is required, final payment will be made on the calculated quantity. Calculations involving thickness of four inch, eight inch, etc., will be made using the fraction (1/3, 2/3, etc).

121.2.2.8 Reinforcing Steel (Section 602)

Reinforcing steel in structures will not be remeasured or recalculated, but will be the quantities shown on the plans, except when field changes are ordered or it is determined there is an error in plan quantity in excess of specified limits. If a recalculation is required, final payment will be made on the recalculated quantity.

121.2.2.9 Price Reductions (Section 105)

Price-reduction calculations should be submitted in accordance with the procedures discussed in Section 120.7.7.10. These reductions will be added as separate items to the estimate.

121.2.3 As-Constructed Plans

121.2.3.1 Availability

Original plans and cross-sections are generally available from the Resident Engineer. If unavailable, the Region will need to request the originals by submitting Form 155 – Reproduction Work Order to the Reproduction Section of the Printing and Visual Communication Center.

121.2.3.2 Incorporation of Changes

As required by *CDOT Procedural Directive 508.1 – Professional Engineer's Stamp*, changes in the scope of work, intent of Contract, geometric design, structural plans, typical sections, standard plans, specifications, and corrections of design errors must be incorporated into the As-Constructed Plans. The designer may have generated project plan sheets either manually or electronically. If the plan sheets have been prepared electronically, as-constructed revisions may be completed using AutoCAD.

Each set of As-Constructed Plans must be prepared under the supervision of the Project Engineer in charge of construction supervision. The Project Engineer should prepare As-Constructed revisions as construction progresses, but must not make revisions to the original AutoCAD file. A backup copy of the original file should be created before revisions are made. Do not delete data from original plans; rather, cross out information that is no longer needed. The following Sections discuss the procedures to revise As-Constructed Plans.

121.2.3.2.1 Manual and Electronic Procedures

The following applies to both manual and electronic procedures:

1. As-Constructed Box. In the as-constructed box on each plan sheet, place the project acceptance date in either the “Revised,” “No Revisions,” or “Voided by Construction” space.

2. Adding Sheets. Add sheets by adding a suffix (e.g., 3A, 3B).

3. Replaced Sheets. Replace sheets by adding "X" to the sheet number (e.g., 3X).

4. Title Sheet. The title sheet should present complete information, as follows:

    - Contractor;
    - Resident Engineer;
    - Project Engineer;
    - start date;
    - project acceptance date;
    - comments;
    - project number;
    - five-digit project code (subaccount), if not already shown;
    - beginning and ending location; and
    - change order number, if there is a project extension.

5. Index. Revise the index of plan sheets as required. List the sheets that were “Added,” “Substituted,” or “Voided By Construction.” Do not add sheet numbers for cross-sections to the index.

6. Typical Section Sheets. Show any changes to base course or surfacing thickness with the appropriate change order number. Add, revise, or delete typical sections, and list the appropriate change order numbers.

7. Summary Sheets. Use the following procedures to prepare summary sheets for As-Constructed Plans:

- Complete a "Summary of Final Quantities" with change order numbers beside affected items.

- It is unnecessary to indicate planned or final force account dollar amounts.

- Any force account items added by change order should be shown.

- Any items that have been deleted must reference the change order or the written document that authorized the deletion.

8. Structures. Use the following procedures to prepare structural sheets:

- Show tip elevation of piling for each pier, wall, or abutment.

- Show structure changes for both minor and major structures.

- Show type, manufacturer, manufacturer's project number, and shop drawing number of bridge expansion and bearing devices installed.

- Show elevation and placement of brass cap bench marks, when used. The elevation should be project specific and marked on the plans. All temporary bench marks on the plans will be lined out.

- Vertical and lateral clearances should be indicated.

9. Plan and Profile: Use the following procedures to prepare plan and profile sheets:

- Show the final location of new utility placements, unknown utility discoveries, relocations, and changes. Abandoned utilities should be shown and noted.

- Show all geometric revisions to alignment, superelevation, and grade. Include the change order number as appropriate.

- Show significant changes in revised slope catches specifically ordered in the field. Include change order numbers as appropriate.

- Show final locations of minor structures.

- As-constructed information must be completed on the item tabulations and revisions shown on the plan/profile sheets.

- Show locations of any petroleum-contaminated soils incorporated into earthwork for disposal, as approved by the Region Planning and Environmental Manager.

