
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:

1. *CDOT Construction Bulletins,*
2. *CDOT Cost Data Book,*
3. *Rental Rate Blue Book for Construction Equipment,*
4. *CDOT Pavement Design Manual,*
5. *CDOT Erosion Control and Storm Water Quality Guide and Pocket Book,*
6. *CDOT Field Materials Manual,*
7. *CDOT Laboratory Manual of Test Procedures,*
8. *CDOT M&S Standard Plans,*
9. *CDOT Policy and Procedural Directives,*
10. *CDOT Safety Manual,*
11. *CDOT SiteManager[®] Users Guide,*
12. *CDOT Standard Specifications for Road and Bridge Construction,*
13. *CDOT Standard Special Provisions,*
14. *CDOT Project Special Provisions,*

15. *CDOT Supplemental Specifications,*
16. *CDOT Survey Manual,*
17. *CDOT Work Zone Safety Book and CDOT MUTCD Supplement,* and
18. Contract Plans.

If a discrepancy is found in the Contract documents, check subsection 105.09 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 WEBSITE

Most CDOT information is maintained in an electronic format on the Department's Internet and Intranet website. The Department's website is an invaluable source of information for construction contract administration information. The Department's Internet site is <http://www.coloradodot.info/> and Intranet is site is <http://intranet/>.

Following is a partial list of the electronic information contained on the websites: *Standard Specifications, Standard Special Provisions, M&S Standard Plans, CDOT Construction Manual, and CDOT Construction Bulletins*. Contact the Contracts and Market Analysis 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 Contracts and Market Analysis Branch Manager

Under the direction of the Chief Engineer, the Contracts and Market Analysis 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:

1. establishing consistent policy and uniform standards for the administration of construction contracts;
2. formulating, developing, issuing, and implementing policies, procedures, and specifications to ensure efficient and effective contract administration;
3. providing guidance and training to ensure that policies, procedures, and specifications are clearly understood and uniformly applied;
4. 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
5. assisting the Chief Engineer during construction contract dispute/claim resolution.

101.103.3 Region Transportation Director

The Region Transportation Directors exercise overall control of their Regions 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 and Contracts and Market Analysis Branches. 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 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 and satisfactory completion 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 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.

Although the Project Engineer has the authority to direct the Contractor's operations, the Project Engineer should refrain from doing so unless special circumstances require such intervention. The Project Engineer is responsible for ensuring that the Contractor uses proper methods for performing quality work safely and in compliance with the Contract requirements. If the Project Engineer or other project personnel attempt to direct the Contractor's operations, the Contractor may claim that the project personnel assumed risk and responsibility for the work product.

101.103.6.1 Consultant Project Engineer

The Project Engineer is the Chief Engineer's duly authorized representative who may be an employee of a consulting engineer (consultant) under contract to CDOT. The Consultant Project Engineer, if not a licensed Professional Engineer, shall be under the responsible charge of the consultant's Professional Engineer (a licensed P.E. in Colorado) who is in direct charge of the work and satisfactory completion of the project. Both the Consultant Project Engineer and the Consultant Professional Engineer shall report directly to a CDOT Resident Engineer (RE) or designee as stated in the scope of services contract.

The responsibilities of the consultant fulfilling the role of the Project Engineer will be similar to that of the CDOT Project Engineer, however, the Consultant Project Engineer and the Consultant Professional Engineer are not authorized to sign or approve Contract Modification Orders (CMO's) and time extensions. The Consultant Project Engineer and the Consultant Professional Engineer shall coordinate as a team to keep the RE informed of project progress as directed and manage the project work. All field revisions and design changes must be approved by the RE prior to implementation.

The Consultant Project Engineer shall not direct the Contractor's operations. The Consultant Project Engineer is responsible for ensuring that the Contractor uses proper methods for performing quality work safely and in compliance with the Contract requirements. If the Consultant Project Engineer or other project personnel attempt to direct the Contractor's operations, the Contractor may claim that the project personnel assumed risk and responsibility for the work product.

When an immediate decision needs to be made regarding the Contractor's work, and that decision may impact project costs or safety of the traveling public, or result in a different installation than what is shown on the plans, the Consultant Project Engineer shall contact the CDOT RE for guidance. If the CDOT RE cannot be reached, then the Consultant Project Engineer shall contact the Consultant Professional Engineer to address the issue of the Contractor's work and make sure that all potential safety issues are resolved prior to the Contractor leaving the site for the day. The Consultant Project Engineer shall follow up with the RE as soon as possible to discuss the issue in question.

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.

The Project Inspector shall not direct the Contractor's operations. The Project Inspector shall document and report to the Project Engineer when the Contractor is not performing work safely and in compliance with the Contract requirements. The Project Engineer is responsible for ensuring that the Contractor uses proper methods for performing work safely and in compliance with the Contract requirements. If the Project Engineer or other project personnel attempt to direct the Contractor's operations, the

Contractor may claim that the project personnel assumed risk and responsibility for the work product.

The following training is required to perform inspection on a CDOT project:

Technical Series (EPS Assistant I through EPS Technician III)

1. Basic Highway Math
2. Basic Highway Surveying
3. Basic Highway Plan Reading
4. Erosion Control Supervisor

Professional Series (EIT I through EIT III)

1. Basic Highway Surveying
2. Basic Highway Plan Reading
3. Erosion Control Supervisor

The specialty certifications, such as CAPA Asphalt Inspection, WAQTC, and Major Structures, will only be required when an inspector is working on a project where those items of work are performed. For example, a person working on an asphalt overlay would need the pre-requisites plus the CAPA asphalt inspection; a person working on an embankment would need the pre-requisites plus the WAQTC soils; etc. The specialty training requirements apply to the full range of both the technical and professional series listed above.

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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) 757-9309.

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 questions pertaining to shop drawings.

101.103.8.3 Bridge Construction Reviews

Notify Staff Bridge upon construction completion of every structure that meets the federal definition of a major bridge. A major bridge is any structure that carries vehicular

traffic and is over twenty feet long, measured along the centerline of the roadway. In addition to these structures, pedestrian and railroad structures over state highways will be included. Staff Bridge shall conduct a final inspection for acceptance of all major structures before project final acceptance is granted. Coordinate Staff Bridge final inspection with the completion of the structure so that any additional work that is required as a result of the inspection can be performed by the structure contractor without having to remobilize.

Schedule the review by contacting the Staff Bridge PE II assigned to the Region.

101.103.9 ENGINEER IN RESPONSIBLE CHARGE (EIRC)

During the construction phase, every project must have an Engineer in Responsible Charge. A project may require/need more than one EIRC. If you are working on a project and are not an EIRC on the project, then you are working under at least one EIRC. For more information about EIRC refer to *CDOT's Construction Engineer in Responsible Charge Information Document* which is posted on CDOT's External website at the same location as this manual.

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 current Federal Transportation legislation

(i.e. Moving Ahead for Progress in the 21st Century Act (MAP-21)), 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 for Project Engineers. 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.

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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 – 102.3 RESERVED

102.4 BID RULES AND CONTRACTOR EVALUATIONS

The Contracts and Market Analysis Branch Manager is the “promulgator” of the Bid Rules. These rules set the ethical requirements of contractors for bidding and performing CDOT work. Contract Management System (CMS) is the data center for the Project Engineer’s evaluations of contractors.

At the completion of a construction project, the Project Engineer will receive an email stating that a final contractor evaluation must be performed. The Project Engineer will allow the Contractor to comment on the final evaluation. The Project Engineer will follow the directions in the email and on the form. Interim evaluations must be performed by the Project Engineer annually if a project lasts longer than one year. Project Engineers will not be sent an email reminder to perform the annual / interim evaluation(s). The Project Engineer is not required to provide the contractor an opportunity to comment on interim evaluations, but should provide these interim evaluations to the Contractor.

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

102.5.1 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 with the Project Engineer listed in the Notice to Bidders.

To ensure competitive bidding, the Project Engineer will provide all bidders with an equal opportunity to view the proposed construction site and will conduct each of the project showings in a similar manner. It is important to provide each prospective bidder with identical information. The same Project Engineer should conduct each of the project showings.

To provide equal information to all bidders, the Project Engineer shall share project showing information with all prospective bidders, the appropriate Program Engineer, the appropriate Resident Engineer, the appropriate Contracts and Market Analysis Area Engineer, and the appropriate Estimator. This information shall contain all questions asked by the bidders during the showings and the responses given by the Project Engineer.

The Project Showing form, Form 1389, will be used to document the bidders' questions and the responses from CDOT. As the bidders' questions are answered they should be emailed to the CDOT representatives listed above. Nonproprietary questions and answers shall be emailed to dot_project_showing@state.co.us. Updated emails will include all questions and answers, not just updates from the previous email.

The final Project Showing Questions and Answers shall be kept as project documentation and be emailed (as stated above) no later than 12:00 noon the Monday before Bid Opening. No bidder questions will be answered by the Region after the final Project Showing Questions and Answers are emailed. Any major concerns brought up after this time could result in project deferral. The CDOT Award Officer will post the Project Showing Questions and Answers on the CDOT Project Advertisement web

page, <http://www.coloradodot.info/business/bidding/future-bidding-opportunities>, to allow bidders to view the information.

Prior to each job showing the Project Engineer shall notify the bidder that the bidder's nonproprietary questions will be documented and made available to all bidders. When a question is asked by a bidder regarding an interpretation of a standard specification, whether it is from the *M&S Standard Plans, Standard Specifications for Road and Bridge Construction*, or a standard special provision, the response will be to bid the plans.

If the question requires an interpretation of the plans or project special provisions, the CDOT Project Engineer should answer the question or seek guidance from the appropriate sources and respond at a later date. If the Project Engineer's immediate supervisor is unable to answer the question, the next information source would be the appropriate specialty group such as Staff Bridge, Staff Traffic, etc. If the specialty group is unable to answer the question, the Area Engineers should be consulted.

It is CDOT's goal to wholly and thoroughly answer all questions and disseminate all the questions and answers to clarify any areas in the plans and specifications susceptible to misinterpretation. If the questions reveal significant discrepancies in the plans and specifications, a revision should be issued and, if necessary, the project opening delayed.

If the bidder has a question or requests clarification that involves the bidder's innovative or proprietary means and methods, phasing, scheduling, or other aspects of construction of the project, the Project Engineer should direct the bidder to contact the Resident Engineer directly to address the question or clarification. The Resident Engineer will determine if questions are innovative or proprietary in nature. If the Resident Engineer determines that the bidder's question is innovative or proprietary, the bidder's innovative method shall be kept confidential and not shared with other bidders. If the Resident Engineer determines that a question does not warrant confidentiality, the bidder may withdraw the question. If the bidder withdraws the question, the Resident Engineer will not answer the question and the question will not be documented on the

CDOT website. If the bidder does not withdraw the question, the question should be answered, and both the question and CDOT answer should be posted on the website.

If it is known that revisions to plans, specifications, or other contractual documents have been, or will be, published and distributed, notify each of the prospective bidders during the project showing. If the Project Engineer volunteers information to a bidder it will be provided to all the bidders.