- Show locations of discovered underground features, such as foundations or pipes, which are left in place.

- Show detailed information on the location of all buried material within the CDOT right-of-way and/or project limits.

- Detail any new or deleted accesses.

10. Tabulation of Quantities. Individual tabulations of separate pay items may be edited to reflect the actual as-constructed quantities. It is important that all quantities match. If tabulation information is not corrected, the tabulation shall be crossed out and a reference made to where the as-constructed quantities reside.

11. Altering Verbiage. Notes may be altered to reflect the as-constructed condition.

121.2.3.2.2 Manual Procedures

Use the following procedures to manually prepare As-Constructed Plans:

- Complete all revisions in black using a non-smearing writing implement.

- Line out plan data being corrected.

- Indicate removals, by crossing out, when construction operations have obliterated features that were originally shown on the plans as existing.

- When as-constructed revisions are completed manually, instances of sheets marked “Voided by Construction” will occur only if the work covered by that sheet was not performed. For example, if the project termini were shortened by change order, the affected plan/profile sheets would be marked “Voided by Construction.”

121.2.3.2.3 Electronic Procedures

Revisions will not be made to original AutoCAD files. A backup copy of the original file will be used to enter the as-constructed revisions. Procedures for the electronic preparation of As-Constructed Plans are as follows:

- Leave original data in the electronic file intact.

- Do not delete any layers in the electronic file.

- All text revisions are to be completed using a freehand print font available through AutoCAD or through PICS.

- The original design information is contained on the frozen layers of the electronic file copy and also in the record set as outlined in *CDOT Procedural Directive 508.1*.

- An additional layer will be created in the AutoCAD file to enter as-constructed information. This layer will be labeled with any name that begins with a ”C.” Do not show features on the plot of the As-Constructed Plans that no longer exist (e.g., roadway alignments, approaches, fences, utilities, and grades).

- The original sheet will be removed and replaced by the hard copy plot showing as-constructed information in the As-Constructed Plans. Hard copy plots are to be printed using the “black and white” option.

- When as-constructed revisions are completed using AutoCAD, sheets marked "Voided by Construction" will occur only if the work covered by that sheet was not performed. For example, if the project termini were shortened by change order, the affected plan/profile sheets would be marked "Voided by Construction."

- In addition to the hard copy distribution, electronic copies of As-Constructed Plans developed using AutoCAD should be retained by the Resident Engineer.

121.2.4 Final Estimates

Quantities on the final estimates must agree with the "Summary of Final Quantities" on the As-Constructed Plans. The following procedures will be performed on force account billings that have not been received by the Project Engineer within 90 days after final settlement has been advertised and final checking has been completed:

1. Project Engineer. Estimate the value of the outstanding force account billings including the value of all manpower, equipment, materials, and railroad flagging. Submit the estimate to the Region Finals Engineer.

2. Region Finals Engineer. Create a line item for each force account billing item and add the line item to the final estimate. Process Form 950 – Project Closure, according to Section 121.3.5 and notify the Projects and Grants Section of the Center of Accounting by means of Form 96 – Contractor Acceptance of Final Estimate to escrow the amount of the outstanding force account billings.

121.2.5 Rounding of Final Estimate Quantities

If a specification indicates that the method of measurement for a particular item will be plan quantity, all interim estimate quantities will be rounded to the nearest whole unit. Otherwise, the final quantity should be rounded according to this Section. Round the final quantity to the proper decimal as detailed in Figure 100E.

As the unit price value of any item increases, a corresponding increase in number of figures to the right of the decimal will be used. If the last digit of a number to be rounded is 4 or less, round down; if 5 or greater, round up. For example, 2.74 will be rounded to 2.7 and 2.75 will be rounded to 2.8.

121.2.6 Pit Payments

A completed Form 570 – Pit Materials Report and Receipt is required on all pits under option to the State. Pit quantities will be verified as soon as practical after work in a pit is completed. Quantities reported on Form 570 will include all material removed for use on the project, all material stockpiled for Department use, and all material used off the project. The signature of the pit owner will be obtained as soon as practical. A copy of the final Form 570 must be submitted to the Records Center.

121.2.7 Final Project Records

The following final project records, books, and documents will be submitted to the Region Finals Engineer:

- all original documentation pertaining to pay quantities,
- alignment books,
- bench mark books,
- section and property ties,
- right-of-way books,
- all documentation required by the construction surveying pay item, and
- Form 250 – Materials Documentation Record.