The Project Engineer should remind the bidders that the questions and answers document is for information only, and it is the bidder's responsibility to verify the information.

Issuing the question and answer memo and publishing it on line will not only help CDOT better understand potential risks, but it will help the contracting community understand the risks as well. If both parties better understand their risks, the project will be properly bid.

102.5.1.1 Signature Project Showings

Refer to the *Project Development Manual* for the definition of a Signature Project.

For signature projects the following procedures should be followed in addition to those detailed in section 102.5.1 above.

All project showings should be completed within the first three weeks after the date of advertisement. Job showings should be attended by the Program Engineer, the Resident Engineer, the Project Engineer, and the Engineering Estimates Program Manager.

The Project Showing form (CDOT Form 1389) should be completed and emailed as soon as the bidder's questions are answered. The final Project Showing Questions and Answers for Signature Projects have the same deadline as specified in section 102.5.1 Project Showings.

Three weeks after the advertisement date, the project staff will review all the questions and comments from the potential bidders and determine if a plan revision or clarification is needed. If a revision or clarification is warranted, the appropriate notification will be sent to all the plan holders on record. If necessary, bid opening may be delayed.

102.6 – 102.10 RESERVED

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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.

103.1 – 103.4 RESERVED

103.5 SURPLUS FUNDS

When a bid results in surplus funds on the project, the Bids and Awards Unit will issue a Preliminary Financial Statement and will submit a request to the Region Business Office for a budget action.

If the Region wants to retain all or part of the bid surplus, the Region Transportation Director (RTD) shall request retention of surplus funds after bid opening day. The request process for the region has two steps.

Step One

RTD will send an email to the Chief Engineer (CE) with notification of the region's "intent" to request to retain all or part of the bid surplus funds. This email must be submitted to the Chief Engineer by noon the day following bid opening.

Prior to the submission of the email to the CE the region will submit a spreadsheet to the Engineering Estimates and Market Analysis Unit (EEMA) of the Contracts and Market Analysis Branch analyzing the proposed costs of the work to be added if funding becomes available. The spreadsheet will list all items of work; the unit prices of the low bidder, second low bidder, and third low bidder; and the product extensions for each bidder. If EEMA determines that including the additional work in the low bidder's bid would result in higher costs to CDOT than if it were included in the bids from either the second or third low bidder, the additional work will not be added to the Contract. The

region will also analyze costs to perform the additional work as though it were a separate contract, including additional mobilization, traffic control, indirect costs, etc. This analysis will also be submitted to EEMA in a spreadsheet format containing quantities, estimated unit prices, and product extensions. The EEMA may adjust the estimated unit prices to complete the work under a separate contract as necessary. If EEMA does not concur that the anticipated cost savings to add the work to the Contract is reasonable, EEMA will notify the region.

Step Two

RTD will submit a formal letter requesting to retain all or part of the bid surplus funds to the Chief Engineer's office by the Monday following bid opening.

Both submissions should be sent via email to the Chief Engineer. The second email should contain the funds retention request letter, the first email with initial approval and amount of surplus. The following Units are to be copied on the second email: Office of Financial Management & Budget, Project Budget Unit , Office of Financial Management & Budget - Project Award and Accounting Unit, the Awards Officer in Contracts and Market Analysis, and the Region Business Office Manager.

The formal letter should contain the following justification at a minimum:

1. Time involved in preparing, letting, awarding and issuing a notice to proceed for a separate contract.
2. Anticipated competition for the work.
3. Time remaining and the critical work that must be done before winter shut-down period.
4. Justification of work that was omitted because of funding constraints.
5. Environmental clearances for the extra work, if any.

After receipt of the signed letter from the Chief Engineer approving the Region's request to obtain bid surplus funds, the Project Awards and Accounting Unit will add a CMO line in the Trns*port® worksheet bid project under category 0200 and item number 700-70002. The amount to input in the CMO line will be the net amount of funds retained

after allowance for CE and Indirect Costs. The net amount is calculated by dividing the amount retained by the current CE & Indirect rate.

The Project Awards and Accounting Unit will generate a final financial statement and submit it to the Agreements Unit for project award.

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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. Additional approvals are required for project extension change orders before work can begin. 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 disputes or 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 Pre-construction 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 (VECPs) to the Department for evaluation. Complete submittal requirements are defined in subsection 104.07 of the *Standard Specifications*.

The Project Engineer will notify the appropriate Area Engineer upon receipt of a VECP. The following procedure is to be used in the evaluation of VECPs:

1. Determine if a VECP qualifies for consideration and evaluation. The Project Engineer should discuss VECPs with the Resident Engineer and reject any VECP that is incomplete or that requires excessive time or costs for review, evaluation or investigation. The Project Engineer should also reject proposals that are not consistent with the Department's design or construction policies or criteria for the project, or with the specification. The Project Engineer should notify the Contractor immediately in writing of the rejection, and the reasons for the rejection.
2. Categorize Proposal. Proposals should be categorized as VECP (Category A) or VECP (Category B). See subsection 104.07 of the *Standard Specifications* for Category definitions.

No VECP can be used to alter incentive and disincentive rates and maximums on A+B (cost plus time) projects. In other words, no additional incentive will be paid resulting from acceptance of a VECP for an A+B project.

For either category of VECP, the Project Engineer should be certain that the estimated quantities, costs and savings are reasonably accurate. The Contractor shall provide additional information regarding costs or quantities as required by the Project Engineer.

3. Evaluation of the proposal. Upon receipt of a VECP, the Project Engineer will ensure that sufficient time is provided for review and will promptly notify the

Contractor if additional time is needed. If additional response time impacts the critical path of the Contractor's schedule, a non-compensable time adjustment to the Contract should be included in the CMO for the accepted VECP (see No. 5 below).

Level of Review (Category A and Category B)

For VECPs (Category A), the Project Engineer will work with the Resident Engineer and Area Engineer to determine an appropriate panel of subject matter experts to evaluate a VECP proposal. The panel may include representatives of Staff Bridge, the Federal Highway Administration (FHWA), the Region Program Engineer, the Area Engineer and others as necessary. The recommendations of the panel will be provided to the appropriate Region Program Engineer. The Region Program Engineer will then make a final decision in consultation with the Region Transportation Director.

VECPs (Category B) may be evaluated in the Region by a panel consisting of the Project Engineer, Resident Engineer, Program Engineer, and other experts as needed including FHWA. The appropriate Area Engineer should also be included. The Region Program Engineer will then make a final decision, based on the recommendations of the panel.

Review Panel Evaluation

For both Categories of VECPs, the Project Engineer will facilitate the panel's review. All panel members should thoroughly review the VECP specification before beginning evaluation. Evaluation of the VECP should consider the results of any previous Value Engineering (VE) studies conducted on the project during the design phase, structure selection reports, or other decisions which have been considered previously. Conditions may or may not have changed since these studies and reports were prepared.

VECP Review Panels should consider the potential merits, cost savings, time savings, and original design intent as well as the shared risk of the proposal.

The cost of each individual item in the proposed change as well as the total cost of the proposal should be thoroughly reviewed. The recommendations of the panel will be provided to the Program Engineer for a decision.

When the Program Engineer issues a decision, the Project Engineer will notify the Contractor in writing, of the approval of the VECP or the reasons for rejection.

4. Contractor Appeal Process. Appeals can only be made on VECPs (Category A). The Prime Contractor submitting the VECP may file a one-time appeal of a denial through the Project Engineer to the Region Transportation Director. The Contractor must provide a valid reason for the appeal, and the decision of the Region Transportation Director will be final.
5. Processing of accepted VECPs. 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.

The Form 90 should identify the difference between the original planned quantities and the quantities represented by the accepted VECP. The net savings shall be calculated pursuant to the formula shown in the specification.

If a VECP saves time on the project, especially on A+B projects, the contract time will be adjusted accordingly as noted in the examples below:

Example 1: – If an A+B project initially has a contract time of 300 calendar days, and CDOT accepts a VECP that saves the project 20 days, the CMO will reset the contract time to 280 days. The allowable incentive and disincentive rates and maximums will be unchanged.

Example 2: – An A+B project initially has a contract time of 200 calendar days with an early completion incentive of \$10,000 per day. A VECP proposes to save 10 days, but at an increased construction cost of \$85,000. The early completion incentive can not be used to offset the additional construction costs, and CDOT would not accept the proposal because it would result in additional construction costs.

The Contractor's development and re-design costs and CDOT's review costs are those costs over and above what each party would have expended if the VECP did not exist. If the Contractor's development and re-design costs include the services of a Consultant Engineer, they must be documented with certified billings. CDOT's costs should include costs for reviews by Staff Bridge, Region or Headquarters personnel, and Consultants, prompted by the VECP. The rates for CDOT's review services are listed in the specification.

The Contractor will be paid for the work represented by the appropriate pay items as the work progresses and is acceptably performed. In addition, the VECP Incentive will be paid to the Contractor upon acceptable completion of **all the construction work** represented by the VECP, according to the formulae in the specification via the SiteManager® System. To initiate payment, the Project Engineer must enter a 900 item "Value Engineering Change Proposal Incentive" into SiteManager®.

If an analysis of the schedule, modified to include the VECP, shows an impact to the critical path, consideration should be given to adjusting the contract time using the CMO. The CMO letter of explanation should describe impacts to the project schedule. The CMO letter of explanation should also describe impacts to the original scope of the project, including but not limited to milestones or lane rentals. The CMO should address adjustments to these items if warranted.

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 Partnering

Partnering is a process that works toward establishing a productive working relationship among all stakeholders on the construction project through a mutually developed strategy of commitment and communication. CDOT requires formal partnering on projects through the use of a Special Provision.

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.

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

105.2 PLANS, SHOP DRAWINGS, WORKING DRAWINGS, OTHER SUBMITTALS, 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. Table 105-1 of the *Standard Specifications* 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

The Project Engineer may review the working drawings for conformity to Contract requirements; 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, for the following structural items:

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

105.2.2 Falsework Certification

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

In accordance with subsection 601.11(b) 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. Shop drawings shall be stamped “Approved for Construction” and signed by the Contractor before CDOT’s review. 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, no exception taken”, “Reviewed, revise as noted”, “Resubmit, revise as noted”, 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). Standard Special Provision Revision of Section 105 allows CDOT to waive these requirements.

105.3 CONFORMITY TO THE CONTRACT

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 and Warranties

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.

It is not acceptable to accept a warranty of any kind in lieu of the Contractor providing specification material. If the Original contract did not include a warranty provision, do not add a warranty provision after project award.

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:

1. nonconforming work that is reasonably acceptable, and
2. 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:

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 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: there may be project specific provisions which require 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.