The “List of Items Retained by the Region” letter will show the distribution of these books, records, and documents. The residency will retain all supporting documentation for stockpiled materials in the project files.

Pay Unit	Rounding Criteria
Acre	.X
Cubic Yard (concrete)	.X
Cubic Yard	X.
Day	X.
Each	X.
Gallon	X.
Hour	X.
Linear Foot	X.
Lump Sum (%)	X.
M-Board Feet	.XXX
M-Gallon	X.
Mile	.XX
Pound	X.
Square Feet	X.
Square Yard	X.
Ton	.XX
Yard-Mile	X.

Legend

X. Round to the nearest whole unit.
.X Round to the nearest tenth.
.XX Round to the nearest hundredth.
.XXX Round to the nearest thousandth.

ROUNDING CRITERIA FOR PAY ITEMS
Figure 100E

121.2.8 Contractor Reports

The following reports and forms will be submitted by the Contractor to the Project Engineer, who will forward them to the Region Finals Engineer:

1. FHWA Form 47. FHWA Form 47 – Statement of Materials and Labor Used By Contractors on Highway Construction Involving Federal Funds is required on all Federal-Aid projects on the National Highway System, excluding force account, beautification, and railroad protective device projects with a final construction cost in excess of $1 million. The Contractor should submit a combined report, which includes the Contractor and all subcontractor costs. To determine if the project is on the National Highway System, refer to the plans, the latest edition of the *National Highway System Map* from FHWA, or contact the Resident Engineer. The construction codes can be found in ProMIS on Form 418 – Federal-Aid Program Data. The Project Engineer will review the quantities for reasonableness and sign the form.

2. Contract Payroll Data. In accordance with FHWA Form 1273 – Required Contract Provisions Federal-Aid Construction Contracts, payroll data, including all appropriate CDOT forms, are required on all Federal-Aid projects exceeding $2,000; however, projects on roadways classified as local roads or rural minor collectors are exempt. Contact the Resident Engineer to determine roadway classification.

3. Form 17. Form 17 – Contractor DBE Payment Certification is required on all projects. Review the *Project Special Provisions* for Contract requirements. See Appendix B for a sample Form 17.

4. Buy America Certification. Buy America Certification is required for steel and iron products. See Section 106.8 for further information. See Appendix B for an example.

The Project Engineer will encourage the timely submittal of all required reports as reduction in retainage or final payment cannot be made until all paperwork has been received. Any paperwork that has not been received at the time of project acceptance will be itemized in the Project Acceptance Letter.

121.3 ADVERTISEMENT FOR FINAL SETTLEMENT

The Region Finals Engineer, by memorandum or electronic mail, will request the Project Development Branch to advertise each project for final settlement immediately after the project has been accepted. The Region Finals Engineer will send a copy of the memorandum or electronic mail to the Right-of-Way Program of the Project Development Branch, which will allow the Right-of-Way Program to clear any temporary easements.

121.3.1 Region Records

The Region Finals Engineer will maintain, at a minimum, the following records or data on each project:

1. Number of Elapsed Days. The number of elapsed days between project acceptance and final Contractor payment for each project will be calculated as shown below and reported on Form 517 – Status of Construction Project Finals and Form 325 – Final Estimate Data. The entry will represent the number of days that are the responsibility of the following parties:

    a. Field/CDOT Residency. Time will not be accumulated in this category until all required paperwork has been received from the Contractor and all claims have been resolved. The Project Engineer will notify the Region Finals Engineer when all paperwork has been received from the Contractor.

    For example, a project is accepted on January 15, and the Contractor submits the last item of required paperwork on March 24. The time that the Residency is responsible for will commence on March 25 and accumulate until all the final documentation has been submitted to the Region Finals Engineer.

    The Project Engineer is responsible for ensuring that the project final documentation is completed in a timely manner. The Project Engineer will

actively pursue completion of the final even if the Contractor has not submitted all required paperwork. If the Project Engineer completes the final project documentation and the Contractor has not submitted the required paperwork (e.g., Form 17, FHWA Form 47, Buy America Certification Letter, Certificates of Compliance, certified payrolls), the final will be submitted to the Region for checking.

b. Region Finals Engineer. For example, the Region Finals Engineer receives the complete final documentation package from the field on March 27, completes the Region review and sends Form 96 – Contractor Acceptance of Final Estimate to the Contractor on April 7. Form 96 is again received by the Region on April 28, and final payment is made on April 30. The Finals Engineer is responsible for the time from March 27 to April 7 and from April 28 to April 30.

c. Contractor. In the previous two examples, the Contractor would be responsible for the periods between January 15 and March 24 and from April 7 to April 28.