The Plan Value in the Concrete 03 program is not labeled correctly. It should be labeled as the Lower specification limit (T_L). The calculations used in Colorado Procedure 71 for the Lower Quality Index are based on this value. This (T_L) is also defined in Subsection 105.06 as the Lower Tolerance Limit. When submitting the final report, strike out the words Plan Value and replace them with Lower Specification Limit or Lower Tolerance Limit as shown in Figure 100 - 1. Do not adjust the default value of 570 psi when assigning the Plan Value in the Concrete 03 program.

```

Department of Transportation      Project No: Example
State of Colorado              Project Code: 12345
June 23, 2015                 Region No: 4
Quality of PCCP (Alt Str), 03-11-04 Location: Greeley
Concrete03, v4.0.1.501(913072210) Supplier:

*** PARTIAL REPORT ***

Flexural Strength - Process 1

Spec. No: 12345                Plan Value: 570 psi (TL)
Criteria: Flexural Strength    Place Price: 35.00
Class: P(Pavement)            Furnish Price: 0.00
Item: 412-00800(PCCP 8 inch)  Unit Price: 35.00

Comments: Example

Process Test      Date      Date      Test      Total
No.   No.   Placed   Tested   Quantity  Quantity  Value  MQL

Flexural Strength - Process 1 Summary

(no tests)
    
```

Lower Spec. Limit
Lower Tolerance Limit

EXAMPLE CONCRETE 03 PRINT OUT
Figure 100 -1

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 mix asphalt (HMA):

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 HMA. 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 HMA contains too much asphalt cement. The Project Engineer immediately requests the Contractor to obtain a sample of the HMA 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 – 105.8 RESERVED

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

Subsection 105.09 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 105.09 of the *Standard Specifications*.

105.10 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.

105.11 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.

105.12 COOPERATION BETWEEN CONTRACTORS

Subsection 105.12 of the *Standard Specifications* requires the Contractor to prosecute the work required by the Contract without interfering with other contractors.

105.13 CONSTRUCTION STAKES, LINES, AND GRADES

Subsection 105.13 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*.

105.14 AUTHORITY AND DUTIES OF THE PROJECT ENGINEER

105.14.1 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 105.22 of the *Standard Specifications*. Note that only CDOT Project Engineers (not consultant or other), by law, can obligate funds or authorize payments on CDOT Contracts.

105.14.2 Duties of the Project Engineer

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 perform the same functions as CDOT Project Engineers, but 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's duties regarding construction Contracts include:

1. Administer the Contract according to established CDOT Policies and Procedures, including those described in this manual.
2. Ensure that all Work and Materials used on the Project, and applicable Project documentation conform to Contract requirements and established CDOT Policies and practices. Document and bring to the attention of the Resident Engineer items that do not meet the Contract or accepted CDOT guidelines.

The Contractor shall make all requests in writing and the Project Engineer shall respond to those requests as directed by the RE. Responses to Contractor requests shall be in writing on a CDOT Form 105 and shall be documented in the daily diary. Instructions and directions provided to the Contractor shall be documented on a CDOT Form 105 and in the daily diary.

3. Manage the Project within the current approved construction budget authorization, or approved budget changes.
4. Ensure Contract Time is managed in a way that benefits the Project.
5. Ensure timely completion of the Project based on the original project schedule and approved schedule revisions.
6. Ensure the Work is inspected daily and as required to ensure reasonable conformance to the Contract.
7. Ensure the Project records and other documentation are proper and current.
8. Ensure DBE, OJT, and other requirements are fulfilled.

9. Ensure the Contractor is paid timely for all Contract items that are satisfactorily completed in accordance with the Contract.

The Consultant Project Engineer's duties regarding construction Contracts include:

1. Administer the Contract according to established CDOT Policies and Procedures, including those described in this manual.
2. Ensure that all Work and Materials used on the Project, and applicable Project documentation conform to Contract requirements and established CDOT Policies and practices. Prior to the work taking place the Consultant Project Engineer and Consultant Professional Engineer shall obtain written approval from the RE or CDOT Engineer of Record for:
 - a. All price adjustments.
 - b. Documentation that does not meet the Contract or accepted CDOT guidelines.

The Contractor shall make all requests in writing and the Consultant Project Engineer shall respond to those requests as directed by the RE. Responses to Contractor requests shall be in writing on a CDOT Form 105 and shall be documented in the daily diary. Instructions and directions provided to the Contractor shall be documented on a CDOT Form 105 and in the daily diary.

3. Manage the Project within the current approved construction budget authorization, or approved budget changes.
4. Ensure Contract Time is managed in in a way that benefits the Project.
5. Ensure timely completion of the Project based on the original project schedule and approved schedule revisions.
6. Ensure the Work is inspected daily and as required to ensure reasonable conformance to the Contract.

7. Ensure the Project records and other documentation are proper and current.
8. Ensure DBE, OJT, and other requirements are fulfilled.
9. Ensure the Contractor is paid timely for all Contract items that are satisfactorily completed in accordance with the Contract.

105.14.3 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.

105.14.4 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 HMA material and excellent laydown and compaction procedures. In addition, the Contractor was extremely quality conscious and received the maximum quality incentive payment. 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.

105.14.5 Assessing Acceptability of Work

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

1. Will CDOT customers (i.e. Colorado taxpayers, traveling public) be satisfied?
2. Would I accept this work if I owned the facility?
3. 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 105.14.3.

105.15 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.

105.16 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.

105.17 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.

105.18 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.coloradodot.info/business/permits/truckpermits>. These restrictions apply to all Colorado public roads and bridges. Project personnel must continually monitor compliance with subsection 105.18 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.

105.19 MAINTENANCE DURING CONSTRUCTION

Subsection 105.19 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).

105.20 FAILURE TO MAINTAIN ROADWAY OR STRUCTURE

If the Project Engineer notifies the Contractor of a maintenance problem and the Contractor does not take action, subsection 105.20 of the *Standard Specifications* 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.

105.21 ACCEPTANCE

105.21.1 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 subsections 105.21, 107.16 and 107.17 of the *Standard Specifications*. Refer to the *Project Special Provisions* when the project includes a landscape maintenance period.

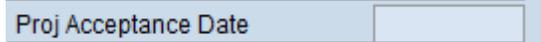
105.21.2 Final Acceptance

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.

105.21.3 Form 1212 and SAP Workflow

1. Once a project is accepted in construction as complete, either by CDOT or the Local Agency, the Form 1212 workflow should be started in SAP. Starting the Form 1212 workflow can be done in one of two ways, depending on the type of project.

- a. For CDOT administered projects in SiteManager®, the Form 1212 workflow is triggered automatically when the Project Acceptance Date is populated within SiteManager®. The workflow will be initiated in SAP the day after the acceptance date is entered. This date is automatically brought over to the SAP system and populates the same field in the Project Manager Custom Tab in transaction CJ20N. Please refer to the portion of the SAP Project Manager tab screen shot below:



The screenshot shows a SAP interface element with the label 'Proj Acceptance Date' in a blue header bar. To the right of the label is a white rectangular input field. The entire area is highlighted with a light blue background, indicating it is disabled or grayed out.

This date will be automatically populated through SiteManager®. It can only be populated through this method for CDOT Administered construction projects. Note the box is grayed out or blue in color which means that it cannot be completed by the user.

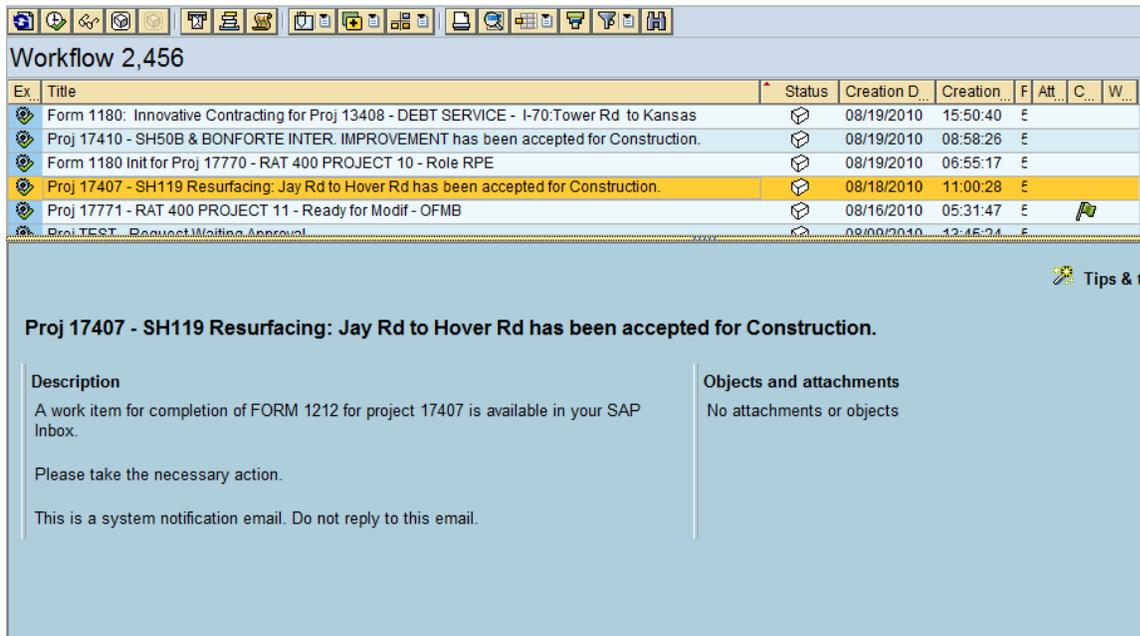
- b. For Local Agency Projects and Non-Engineering Capital Projects: The Form 1212 workflow is triggered when the assigned Project Manager populates the Project Acceptance Date within the Project Manager Custom Tab in the SAP transaction CJ20N. These project types do not manage construction activities through SiteManager® and the acceptance date must be entered manually. Please refer to the portion of the SAP Project Manager tab screen shot below:



The screenshot shows a SAP interface element with the label 'Proj Acceptance Date' in a blue header bar. To the right of the label is a white rectangular input field with a thin border, indicating it is active and can be edited by the user.

For local agency and non-engineering capital projects, Project Managers must manually populate the date in order to start the SAP Form 1212 workflow. Note the field in white can be changed by the user.

2. Once the Form 1212 workflow has been started, a Form 1212 workflow item and outlook email message will be sent to all Resident Engineers within the project's region. The Resident Engineer managing the project should open this workflow through transaction SBWP to save the workflow or to complete the Form 1212. Please refer to the screen shot below:



3. Upon opening the workflow message, the Form 1212 for the project will be ready for modification.
 - a. The top section of the form has two fields that need to be completed by the Resident Engineer (Contractor’s Name; Inspection Date). All other fields will be automatically populated using existing information within SAP. The Federal Oversight radio button is automatically selected based on the project information in SAP, but can be changed if necessary. Please refer to the screen shot below:

Final Acceptance for Federal Aid Projects: FORM 1212

Project No.: STU 0404-047	Federal Oversight <input type="radio"/> Yes <input checked="" type="radio"/> No	
Project Code (SA#): 16705		
County: ADAMS ARAPAHOE		
Contractor's Name: ASPHALT SPECIALTIES CO., INC.	Location: SH-40: YOSEMITE TO PEORIA R	Original Contract Amount: 1,258,560.90
Description of Work as Advertised: RESURFACING/CURB RAMPS	Percent Time Elapsed: 98.00	Original Contract Time: 00040
Inspection Date: <input type="text"/>	Acceptance Date: 08/27/2009	

- b. The bottom section of the form is the checklist of activities that should be complete as part of project acceptance. All activities must be checked before submitting the form. The Resident Engineer can select whether the project included a major bridge or not. If a major bridge is included in the project, the Staff Bridge inspection checkbox must be selected before submitting the form. Please refer to the screen shot below:

Checklist-Verify the following items as complete and/or correct:

- The project has been completed in reasonably close conformity with the Contract Plans and Specifications including authorized changes.
- The Form 473 - Letter of Materials Certification has been completed.
- The project right-of-way appears to be free of unauthorized encroachments.
- The completed project has been reviewed for obvious safety deficiencies.

Select one of the following:

- 1. The project did not include construction of a major bridge.
- 2. The project included construction of one or more major bridges.

If you selected 2 above verify the following:

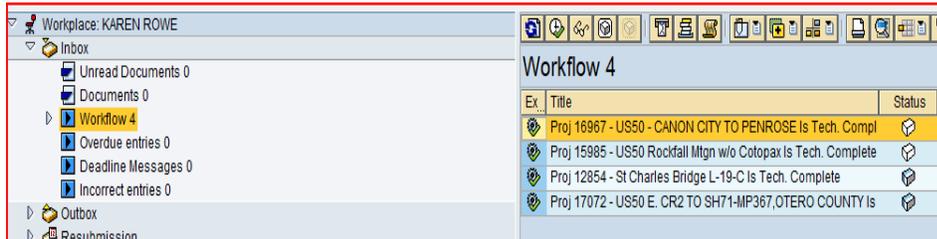
- Staff Bridge has conducted an inspection of all major bridges constructed on this project.

Remarks:

Li 1, Co 1	Ln 1 - Ln 1 of 1 lines

Name: Darius Pakbaz Title: Resident Engineer Date: 08/23/2010

- c. The Resident Engineer and date fields at the bottom of the form are automatically populated with the user initiating the workflow and the current date. These can be changed if needed.
- d. Click the “Submit” button to complete the Form 1212.
- e. If the Resident Engineer is not ready to complete the Form 1212 when he receives the workflow, then the workflow should be reserved with that Resident Engineer. Open the workflow item; then close it without completing it. It will show that this workflow is only in that Resident Engineer’s SAP business workplace. See screen shot below:

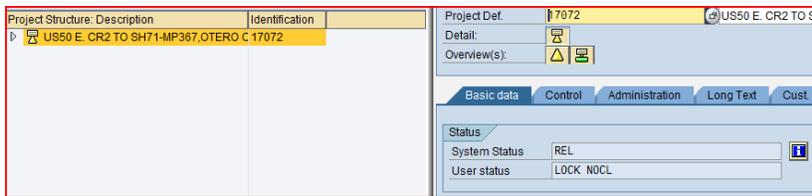


- f. The workflows only in the Resident Engineer’s workplace show a blue and white box under status. This is referred to as “reserving the workflow item.”
- g. The workflows in all the Region’s Resident Engineers' workplaces show a white only box.
- h. The Resident Engineer can come back to this reserved Form 1212 workflow when he is ready to complete it.
- i. If you want to unreserve a Form 1212 workflow and put it back in all the Region’s workplaces, highlight the workflow and then press the  submit button.

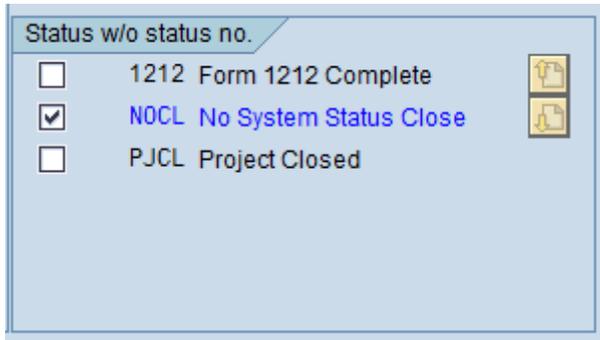
After the submit button is hit, the workflow is automatically completed and an email message is sent to all Resident Engineers indicating that the Form 1212 is complete. The email will include a pdf copy of the completed form. The Resident Engineer should print the pdf copy, sign it and send the form with other project closure paperwork to the Region Finals Administrator.

For projects that do not require the Form 1212 to be completed, the workflow can be bypassed and the business office can start project closure activities. These types of projects include design-only projects, property projects, DTD projects, maintenance projects, withdrawn projects, or any other projects that do not have a Construction phase.

- j. For these projects, the Business Manager or designee can mark the Form 1212 status in CJ20N for the project and save the project. Once this status is set, the business office can set the TECO status and begin project closure activities and the Form 950 workflow. Please refer to the screen shots below:



Hit the blue “i” button at the top level of the project. Then the following screen will appear.



What do I do if I lost the Form 1212 workflow?

There is now a workflow report available that will allow anyone to see where any workflow is located. It may be in another RE’s SAP workplace and this report will

indicate the location. The report is located in the Portal under the Report tab, then under Project Systems. If help is needed with the report, contact your region Super User or the SAP Project Systems support team.

What do I do if I want to run the Form 1212 workflow again?

There is no way in the system to easily re-run a Form 1212 workflow that has already been completed. If the Form 1212 that was created is needed or if the workflow needs to be restarted, the SAP Project systems support team will need to be contacted. Please contact the SAP Project Systems Business process experts.

105.22 DISPUTE RESOLUTION

105.22.1 General

Contract adjustments and dispute resolutions will be:

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

The dispute and claim resolution processes are business processes that are sometimes necessary to resolve differences between CDOT and Contractors. The intent of the processes is to resolve issues early, efficiently, and as close to the project level as possible. In the event of a dispute the Project Engineer will contact the Area Engineer.

105.22.1.1 Dispute and Claims Evaluations

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

and timely records throughout the project. For Administrative settlements see Section 120.7.2 of this *Manual*.

105.22.1.2 Dispute and Claim Status Report

The Contracts & Market Analysis Branch is responsible for preparing and forwarding a quarterly Dispute and Claims Status Report to the Chief Engineer. Therefore, it is essential that Project Engineers monitor the status of each dispute or claim on their respective projects. To assist with this task, Project Engineers shall use the Form 1318, Dispute and Claim Status Report Form (see Appendix B), which is available from the Forms Catalog website or in electronic format from the Contracts & Market Analysis Branch. Submit the form to your Area Engineer whenever the status of a dispute or claim changes. The Dispute and Claim Status Report Form presents a list of key events that are time sensitive in processing disputes and claims.

105.22.1.3 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 disputes and 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 dispute from the Contractor when the dispute meets the following requirements:

1. all disputes exceeding \$250,000 on Federal-Aid projects; and
2. all disputes on full oversight projects.

The written notification shall be followed up with copies of all dispute information.

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.

105.22.2 Dispute Processing Procedures**105.22.2.1 Dispute Notification**

The contract requires that disputes must be based on the requirements of the Contract documents (e.g., Contract Plans, *Standard Specifications*, *Special Provisions*). Upon failure of the Parties to resolve an issue through negotiations and the Contractor elects to escalate the dispute, the Contractor must provide the Project Engineer with immediate written notice of dispute. 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. “CDOT is in receipt of your notice of dispute in regard to _____. Your Request for Equitable Adjustment (REA) is due 15 days from the date of your notice of dispute letter, dated _____.”
2. Alert AE. Notify your Area Engineer of the Project Engineer’s receipt of a “notice of dispute”.
3. Contract Specifications. Review the requirements of subsection 105.22 of the contract. Pay particular attention to specified time requirements.
4. Seek Guidance. Upon notification of a dispute, 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 dispute with the Area Engineer before rendering a decision.
5. 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 may include:

- a. Force Account Records. Force account records of the disputed work must be on Form 10 – Inspector’s Report for Force Account Work. For information on Force Account, see Section 109.4 and Appendix B of this *Manual*.
- b. Conversations. Accurately document conversations, agreements, and actions taken by the Contractor, Project Engineer, or other CDOT personnel regarding the disputed work on CDOT Form 103, Daily Diary. Do not editorialize. Be factual and cite the Contract requirements.
- c. Photographs/Videotape. Where appropriate, take photographs and videotape of the disputed work. Follow the steps in Section 120.1.3.6. Be careful what is stated near audio microphones during videotaping.

105.22.2.2 Review of REA Package

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

1. Check REA Package. Disputes will not be considered unless the Contractor has first complied with the resolution processes as specified in subsections 104.02, 106.05 and 108.08. Compare the REA package 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 dispute. The contractor shall provide the estimated dollar cost of the dispute with supporting documentation, and an analysis of the progress schedule showing the schedule change or disruption. The package needs to be specific in order for CDOT to evaluate the elements being disputed, so that other elements don’t get drawn into the dispute. The Contractor is allowed to supplement the REA as additional information becomes available.
2. Request Additional Information. If it is determined that additional information or clarification is required from the Contractor to fairly and accurately review the

REA 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. The request for additional information letter should give the Contractor 10 days to provide missing information. Only the information submitted as part of the REA or supplemental REA will be considered in the decision for merit.

3. **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 dispute with the Area Engineer before rendering a decision. If the dispute involves legal issues or legal questions, the Area Engineer, after discussing the issue with the Resident Engineer, will consult the Attorney General for guidance.
4. **Request Audit.** An audit may be performed for any dispute. The audit will evaluate the amount of the Contractor's damages but will not make judgment on merit or quantum. In certain cases there are damages that are the fault of both Parties and a determination of value to be assigned to each Party will have to be negotiated. If the decision is made to perform an audit, the Project Engineer will request the audit as soon as practical after receiving the complete REA or dispute. The Project Engineer will contact the Area Engineer to assist in the determination of the scope of the audit.
5. **Use of Consultants.** If the Project Engineer feels additional help with the dispute would be warranted, he will consult with his Resident Engineer for approval to use a consultant. 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 consultant. 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 dispute at an early stage. The Contracts & Market Analysis branch has contracts in place to assist projects with disputes and claims. Contact the Area Engineer for additional information.

105.22.2.3 Project Engineer Decision

The Project Engineer will follow the requirements of subsection 105.22(c) of the Contract and render a decision within the timeframes specified. This determination will include a summary of the relevant facts, Contract provisions supporting the determination, and an evaluation of all scheduling issues that may be involved. The determination may include both merit and quantum but quantum may be determined separately. Merit may be granted but the quantum may continue to be disputed and follow the dispute resolution process through the Dispute Review Board or even through the claim process. See Figure 105-1 in the Contract for an outline of the process.

105.22.2.4 Resident Engineer Review

If the Contractor rejects the Project Engineer decision of merit or quantum the Resident Engineer (RE) will follow the requirements of subsection 105.22(d) of the Contract. If the meetings with the RE do not result in a resolution or the participants mutually agree that they have reached an impasse, the dispute shall be presented to the Dispute Review Board in accordance with subsection 105.23 of the Contract.

105.23 DISPUTE REVIEW BOARD

The Project Engineer will initiate the Dispute Review Board (DRB) process in accordance with subsection 105.23(a) of the Contract when a dispute has not been resolved. Select DRB members based upon their experience, knowledge relevant to the project and their availability. When contacting prospective DRB members, let them know who the project participants (contractor, subcontractors, project personnel, etc.) are so that a conflict of interest situation can be avoided.