Although CDOT is not accepting responsibility for the accumulation of time before all the paperwork is received from the Contractor, the Region should continue to process finals during this period. This procedure will ensure final payment is made as soon as possible.

2. Date Review Begins. Document the date the final documentation review was started.

3. Name of Reviewer. Document the name of the final documentation reviewer.

4. Checking Percentage. Document the number of items checked and the total number of items on the final estimate. The method of computing percentage checked will be the dollar amount of the items checked divided by the final Contract amount.

5. Date Review Ends. Document the date the final documentation review was completed.

121.3.2 Region Review Procedures

The Region Finals Engineer will review the final project documentation to ensure that the field personnel responsible for creating and checking the project documentation have followed CDOT policies and procedures.

A Final Documentation Risk Analysis will be used to determine the extent of the documentation review required. The Region Finals Engineer may complete the Final Documentation Risk Assessment Form, illustrated in Figure 100F, for each project before commencing review of the final project documentation. If four or more factors in this analysis are considered high risk, the finals documentation for this project will be considered high risk, and additional checking will be instituted.

Final documentation will be reviewed as follows:

1. Review Identification. The Region Finals Engineer will identify information each has reviewed by using a red check mark.

2. Periodic Field Reviews. The Region Finals Engineer will conduct periodic documentation field reviews of active projects.

3. Extensive Reviews. The Region Finals Engineer will make a complete final documentation review on a minimum of one project in every 20 (i.e., five percent). At least one-half of the projects on which a complete review is performed will have a cost exceeding $1 million.

4. Major Pay Item Reviews. The following procedures will be used to review final documentation on all projects not completely reviewed in Item #3. A major pay item is defined as any pay item with a final cost that exceeds ten percent of the final Contract amount. To determine the amount of checking, consider the following:

FINAL DOCUMENTATION RISK ASSESSMENT		
Project Number:		
Project Code Number:		
Description:		
Factor	**Risk**	
	High	Low
As Constructed Cost/Original Project Commitment Amount (More than 105% = High Risk).		
Project History (Construction problems?).		
Tenure of Project Staff.		
Project Size (Number of pay items/project dollars).		
Complexity of Project (Phases, multiple construction types).		
Change Order Factor.		
Consultant/CDOT Team Performance.		
Organization and Detail of Documentation.		
Complexity of Force Account Billings (More Complex = High Risk).		
Comments:		

Region Finals Engineer Date

FINAL DOCUMENTATION RISK ASSESSMENT FORM
Figure 100F

- Four pay items will be completely reviewed per each $1 million of final Contract amount (e.g., six pay items would be completely reviewed on a project with a final Contract amount of $1.5 million). Major pay items will be checked first.

- If any significant documentation deficiencies are found, two additional pay items per $1 million of final Contract amount will be reviewed. The Project Engineer will meet with the Region Finals Engineer to review the documentation and correct all deficiencies.

5. Other Pay Item Reviews. The Region Finals Engineer will review other pay items if the risk associated with measurement and payment of a pay item is considered significant enough to require a check.

6. Force Account Billings. Force account billings will be reviewed for proper procedure (see Section 120.15.3).

7. Scales and Water Tickets. The Project Engineer will review scale and water tickets. The Region Finals Engineer will verify that established procedures have been followed. No further checks will be required unless the procedural review reveals deficiencies.

8. Signature Authority. The Region Finals Engineer will sign the estimate sheets and voucher for all final estimates. The signature line on the final estimate voucher will state the following: “I hereby approve payment.” The signature will constitute full authority for payment to be made on the final estimate.

121.3.3 Distribution by Region Finals Engineer

After the Region Finals Engineer has received, reviewed, and checked all the required and applicable documentation, one copy each of the forms will be distributed by the Region Finals Engineer as illustrated in Figure 100G.