Once DRB members have been selected, notify the Area Engineer so the AE can obtain concurrence from the Attorney General. Upon approval of DRB members, submit the Third Party Agreement to the Area Engineer for signature by the Chief Engineer.

The Pre-Hearing submittal shall include a pre-hearing position paper containing the information required in subsection 105.23(e) of the Contract. A joint statement describing the dispute is part of the position paper. If the parties are unable to agree on the wording, see the specification for suggested wording of this document. Both parties need to be able to agree upon what is being disputed. This is a fundamental part of the dispute process. The DRB shall hear only those disputes identified in the written request for the DRB and shall review only the information contained in the pre-hearing submittals. The pre-hearing submittal shall only contain information that was shared and discussed with both parties during the Project and Resident Engineer review meetings. Therefore consider including the following documents in the pre-hearing submittal:

1. Contract Plans,
2. *Standard Specifications,*
3. *Special Provisions,*
4. *Standard Plans,*
5. shop drawings,
6. reports from consultants,
7. reports from auditors,
8. schedules and schedule updates,
9. schedule analysis,
10. Schedule narratives
11. project diaries,
12. correspondence,
13. engineering memos,
14. inspection reports,
15. time counts, and
16. pay estimates.

If the parties are unable to resolve the dispute after the DRB process, the contractor may escalate the dispute to a claim.

105.24 CLAIMS FOR UNRESOLVED DISPUTES

When the dispute is not resolved at the Resident Engineer level, the Project Engineer will continue to be involved with the process by maintaining the claim record and ensuring the specification is followed.

105.24.1 Official Claim Record

The official claim record consists of CDOT's and the Contractor's claim packages along with any additional documentation developed during the claim process.

Development of Claim Record

1. Contractor submits 5 copies of the Contractor claim package to RTD
2. Project Engineer prepares 5 copies of the CDOT claim package
3. Project Engineer is responsible for getting all the packages together and creating 5 Claim Records.
4. The Project Engineer is responsible for maintaining these 5 records while the RTD reviews the Claim. This includes adding:
 - a. any correspondence related to the claim between the Contractor and RTD,
 - b. minutes or notes from the RTD hearing,
 - c. any additional information provided to render a decision, and
 - d. the RTD Decision letter.
 - e. This can be done by providing copies of these documents to the person with a copy of the claim record.
5. When the RTD issues a written Decision, a copy of the Record is returned to the Contractor.

6. If the claim is appealed to the Chief Engineer, the Area Engineer will be responsible for maintaining the four remaining copies of the claim record. The Area Engineer will add the following documents to the claim records:
 - a. the Contractors appeal to the Chief,
 - b. any correspondence related to the claim between the Contractor and the Chief,
 - c. minutes or notes from the Chief Engineer hearing,
 - d. any additional information provided to render a decision, and
 - e. the Chief Engineer's Decision letter.

7. To assist with review of the Claim Package, the Project Engineer and/or the Area Engineer may prepare a summary of the claim record for the RTD and Chief's review of the claim. Many times a Contractor will submit large volumes as the claim package, this summary is intended to help the RTD and Chief to understand the claim.

Claim Record Distribution

Record Copy	RTD Level	Chief Level
1	Contractor	Contractor
2	RTD	RTD (Region Use)
3	Project Engineer or RE	Area Engineer
4	Unassigned	Chief
5	Unassigned	Attorney General (if necessary)

Consider the documents listed in subsection 105.23 of this *Manual* when preparing the claim record.

Once the claim record has been assembled by the Project Engineer, the submission of additional information, other than subsequent levels of review, will not be permitted.

105.24.2 RTD Decision.

The RTD will render a written decision within 60 days after receipt of the official claim package or receipt of the audit, whichever is later.

105.24.3 Chief Engineer Decision.

The Contractor may appeal the RTD decision within 30 days to the Chief Engineer. Within 15 days of the appeal either party may submit a written request for a hearing with the Chief Engineer. The Chief Engineer will render a written decision within 60 days after receipt of the official claim package and will only consider information contained in the claim package.

105.24.4 De Novo Litigation or Merit Binding Arbitration.

If the Contractor rejects the Chief Engineer's decision, the Contractor may initiate de novo litigation or merit binding arbitration depending on the option selected by the Contractor on Form 1378 submitted at the Pre-construction Conference.

SECTION 106

CONTROL OF MATERIAL

106.1 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

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 turnaround 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 CDOT Field Materials Manual for additional guidance.

106.4 QUALIFICATION OF TESTING PERSONNEL AND LABORATORIES

Personnel performing any type of testing on a project shall be certified in accordance with the CDOT Field Materials Manual.

106.5 SAMPLING AND TESTING OF HMA

All HMA, Item 403, except HMA (Patching) and temporary pavement shall be tested in accordance with the specifications and the CDOT Field Materials Manual.

106.6 SAMPLING AND TESTING OF PORTLAND CEMENT CONCRETE PAVING

All Portland Cement Concrete Pavement, Item 412, shall be tested in accordance with the specifications and the CDOT Field Materials Manual.

106.7 – 106.10 RESERVED**106.11 BUY AMERICA REQUIREMENTS**

With the exception below, the Contractor shall provide steel and iron products for permanently incorporated elements, for which all manufacturing processes have occurred in the United States.

For definitions of steel and iron products refer to the Special Notice to Contractors in the Field Materials Manual.

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

Prior to the permanent incorporation of steel or iron products into the project the Project Engineer must obtain from the Contractor a written statement signed by the Contractor (see examples in the Field Materials Manual) that the certifications required by the Buy America specification are on file and the steel or iron products are in compliance with the Buy America specification.

Bid items that include steel and iron products will not be paid for in a monthly pay estimate until the Contractor is in compliance with the Buy America specification. The

Contractor shall provide documentation of the project delivered cost of all foreign steel or iron permanently incorporated into the project, if any.

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.

All *Buy America* waiver requests must be submitted to the FHWA Office of Program Administration for consideration. The waiver request will be posted on the internet for public comment for 15 days before FHWA action is taken. They will be posted at:

["Notice of Buy America Waiver Request"](#)

(<http://www.fhwa.dot.gov/construction/contracts/waivers.cfm>)

Waiver requests that are based on an adverse impact to a contractor's construction schedule will not be accepted when domestic material is available.

The Contractor shall maintain a document summarizing the date and quantity of all steel and iron material delivered to the project. The document shall show the pay item, quantity of material delivered to the project, along with the quantity of material installed by the cutoff date for the monthly progress payment. The summary shall also reconcile the pay item quantities to the submitted Buy America certifications. The Contractor shall also maintain documentation of the project delivered cost of all foreign steel or iron permanently incorporated into the project, if any. A summary of both sets of documentation shall be submitted to the Engineer within five days of the cutoff date for

the monthly progress payment. A monthly summary shall be required even if no steel or iron products are incorporated into the project during the month. The summary document does not alleviate the requirement to provide the necessary Buy America certifications of steel and or iron prior to permanent incorporation into the project.

106.12 CERTIFICATES OF COMPLIANCE

The Project Engineer must be in receipt of all original material certifications with an original signature, before payment is made for the Contract item. For details and the language required on the Certificate of Compliance see subsection 106.12 of the *Standard Specifications and Standard Special Provision, Revision of Section 106 - Certificates of Compliance and Certified Test Reports*.

106.13 CERTIFIED TEST REPORT

The Project Engineer must be in receipt of all original material Certified Test Reports, with an original signature, before payment is made for the Contract item. For details and the language required on the Certified Test Report, see subsection 106.13 of the *Standard Specifications and Standard Special Provision, Revision of Section 106 - Certificates of Compliance and Certified Test Reports*.

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 Pre-construction Conference.

107.1.1.2 Weekly Payrolls

Weekly payrolls are required from all Contractors and subcontractors.

CDOT inspectors will randomly sample ten percent of the Contractor's submittals to verify they are signed and certified. All payrolls checked by an inspector will be stamped to document they were checked. If problems are found, the Contractor will be notified immediately and the random sample frequency will be increased to 25 percent until the Contractor becomes compliant. The Contractor shall also check all project payrolls prior to submitting to CDOT. Payrolls checked by the Contractor shall be stamped to document they were reviewed.

107.1.2 Processing Requests for CDOT Records

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*). The Colorado Open Records Act requires CDOT to respond to inquiries for information within three days of the written request.

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 (EEO) and Labor Compliance as required by federal regulations. Form 280 interviews are required on all projects (i.e. federal aid construction projects, local agency projects, maintenance projects and state funded only projects). All projects require the “Equal Employment Opportunity” section to be completed. The “Labor Compliance” section is only completed when Davis-Bacon wages are required on the project.

Each Region Civil Rights Manager will create a process to report the number of interviews required and completed. The actual interview forms shall be retained in the project records. A copy should be forwarded to the Region Civil Rights Manager for follow-up action if problems are noted. Region Civil Rights Manager will report data for each residency to the Labor & Contract Compliance Officer in the Civil Rights and Business Resource Center on a quarterly basis. The report will indicate the number of interviews required, completed and forwarded for follow up action. The Labor & Contract Compliance Officer will prepare a summary report for the Chief Engineer.

Project personnel will conduct interviews in accordance with the following table:

Contract Amount	Interviews Required
Up to \$20 million	4 interviews during each month of active construction
Greater than \$20 million and up to \$100 million	8 interviews during each month of active construction
Greater than \$100 million and up to \$200 million	12 interviews during each month of active construction
Greater than \$200 million and up to \$300 million	16 interviews during each month of active construction
Greater than \$300 million	20 interviews during each month of active construction

Please note, field personnel should prioritize interviews by:

1. Interviewing women and minorities on the workforce in order to monitor potential discriminatory actions
2. Rotating the interviews among the prime and subcontractors on the project
3. Rotating the interviews among various labor classifications, with emphasis on the more heavily utilized classifications

Questions regarding this process may be referred to the Labor & Contract Compliance Officer in the Civil Rights and Business Resource Center at 303-757-9540.

The sample spreadsheet below may be used by the Project Engineer for tracking Form 280 interviews

	A	B	C	D	E
1	Project Tracking Form for EEO interviews using Form 280				
2	Project Number/Code:				
3	Original Contract \$\$:				
4	Start of work date:				
5	Standard # of Form 280s required monthly (from chart):				
6		# of	# of	# Form 280s	
7		Form 280s	Form 280s	forwarded for	
8	Reporting Period	required	completed	follow-up action	Comments
9	July (year)				
10	August (year)				
11	September (year)				
12	Quarterly totals				
13	October (year)				
14	November (year)				
15	December (year)				
16	Quarterly totals				
17	January (year)				
18	February (year)				
19	March (year)				
20	Quarterly totals				
21	April (year)				
22	May (year)				
23	June (year)				
24	Quarterly totals				

	A	B	C	D
1	Region Quarterly Reporting for EEO interviews using Form 280			
2	Region:			
3	Fiscal Year:			
4	Quarter:			
5		Number of Interviews (Form 280)		
6	Residency Unit Number	Required	Completed	Forwarded for follow-up action
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22	Region Totals			

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

For more information or assistance with the application of the OJT requirements please contact your Region Civil Rights Office (CRO) or the OJT Program Coordinator at the Civil Rights and Business Resource Center, 303-757-9234

107.1.4.1 Pre-construction Conference Requirements

At the Pre-construction Conference the Project Engineer or if available, the CRO representative will discuss the Project's On-the-Job Training (OJT) goal and the OJT requirements. An emphasis will be placed on noncompliance resulting in the withholding of payments and the assessment of disincentives against the Contractor at the end of the project. If the Contractor does not comply by the end of the project he is subject to disincentives.