Form Number and Title	Distribution
Form 17	Contracts and Market Analysis Branch (original).
FHWA Form 47	FHWA (original and one copy). Records Center.
Form 250 Buy America Certification	Resident Engineer (original) Region Materials Engineer. Records Center. FHWA (projects with full oversight).
Form 262	FHWA (one copy of final time count for projects with full oversight).
Form 325	Projects and Grants Section, Center for Accounting. Contracts and Market Analysis Branch. Records Center (original).
Form 473	Resident Engineer. (original) Materials and Geotechnical Branch. Contracts and Market Analysis Branch. Records Center. FHWA (projects with full oversight).
Form 570	Records Center (one copy of final).
Form 789	Records Center.
Form 1212	Projects and Grants Section, Center for Accounting. Contracts and Market Analysis Branch. FHWA (original).
As-Constructed Plans	Printing and Visual Communications Center (for reproduction only). Right-of-Way Unit. Staff Bridge Branch, Room 320. Region (retains originals, including cross sections). Central Files (8½" x 14")
Payroll Certification	Records Center (original).
Final Estimate	Region Materials Engineer (Estimate Summary Sheet). Contracts and Market Analysis Branch (Estimate Summary Sheet). FHWA (projects with full oversight).
Final Estimate Package	Project and Grants Section, Center for Accounting, including: - Final estimate voucher and journal entries (original). - Final Estimate Summary sheet (two copies). - Final estimate with summary sheet (original and two copies). - Form 96 (original, if Contractor executed form returned to Region).
All Applicable Correspondence	Records Center.
List of Items Retained by Region	Records Center.

DISTRIBUTION BY REGION FINALS ENGINEER
Figure 100G

121.3.4 Construction Phase Closure

The CDOT Controller, in conjunction with the Federal Highway Administration, has established procedures to expedite the closure of projects following project acceptance. These procedures require the closure of the construction phase of a project within six months after the project acceptance date. At the end of this six-month period, charges against the project will not be allowed unless an extension notification or request has been submitted in accordance with the requirements discussed in this Section.

Extensions of the construction phase of the project may be needed for settlement of Contract disputes, claims against the Department, or for completion of pending investigations. In the event that a lengthy extension period is anticipated for any reason, procedures are available to escrow project funds to allow for project closure until a determination has been reached on unresolved issues. The procedures for escrowing project funds are discussed in Section 121.3.5 and should be used. as practical, to expedite closure of the construction phase of a project. Consider the following:

1. Content of Correspondence. All correspondence regarding notification or requests for construction phase extensions will include the following information:

    a. Project Information. Include the project number, project code (subaccount), and location.

    b. Subject Line. In the subject line, include either “Notification” or “Request” for extension to distinguish between the two possibilities.

    c. Acceptance Date. Include the project acceptance date and extension period (in months) beyond the acceptance date.

    d. Justification. Include justification for the extension, including sufficient detail of the circumstances, such as:

        - Contractor submittals not received and discussion verifying that the Contractor has been informed of any deficiencies;

- Contract dispute issues and status of the issues;
- claims against the Department and status of the claims; and
- status of project final documentation review and discussion of pertinent investigations.

2. Requests for Extensions Less Than 12 Months. The following procedures are applicable to an extension request of an additional six months up to 12 months after project acceptance:

   - If resolution of the pending issues is anticipated between six and 12 months after the project acceptance date, the Project Engineer will request the Region Business Manager to notify the Projects and Grants Section in writing of the need for a six-month extension of the phase closure date.
   - The notification will include the information presented in Items 1.a through 1.d above.
   - A copy of this notification will be forwarded to the Contracts and Market Analysis Branch.
   - Requests for extensions will not be granted if the pending issues have no financial impact on the project or if outstanding project costs can be escrowed.

3. Requests for Extensions Greater Than 12 Months. The following procedures are applicable to an extension request for more than 12 months after project acceptance:

   - If the Region determines the phase should remain open longer than 12 months after project acceptance, the Region Business Manager will send a request for the additional extension with appropriate justification to the

Office of Financial Management and Budget with copies to the Projects and Grants Section and the Contracts and Market Analysis Branch.

- The request will explain why project charges cannot be placed in escrow or borne by a like-funded project.

- The Projects and Grants Section will record the additional phase extension upon approval.

- The Contracts and Market Analysis Branch will monitor and track the status of all projects that have been extended beyond the allotted six months after project acceptance.

- The Region is to report the status of construction phase extensions in the remarks section of Form 517 – Status of Construction Project Finals with a brief explanation of the reason for construction phase extensions and the anticipated extension period, in months, after project acceptance.