107.1.4.2 Enrolling Trainees and Apprentices

The Contractor shall enroll all trainees and apprentices by submitting a Form 838 – OJT Trainee/Apprentice Record and one of the following as supporting registration documentation to the Project Engineer ten working days before the trainee or apprentice starts work onsite.

Type of Program	Documentation Required
Standard Training Program	Form 838, <i>plus</i> Copy of the Contractor’s Standard OJT Training Program’s Approval Letter signed by CDOT & FHWA - or - Colorado Contractors Association Manpower Training Program Acceptance Form
U.S. Department of Labor Approved Apprentice	Form 838, <i>plus</i> US DOL – Program Registration and Apprenticeship Agreement – Form ETA 671 – Section II - or - US DOL – Office of Apprenticeship, Apprenticeship Certification with the Apprentice’s name on this list

The Project Engineer will forward the form to the CRO for approval. This can be scanned and emailed or faxed to the CRO. The CRO will review and respond within ten working days. If the Contractor has not submitted the OJT Form 838 and registration documentation to the Project Engineer at least ten working days prior to the first progress payment, the Project Engineer will send a Form 105 – Speed Memo to the Contractor. The Form 105 will remind the Contractor of the OJT goal, the possibility of progress payments being withheld, and the possible assessment of disincentives for non-compliance. The Project Engineer will remind the Contractor at the weekly project meetings about the OJT goal and the Contractor’s status towards the goal. The Project Engineer will follow up with the issuance of a Form 105 memo as appropriate

When a trainee or apprentice is approved by the CRO, the Contractor shall submit the hours worked on the project by the trainee/apprentice on a Form 832 – Trainee Status and Evaluation. The form is due monthly and requires approval of the Project Engineer.

The Project Engineer should review the project hours for reasonableness in comparison to the certified payrolls, daily diaries, or other project observations. The Project Engineer will initiate payment from the OJT force account for hours worked on the CDOT project site and found to be reasonable at the rate of \$2.00 per hour. A copy of Form 832 shall be sent to the CRO each month. At no time should the OJT force account be paid as a lump sum pay item.

107.1.4.3 Increasing OJT Hours

If the OJT Force Account has been expended and the Contractor requests an increase in the OJT force reimbursable training hours, the Project Engineer should consider whether additional funds are available and if the request is timely. The Project Engineer should also consider if the Contractor is close to reaching the OJT goal, has significant work to perform, and training opportunities are still available. If that is the case, the Project Engineer may grant an increase in the OJT hours. Requests should not be considered if prior approval is not obtained. The Project Engineer may also reject a request if the request is premature, the Contractor is not close to reaching the current OJT goal, a request is made at the end of a project, after trainees/apprentices have worked on site, the paperwork was not submitted in a timely manner, or if the amount requested is significant. When an increase to the OJT hours is approved the Project Engineer will determine the limit of increase and create a CMO to increase the OJT Force Account.

107.1.4.4 Offsite OJT Hours

If a Contractor's apprentice is enrolled in a U. S Department of Labor approved apprenticeship program and registered with CDOT using Form 838 and working for the Contractor on a non-CDOT project, the hours worked on the non-CDOT project may be counted toward the project goal. To qualify the approved documentation on Form 832 and concurrence from the CRO is required. If a Contractor elects to use this method, the hours will not be reimbursed from the Project's force account. Adequate documentation shall be submitted by the Contractor to the Project Engineer for

approval. An example of acceptable documentation is a Certified Payroll from the other project. The Project Engineer will forward the documentation to the CRO who will have ten days to review the request and issue a decision.

107.1.4.5 OJT Goal Waiver or Modification

The Contractor or the Project Engineer may initiate a waiver or modification of the OJT goal. A waiver or modification is approved only in rare cases and because of this, is not discussed in the specification. If the Contractor requests that the OJT goal be waived or modified, a written explanation shall be submitted. Once a written request is received or the Project Engineer determines a waiver or modification is warranted, the Project Engineer will notify the CRO. The Project Engineer with the CRO will decide whether to approve the waiver or modification and if approved, a Form 1336 – Waiver Request for Contract's On the Job Training Hours will be completed by the Project Engineer. If applicable, it should include the Contractor's request as an attachment. The CRO will have ten working days to review and approve Form 1336. If Contractor's request for a waiver or modification is denied, the Project Engineer will notify the Contractor in a Form 105. Examples of when a waiver or modification should be considered are:

1. when the work a trainee or apprentice performs is a safety hazard that cannot be mitigated and was unknown at the time the goal was developed;
2. if there was a change of scope that eliminates the work that would have been performed by a trainee or apprentice and there are no other opportunities for the trainee or apprentice; and
3. any other efforts to meet the goal such as a Contractor soliciting OJT participation from the subcontractor.

107.1.4.6 Not Meeting the OJT Goal

If the Contractor does not meet the required OJT goal, the Project Engineer will notify the CRO prior to Final Acceptance of the project. The Project Engineer will issue a Form 105 requiring the Contractor to submit a written explanation for not meeting the OJT goal. When the Contractor provides a written explanation, the Project Engineer and the CRO will confer to determine whether disincentives should be imposed, and in what amount. If the Contractor does not provide a written explanation or the explanation provided is not satisfactory to CDOT, disincentives will be assessed against the Contractor. The CRO will determine the journeymen's rates to be used to calculate disincentives. The Project Engineer will notify the Contractor of the decision using Form 105.

107.1.4.7 Assessing OJT Disincentives in SiteManager®

In SiteManager®, add a change order (Reason code: No MCR/CMO required) for the calculated disincentives. Use Category 0200; use only item code 900-00028, Added Item/OJT Disincentives. This disincentive is a per hour type item. Enter the hourly rate as a positive and the quantity of hours as a negative. Remember to post to your DWR. For further information and assistance with SiteManager® entry, please contact the AASHTOWare Project Manager at (303) 757-9541.

107.1.5 Reserved**107.1.6 Drug-Free Workplace**

Subsection 107.06 (b) 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 108.06 of the *Standard Specifications*.

107.2 PERMITS, LICENSES, AND TAXES

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

1. provide reference to subsection 107.02 of the *Standard Specifications*;
2. refer questions regarding sales tax to the local taxing authority or the Sales, Use and Cigarette Tax Section of the Colorado Revenue Department; and
3. 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 Performance of Safety Critical Work**

The following work elements are considered safety critical work:

1. Overhead girder erection
2. Overhead structure construction or repair
3. Removal of bridge
4. Removal of portion of bridge
5. Temporary works: falsework, shoring that exceeds 5 feet in height, cofferdams, and temporary bridges
6. Work requiring the use of cranes or other lifting equipment
7. Blasting
8. Excavation and embankment adjacent to the roadway, especially if it requires shoring

9. Tunneling
10. Work operations such as pile driving and jack hammering which may create vibration and cause debris to fall into traffic.
11. Rockfall mitigation

The Contractor shall submit, for record purposes only, an initial detailed construction plan that addresses safe construction of each of the safety critical elements. When the specifications already require an erection plan or a bridge removal plan, it shall be included as a part of this plan. The detailed construction plan shall be submitted two weeks prior to the safety critical element conference described below. The construction plan shall be stamped "Approved for Construction" and signed by the Contractor. The construction plan will not be approved by the Engineer.

The Construction Plan shall include the following:

1. Safety Critical Element for which the plan is being prepared and submitted.
2. Contractor or subcontractor responsible for the plan preparation and the work.
3. Schedule, procedures, equipment, and sequence of operations, that comply with the working hour limitations
4. Temporary works required: falsework, bracing, shoring, etc.
5. Additional actions that will be taken to ensure that the work will be performed safely.
6. Names and qualifications of workers who will be in responsible charge of the work:
 - a. Years of experience performing similar work
 - b. Training taken in performing similar work
 - c. Certifications earned in performing similar work

7. Names and qualifications of workers operating cranes or other lifting equipment
 - a. Years of experience performing similar work
 - b. Training taken in performing similar work
 - c. Certifications earned in performing similar work

8. The construction plan shall address how the Contractor will handle contingencies such as:
 - a. Unplanned events (storms, traffic accidents, etc.)
 - b. Structural elements that don't fit or line up
 - c. Work that cannot be completed in time for the roadway to be reopened to traffic
 - d. Replacement of workers who don't perform the work safely
 - e. Equipment failure
 - f. Other potential difficulties inherent in the type of work being performed

9. Name and qualifications of Contractor's person designated to determine and notify the Engineer in writing when it is safe to open a route to traffic after it has been closed for safety critical work.

10. Erection plan or bridge removal plan when submitted as required elsewhere by the specifications. Plan requirements that overlap with above requirements may be submitted only once.

A safety critical element conference shall be held two weeks prior to beginning construction on each safety critical element. The Engineer, the Contractor, the safety critical element subcontractors, and the Contractor's Engineer shall attend the conference. Required pre-erection conferences or bridge removal conferences may be included as a part of this conference.

After the safety critical element conference, and prior to beginning work on the safety critical element, the Contractor shall submit a final construction plan to the Engineer for

record purposes only. The Contractor's Engineer shall sign and seal temporary works related to construction plans for the safety critical elements, Removal of Portion of Bridge and Temporary Works. The final construction plan shall be stamped "Approved for Construction" and signed by the Contractor.

The Contractor shall perform safety critical work only when the Engineer is on the project site. The Contractor's Engineer shall be on site to inspect and provide written approval of safety critical work for which he provided stamped construction details. Unless otherwise directed or approved, the Contractor's Engineer need not be on site during the actual performance of safety critical work, but shall be present to conduct inspection for written approval of the safety critical work.

When ordered by the Engineer, the Contractor shall immediately stop safety critical work that is being performed in an unsafe manner or will result in an unsafe situation for the traveling public. Prior to stopping work, the Contractor shall make the situation safe for work stoppage. The Contractor shall submit an acceptable plan to correct the unsafe process before the Engineer will authorize resumption of the work.

When ordered by the Engineer, the Contractor shall remove workers from the project that are performing the safety critical work in a manner that creates an unsafe situation for the public in accordance with subsection 108.06 of the *Standard Specifications*.

Should an unplanned event occur or the safety critical operation deviate from the submitted plan, the Contractor shall immediately cease operations on the safety critical element, except for performing any work necessary to ensure worksite safety, and provide proper protection of the work and the traveling public. If the Contractor intends to modify the submitted plan, he shall submit a revised plan to the Engineer prior to resuming operations.

All costs associated with the preparation and implementation of each safety critical element construction plan will not be measured and paid for separately, but shall be included in the work.