121.3.5 Escrow of Project Funds

The Department's project closure agreements with the FHWA require that the construction phase of projects be closed six months after CDOT accepts the project from the Contractor. The procedures discussed in this Section will be used on projects with unresolved labor claims or subcontractor/supplier liens or when the Contractor fails to submit the required forms. Note that this process cannot be used when a Contractor has filed a claim in accordance with subsection 105.17 of the *Standard Special Provision, Revision of Section 105 – Disputes and Claims of Contract Adjustments.*

When the project construction phase is complete except that the final estimate cannot be processed because of unresolved labor complaints or supplier liens or the Contractor has not submitted the required forms, the Region Finals Engineer will notify the Project and Grants Section at (303) 757-9571 to initiate the escrow of project funds. The following actions will be taken:

1. Labor Issues. The following procedures will be used when the issue relates to labor complaints or other labor pay issues:

   - The Projects and Grants Section will charge the project for the amount of the labor complaint and escrow the funds.

   - Upon notification, the Region Finals Engineer will run the final pay estimate, close the project, and initiate or request initiation of Form 950.

   - When the final estimate is run, the amount of the labor complaint previously withheld from the Contractor will remain as deductions.

   - The Contracts and Market Analysis Branch will track the labor complaint and notify both the Region Finals Engineer and the Projects and Grants Section when the complaint has been resolved.

   - The Project and Grants Section will prepare a payment voucher in accordance with the final resolution of the labor claim.

2. Subcontractor or Supplier Liens. The following procedures will be used when the issue relates to subcontractor or supplier liens:

   - The Region Finals Engineer will run the final estimate, close the project, and initiate or request initiation of Form 950.

   - When the final estimate is run, the amount of the lien previously withheld from the Contractor will remain as deductions. The amount will be reflected as Item 900-00006.

   - When the final pay estimate is processed for payment, the Projects and Grants Section will charge the project for the amount withheld for supplier liens and establish an escrow for the same amount.

   - When the Projects and Grants Section receives a release of escrowed liens or other resolution of the escrowed lien, payment will be made to the

appropriate party from the escrow account. The Projects and Grants Section will notify the Region Finals Engineer of either of these actions.

3. Contractor Failure to Submit Required Forms. The following procedures will be used if the Contractor fails to submit the required forms:

- The Region Finals Engineer will verify that the Contractor has been notified of forms not received (i.e., by means of the project acceptance letter and/or other correspondence) and will run the final estimate, close the project, and initiate or request initiation of Form 950.

- Upon written notification by the Region Finals Engineer, the Projects and Grants Section will prepare a journal voucher to charge the project and establish an escrow account.

- When the Contractor submits the required forms, the Region Finals Engineer will notify the Projects and Grants Section to release the escrowed final pay estimate amount to the Contractor.

- If any of the overdue forms relate to force account work or other payment issues that depend on paperwork submittal, the Project Engineer will review the forms upon receipt for correctness and forward them to the Region Finals Engineer. The Region Finals Engineer will revise Form 96 and make distribution of copies. The Projects and Grants Section will release the appropriate amount to the Contractor.

- The Projects and Grants Section will provide a quarterly status report of escrowed final pay estimate amounts to the Region Finals Engineer and the Contracts and Market Analysis Branch.

- Note that Form 96 will identify and itemize dollar values that have been escrowed.

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SECTION 122
LOCAL AGENCY PROJECT ADMINISTRATION

122.1 ADMINISTRATION OF FEDERAL-AID LOCAL AGENCY PROJECTS

The *CDOT Local Agency Manual* covers all topics in more detail. Federal-Aid funds are available to Local Agencies for the construction of roads, streets, structures, and other improvements, including enhancement projects. The FHWA requires the Department to certify that such projects are administered in accordance with Federal regulations.

122.2 QUALITY ASSURANCE – CDOT FEDERAL-OVERSIGHT PROGRAM

Regardless of the contract administrative procedures used, a CDOT/FHWA Quality Assurance Review will be performed on random projects in accordance with the CDOT/FHWA Stewardship Agreement (see Section 101.105).

122.3 CONTRACT ADMINISTRATION

The Local Agency Contract Administration Checklist will define the contract administration responsibilities of the parties involved in each Local Agency project, including enhancement projects. The types of contract administration procedures used for these projects are discussed in the following Sections.

122.3.1 Administration by the Department

When administered by the Department, CDOT will advertise, bid, award, and administer the project exactly like any other CDOT construction project. Consider the following:

1. Region. The Region will ensure that the project is administered in the same manner as other Federal-Aid projects.

2. Resident Engineer/Project Engineer. The Resident Engineer will be in responsible charge of all facets of contract administration, and may delegate this responsibility to a Project Engineer.

3. Change Orders. The following statement, included in the body of the change order, must be signed by a qualified representative of the Local Agency or private owner for all change orders that involve the expenditure of Local Agency or private owner funds before the work covered by the change order commences:

> *Should Federal funds not be available to cover these additional costs, or the FHWA decide not to participate in these costs, the Local Agency or private owner agrees to provide the required funds.*
>
> *The* _____
> *(Name of Local Agency or private owner)*
>
> *approves this Change Order No.* _____ *by signing below.*
>
> _____ _____ _____
> *Signature* *Title* *Date*

See the *CDOT Local Agency Manual* for further information.

122.3.2 Administration by the Local Agency

CDOT and the Local Agency will execute a project specific agreement that authorizes the Local Agency to assume responsibility for part or all of the contract administration on a specific construction project. The agreement will be completed and signed before the project is advertised.

The agreement will include a Local Agency Contract Administration Checklist. The checklist will indicate whether the Region or the Local Agency has assumed responsibility to perform each specific contract administration task on the project. When the Local Agency has assumed responsibility for any task on a project, the Local Agency will fulfill all requirements associated with that task as referenced in this *Manual*, including those usually designated to be completed by the Region Program Engineer, Resident Engineer, and Project Engineer.

122.4 REGION RESPONSIBILITIES FOR OVERSIGHT

Regardless of which party advertises, bids, and awards the project, the Resident Engineer, or Project Engineer as assigned, should review the agreement between the Local Agency and the Department to ensure that the following items are addressed:

1. Appointment of Project Engineer. The Local Agency will appoint a qualified Professional Engineer, licensed in the State of Colorado, as the Project Engineer. The Project Engineer may be an employee of the Local Agency or a consultant.

2. Assignment of Responsibility. The following statement will be included in the agreement to protect the CDOT Engineer's Professional Engineering License:

   Notwithstanding CRS 12-25-103, the Project Engineer appointed by the Local Agency shall be in responsible charge of the construction supervision for the duties specified in the approved agreement.

3. Administration. The Project Engineer will administer the project in accordance with the approved agreement, Contract requirements, and CDOT policies and procedures. The agreement should address the project administration tasks that the Local Agency/consultant will perform, such as:

   - project inspection and testing;
   - approval of material sources;
   - record keeping (e.g., testing, inspection, pay documentation);

- preparation and approval of pay estimates;
- monitoring of project financial status; and
- processing of Contractor claims.

The Region will be responsible for assuring that all contract administration tasks not assigned to the Local Agency are performed by CDOT.

122.5 QUALITY CONTROL – CDOT FEDERAL-OVERSIGHT PROGRAM

The Resident Engineer will be responsible for approving change orders and determining whether the funding for change orders will be participating or non-participating. Before approving the change order, the Resident Engineer will perform the following:

1. Compliance Review. Review the change order and letter of explanation to ensure compliance with CDOT policies and procedures contained in this *Manual*.

2. Budget Review. Review the financial status of the project to ensure that the projected completion cost does not exceed the allotted budget. If the projected completion cost exceeds the allotted budget, the Resident Engineer will consult with the Region to determine if Federal-Aid funds are available and can be added to the project. Consider the following:

   - If additional Federal-Aid funds are available and can be added to the project, the Region will complete the required budget actions.

   - If additional Federal-Aid funds are not available, the Local Agency will provide the additional funds.

122.6 PROJECT REVIEWS

The Region will designate a Resident Engineer or Project Engineer to perform random project reviews and provide advice to the Project Engineer of the Local Agency.

The reviews by the Resident Engineer or Project Engineer will be sufficiently detailed to ensure that the Project Engineer of the Local Agency is administering the project in accordance with the terms of the Contract and the approved agreement. All CDOT reviews will be documented in the project diary or on the monthly pay estimate.

The Resident Engineer or Project Engineer will communicate only with the Project Engineer of the Local Agency, or his duly authorized assistant, and, except in an emergency, will issue no instructions to the Contractor or its Foremen.

122.7 FINAL PROJECT INSPECTION

As a quality control activity, the Resident Engineer will perform the final project inspection. See Section 109.9 for additional information on final project inspection and Form 1212 – Final Acceptance Report.

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