Nothing in the section shall be construed to relieve the Contractor from ultimate liability for unsafe or negligent acts or to be a waiver of the Colorado Governmental Immunity Act on behalf of the Department.

107.6.2 Safety Equipment

Required personal protective equipment (including but not limited to hard hats, vests, eye protection, and foot protection) will be made available, and will be properly used by, all CDOT personnel and consultants pursuant to Procedural Directive 80.1 which is available at: <http://intranet/resources/policy-procedure/documents/0080-1/view> .

Consultants working on CDOT projects must wear the same personal protective equipment as CDOT personnel. Appropriate safety equipment will be used 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, health and sanitation laws, rules, regulations, and guidelines, including but not limited to the Project Safety Management Plan (Plan) described in the specification, the Occupational Safety and Health Act (OSHA), 29 CFR 1910, 29 CFR 1926, 23 CFR 634, the Mine Safety and Health Administration (MSHA), Title 30 CFR, "Colorado Work Zone Best Practices Safety Guide", CFR 49, national consensus standards, and the Federal Drug Free Workplace Act, and for ensuring the safety of all representatives and employees of the Contractor and all subcontractors, suppliers, Department personnel and consultants, visitors, and the public throughout the project site.

The specifications require the Contractor to prepare a project-specific safety management plan. The Contractor must certify that:

1. The Plan complies with applicable safety, health, and sanitation laws, rules, regulations, and guidelines.

2. All operations and work practices of the Contractor comply with it.
3. All subcontractors, suppliers, and Department personnel and consultants will comply with it.

The Contractor is to submit a copy of this Plan to the Engineer before starting work, and is to keep it updated. The Engineer should be familiar with the specification and the Plan. The Engineer should review the Plan for general adequacy and compliance with the specification, and notify the Contractor in writing that the plan has been received and addresses items 1 through 12 in the *Standard Specifications*. The Engineer may request assistance from the Region Safety Officer.

An example project safety management plan has been posted on the Construction Specifications page of CDOT's website. Notice that this is only an example project safety management plan. It may be used only as a guide in preparing an actual project safety management plan. The safety management plan for a particular project must address the project specific construction activities. The URL for the CDOT web page on which the example plan may be found is:

<http://www.coloradodot.info/business/designsupport/construction-specifications/2011-Specs>. Among other things, the specification requires at a minimum that all personnel on the project site are to wear hard hats, high visibility apparel and appropriate, sturdy footwear at all times when outside of their vehicles and within CDOT ROW. 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 and Consultant personnel on the project should monitor Contractor and subcontractor activities for obvious or suspected noncompliance with the Plan, and safety, health and sanitation laws, rules, regulations, and guidelines. Any concerns should be raised immediately and followed up in writing with the Contractor's competent person for that activity, the Superintendent, or the Contractor's Project Safety Manager. Due to training and liability constraints, the Department does not have the authority to accept a specific condition as being in compliance with OSHA requirements. Furthermore, it is not the intent of the specification for

CDOT or Consultant personnel to function as OSHA enforcement or OSHA inspectors. The Contractor is responsible for compliance with its Plan.

2. Noncompliance. The Project Engineer will immediately notify the Contractor in writing of apparent noncompliance with the Plan, or other laws, rules and regulations. The specification requires the Contractor to respond in writing to safety issues raised by the Engineer. The Engineer may contact the Region Safety Officer or the Statewide Safety Manager at (303) 757-9463 for assistance.

3. Imminent Danger. Imminent danger as defined by OSHA is any condition or practices in any place of employment which are such that a danger exists which could reasonably be expected to cause death or serious physical harm immediately or before the imminence of such danger can be eliminated through the enforcement procedures otherwise provided by this Act. It should be noted that subsection 105.01 of the *Standard Specifications* requires the Engineer to immediately suspend all or part of the work when the Contractor fails to correct conditions unsafe for the workers or the general public. Additionally, the Project Safety Planning special provision now allows the Engineer to immediately enact a “safety stand-down” in the case of an accident (including property damage), or catastrophe (the hospitalization of three or more employees, resulting from a work-related incident or exposure; in general, from an accident or an illness caused by a workplace hazard), or other situation presenting an imminent danger to life or health, such as a “near miss”, violation of the Plan, or presence of a hazardous situation. The safety stand-down is mandatory in the case of a work zone fatality directly related to the Contractor’s or any subcontractor’s operations. The Engineer will need to apply judgment in non-fatal situations, in cases of vehicular fatality not caused by a work zone incident, and for minor infractions. The Contractor is required to provide properly certified documentation specifying the corrective measures that it has taken to prevent recurrence, before the Contractor may resume operations. Contact the Region Safety Officer or the Statewide Safety Manager for assistance with questionable situations and for review of the Contractor’s corrective measures.

The Engineer should withhold progress payments, suspend the project, or both, for failure to submit an acceptable Plan or update it, for failure to respond in writing to safety issues that are raised by the Engineer, or for failure to submit documentation of safety inspections.

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 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

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:

1. 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.
2. At the Environmental Pre-construction Conference, 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.
3. At weekly meetings with the Contractor and subcontractors, be sure to cover the environmental mitigation commitments.
4. 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.

There are three project special provisions that may appear in the Contract to implement Migratory Bird Treaty Act requirements:

1. One for use on projects where the work consists only of structure work.

2. One for use on projects where the work includes soil and vegetation disturbance and bird surveys have been done by CDOT environmental personnel.
3. One for use on projects where the work includes soil and vegetation disturbance and bird surveys will be done by the Contractor's wildlife biologist.

The appropriate one of these special provisions will be included in the Contract for each project. The RPEM and the Staff Biologist are responsible for working with engineers to prevent potential problems and for collaborating on avoidance and mitigation measures.

CDOT staff involved in construction will act to ensure that appropriate and reasonable measures are taken to prevent the taking of migratory birds.

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, INSURANCE TYPES AND COVERAGE LIMITS

Subsection 107.15 of the *Standard Specifications* requires the Contractor to procure and maintain public liability and property damage insurance. The Project Engineer shall review the certificate of insurance to ensure it meets the requirements of Subsection 107.15 of the *Standard Specifications*. 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'S 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:
 - a. Require the Contractor to repair the work, and pay for the restoration under the provisions of subsection 104.03 of the *Standard Specifications*.
 - b. 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:
 - i. The project is a HMA overlay. The traveling public damages a section of existing guardrail. The Department will pay for restoration of the damaged guardrail.
 - ii. 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.
 - iii. The project is a HMA 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 Department of Transportation Development (DTD). 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 and Section 208 of the Standard Special Provisions, as referenced below.

107.25.2 Contractor Responsibility

The Contractor shall comply with all governing Federal, State and local 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 (State waters). With permission from and at the direction of the Engineer, the Contractor shall comply with action items documented by the Region or Headquarters inspections. The Contractor faces

enforcement action by the Colorado Department of Public Health and Environment for permit violations and liquidated damages from CDOT under subsection 208.09 – Failure to Perform. Where concrete washout sites will be used, they must be pre-approved by the Engineer. See the CDOT *Erosion Control and Storm Water Quality Guide* and subsection 208 of the Standard Special Provision, *Revision of Section 208 – Erosion Control*.

107.25.2.1 SWMP Notebook

The Contractor must maintain a Stormwater Management Plan (SWMP) Notebook. See Section 208.03(d)1 of the Standard Special Provision, *Revision of Section 208 – Erosion Control* for a list of required notebook contents. The SWMP Notebook is property of CDOT, shall remain with the project records at all times. Upon final acceptance, for sites equal to or greater than one acre, the Engineer will provide the notebook to the Region Water Pollution Control Manager (RWPCM). Upon final acceptance for sites with less than one acre of disturbed area (no Colorado Discharge Permit System Stormwater Construction Permit), the notebook shall be provided to the Finals Administrator.

107.25.2.2 Environmental Pre-construction Assessment

Prior to the Environmental Pre-construction Conference, the Contractor's SWMP Administrator shall provide a list that identifies and describes all potential pollutant sources. At, or prior to, the Environmental Pre-construction Conference, the Contractor shall submit a Spill Response Plan (SRP). See subsection 208.06(c) in Standard Special Provision, *Revision of Section 208 – Erosion Control*. Work shall not be started until the plan has been submitted to and approved by the Engineer.

A minimum of ten days prior to the start of the construction activity, the Contractor shall submit in writing a Method Statement for Containing Pollutant Byproducts to the Engineer for approval. For requirements, see subsection 107.25(b)13 in the appropriate

Standard Special Provision, *Revision of Sections 107 – Water Quality Control (CDOT or Contractor Obtained Stormwater Permit)*.

A Spill Prevention, Control and Countermeasure Plan (SPCC) may be required from the Contractor prior to the start of work. See subsection 107.25(b)6(14) of the appropriate Standard Special Provision, *Revision of Section 107 – Water Quality Control (CDOT or Contractor Obtained Stormwater Permit)* for SPCC requirement criteria.

107.25.2.3 Site Cleanliness

The Contractor shall certify that construction equipment has been cleaned prior to site arrival. Vehicles shall be free of soil and debris capable of transporting noxious weed seeds or roots onto the site.

At the end of each day the Contractor shall collect all trash and dispose of it in appropriate containers. Containers shall be emptied as needed.

107.25.3 Internal CDOT Coordination

Because of the different Contract requirements of who is responsible to obtain the required environmental permits and who is the permittee of record, internal CDOT coordination is essential. Notification from Federal, State and local regulatory agencies of pending inspections or Notice Of Violation must immediately be communicated between the HQ Environmental Programs Branch, region environmental staff, Project Engineer and Resident Engineer.

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.

The Colorado Department of Public Health and Environment must issue a general permit, entitled, “CDPS General Permit for Stormwater Discharges Associated with Construction Activity” (CDPS-SCP). Depending on the Contract, this permit may be originated by either CDOT or the Contractor. This decision is made during the design phase and will be indicated in the Contract by inclusion of one of two standard special provisions for Section 107.

If the Standard Special Provision, *Revision of Section 107 – Water Quality Control (CDOT Obtained Stormwater Permit)* has been included in the Contract, CDOT is responsible for obtaining the CDPS-SCP permit prior to advertisement, and the permit will be transferred to the Contractor before start of any construction. The Contractor is responsible for submitting the “Application for Transfer of Ownership for All Permits, Certifications and Authorizations” form to CDPHE prior to beginning construction.

If the Standard Special Provision, *Revision of Section 107 – Water Quality Control (Contractor Obtained Stormwater Permit)* has been included in the contract documents, the Contractor is responsible for obtaining the permit and the Contractor shall apply for the permit upon award of the Contract. The Contractor shall provide a copy of the submitted CDPS-SCP application to the Engineer prior to or at the Environmental Pre-construction Conference.

If a Utility Company has pulled a permit for the area prior to the Contractor being on site, see subsection 107.25(d) of the appropriate Standard Special Provision, *Revision of Section 107 – Water Quality Control (CDOT or Contractor Obtained Stormwater Permit)* for requirements.

The Erosion Control Management (ECM) staff consists of a SWMP Administrator and one or more Erosion Control Inspectors, if required, depending on the overall area of disturbed area. See subsection 208.03(c) in Standard Special Provision, *Revision of Section 208 – Erosion Control* for additional information on the duties and requirements for ECM staff.

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 CDPHE may be obtained allowing the Contractor to infiltrate the water back into the ground.

If a spill occurs on site, the Contractor shall immediately implement the Spill Control Plan. See subsection 107.25(b)16 in the appropriate Standard Special Provision, *Revision of Section 107 – Water Quality Control (CDOT or Contractor Obtained Stormwater Permit)*.

107.25.4.1 Transfer of Stormwater Permit from the Contractor to CDOT Maintenance

As the project nears completion, the Contractor shall request a review of the erosion control site conditions and documentation (Partial Acceptance of permanent stabilization unit of work). The timing of this review will be when, at the judgement of the Engineer, the project is sufficiently completed as that no further construction operations will effect permit requirements, but sufficient Contractor equipment and work force remains to do “punch list” type work on erosion control features. See subsection 107.25(d) of the appropriate Standard Special Provision, *Revision of Section 107 – Water Quality Control (CDOT or Contractor Obtained Stormwater Permit)* for requirements.

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. 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 Section 5.7 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

Subsection 108.01 of the *Standard Specifications* 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 of this *Manual* 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. The Award Officer in the Engineering Contracts unit issues the Notice to Proceed (NTP) to the Contractor once the contract is fully executed. A PDF copy of the NTP or a link to a copy in ProjectWise® is posted in SAP in the Purchase Order (PO) as an attachment. Use transaction ME23N- Display Purchase Order if you know the PO number or ME2J – Purchase Order for Project if you have the subaccount (project definition or project code).

1. ME23N – Display Purchase Order
Usually the last PO opened will display, if this is not the PO for the Project you are looking for, click on the Other Purchase Order  button. In the Select Document dialog box enter the correct PO number in the Pur. Order field and click on the Other Document button. Once the PO is opened click on the

Services for Object  button then select Attachment List. If the NTP is available it is in the list, double click the file or link and open the PDF file.

2. ME2J – Purchase Order for Project

Enter the five-digit Project Definition (subaccount) in the Project field and click Execute. A list of Purchase Orders (PO) related to the project will display. Scroll to the PO with the Order type ZG – Highway Construction and double click that row. The PO will open in a new window. Click on the Services for Object  button then select Attachment List. If the NTP is available it is in the list, double click the file or link and open the PDF file.

108.3 SCHEDULE

Subsection 108.03 of the *Standard Special Provision, Revision of Section 108 – Project Schedule* requires the Contractor to submit a Critical Path Method (CPM) Project Schedule in either Microsoft Project or Primavera. Bar charts are not acceptable and will be rejected. Contractors are also required to submit Methods Statements for salient features. Additional Methods Statements may be required by the Engineer.

It is essential to ensure that schedule submittal packages include all of the information and reports listed in subsection 108.03(b) of the *Standard Special Provision, Revision of Section 108 – Project Schedule* in both electronic and printed formats. It is important to retain both the electronic files and printed copies for every schedule submittal.

Electronic files can be helpful for analyzing changes and delays. Printed documents provide a snapshot of the schedule that cannot be changed.

108.3.1 Why are CPM Schedules Important?

CPM schedules are essential for planning and managing the project, and for determining impacts from time-related changes that add or delete work, differing site conditions, delays, suspensions, or accelerations. Dispute Review Boards and courts favor delay analyses that use CPM schedules, if:

1. The Baseline and Project Schedule Update have been established as reasonable and accurate.
2. The schedule has been updated and maintained during construction in accordance with the specifications.

108.3.2 Reviewing the Schedule

The Engineer will review all Preliminary, Baseline, Updates, and Revised Schedule submittals as well as Methods Statements. Once the review is complete the Engineer will need to respond to submittals in writing with one of the following: Approved; Approved-as-Noted; or Revise and Resubmit within 10 days.

It is important to provide the response in writing to properly document comments and approvals. If the Engineer approves a schedule in which the Contractor fails to include an element of work, the Contractor is not excused from completing all contract work within contract time. Only a change order can add or remove work from the contract.

The reviewer first should ensure that schedule submittals are complete. Do they include all the required reports and adequately address all aspects of the work? If a submittal is not complete, the Engineer should immediately request the missing information in writing. Providing the Contractor one business day to complete the submittal is adequate. If the Contractor does not respond timely, the Engineer should reject the submittal with specific comments and withhold progress payments as described in subsection 108.03 of the *Standard Special Provision, Revision of Section 108 – Project Schedule* until a complete package is received and approved. Use the Table 1 - Schedule Submittal Checklist below to help ensure that a schedule submittal is complete.

Table 1 –Schedule Submittal Checklist	
Have electronic files of the schedule been provided by the Contractor?	
Have printed copies of the schedule been provided by the Contractor?	
Is the submittal package complete? Does it include all required reports (Narrative, Predecessor/Successor, Early Start, Float, Critical Path, and Non-work Days)?	
Are all components of the project work included?	
Is the scheduled phasing of the work reasonable?	
Are activities included for submittals and CDOT submittal reviews? Do these include falsework plans, shop drawings, post-tensioning plans, mix designs, etc.?	
Are activities included for procuring materials and equipment?	
Does the schedule include activities and reasonable durations for fabrication, delivery and installation of equipment?	
Does the schedule include time for startup and testing of equipment such as lighting systems and signal equipment? Is the time reasonable?	
Are activities included for utility coordination and other third party items?	
Is all subcontracted work included?	
Does the Baseline Schedule show completion of all work within contract time?	

Next, the reviewer should analyze the schedule to make sure that it is reasonable. Is the work shown in a logical fashion and does the time allotted to activities seem adequate?

The Contractor is required to submit a Methods Statement for each Salient Feature of work. Methods Statements provide the type of workforce and equipment the Contractor intends to use. The Engineer can require the Contractor to submit additional Methods Statements if it would help with evaluation of the schedule. Additional Methods Statements should be required only if they will be used in the analysis, and not just for filing purposes.

It is important to review the production rates indicated in Methods Statements, to check that they are reasonable and attainable. The production rates should also be compared to activity durations in the schedule to make sure that they agree. For example, if a Methods Statement shows a production rate of 1,000 LF/day for installation of curb and

gutter and the plan quantity is 10,000 LF, the corresponding activity in the schedule should have a duration of at least 10 days. Significantly more or less time indicates an error in the schedule.

A schedule can be approved with comments if the Engineer disagrees with minor items such as overly optimistic production rates or the logic between activities. A schedule should be rejected if it is incomplete, includes artificial constraints or logic that is not allowed, or does not accurately represent the work. See the Table 2 – Checklist: Is the Schedule Reasonable? below for suggested items to review. Not all of the items listed apply to every project.

Table 2 - Checklist: Is the Schedule Reasonable?	
Does the workflow seem logical?	
Do logic relationships make sense? (i.e., Finish to Start, Start to Start,) Start to Finish relationships are not allowed.	
Do all activities have both a predecessor (except the first one) and a successor (except the last one)? Open-ended activities are not allowed. Review the Predecessor Activity and Successor Activity Report for this information.	
Are contract milestones included for Project Start and End, and as needed, the start and end of phases?	
Is the schedule sufficiently detailed to make it useful?	
Are there any activities with duration greater than 15 days? Durations are limited to 15 calendar days unless approved by the Engineer. For example, work related to embankment could be broken out into several activities of 15 days or less by location, delineated by stations or work area.	
Is responsibility for each activity assignable to one entity? Is the Responsible party identified?	
Do durations and production rates seem reasonable, and do production rates agree with Methods Statements?	
Are there any lags in the schedule? Are the explanations for the lags reasonable? Negative lags (leads) are not allowed. Is any lag in excess of 10 days? If so, is a reasonable explanation included?	
Are there any constraints in the schedule? Constraints must be approved by CDOT. Are explanations for the constraints reasonable?	
Does the schedule address public events such as holidays, local celebrations, etc.?	

Table 2 - Checklist: Is the Schedule Reasonable?	
<p>If the project has third party work, does the schedule include the third party work such as:</p> <ol style="list-style-type: none"> 1. Roadway design 2. Hazmat work 3. ROW acquisition 4. Submittal review 5. Equipment Testing (i.e., lighting and signal equipment) 6. Procurement of owner-furnished equipment such as VMS or Signals 	
Are procurement, fabrication and delivery times included as activities on the schedule? Are the duration times reasonable?	
Is adequate time included for submittals, working drawings, and shop drawing preparation?	
Are there any long lead-time requirements for procuring materials, etc.?	
Does the critical path make sense?	
Are there multiple critical paths? This would warrant additional investigation.	
What activities are near critical? Does the near-critical (activities with 10 days or less of float) path make sense?	
Does the schedule include downtime for curing, between successive paving courses or concrete placements, or for embankment settlement?	
Are contractual schedule constraints included?	
Has the effect of traffic and phasing on production rates and the sequence of operations been taken into account?	
Has time been allowed for setup and mobilization, and acquiring any special equipment?	
Do work hours reflect seasonal limitations to both the number of days the Contractor will be able to work as well as production rates? Has rain, runoff, high water conditions and snow been taken into account?	
Seasonal conditions need to be taken into account. Does the schedule show work occurring during appropriate periods? For example, HMA paving should not be shown during winter months unless specifically provided for in the contract. Tree planting should not occur in July.	
Do calendars show non-work periods and holidays?	
Are there any potential conflicts with adjacent projects, both public and private?	
Does the schedule include lead time to obtain necessary permits and any restrictions?	
Does the schedule reflect restrictions for nighttime and weekend operations?	
Is additional time included for obtaining specialty items or materials with long-lead requirements, such as steel girders or treated timber?	

Table 2 - Checklist: Is the Schedule Reasonable?	
Does the schedule address environmental commitments (i.e., migratory bird restrictions)?	

108.3.3 Schedule Reports

The Contractor is required to provide several schedule reports that will facilitate a review. These reports are particularly helpful if the Contractor is using Primavera and the Engineer does not have access to the software. Tips for reviewing these reports are listed below:

1. The Job Progress Narrative Report should discuss progress and highlight and explain changes from the previous schedule submittal. It should also discuss issues that occurred and issues anticipated in the future. A narrative should include the following items, as appropriate:
 - a. Identification of significant schedule progress during the reporting period.
 - b. Actual progress compared to contractual milestones during this period.
 - c. A list of significant activities started or completed during the reporting period.
 - d. Explanation of lack of progress on critical path activities planned to be performed during the previous reporting period.
 - e. The status of major material and equipment procurements.
 - f. Identification of difficulties encountered (delays) during the reporting period.
 - g. Explanation of any significant schedule variances from the baseline (target) schedule plan.

2. The Predecessor Activity and Successor Activity Report should list the schedule logic and constraints for each activity. It is usually difficult to read logic ties on a network diagram, so this report can help with your review of workflow logic. Also, it can be used to verify the activities on the critical path, and any other path.

3. The Early Start Report lists all activities sorted by actual start/early start date. The early start is the earliest that an activity can start, based on the completion of predecessor activities.
4. The Float Report lists all activities sorted in ascending order of available float. This report will help identify the critical path and other activities that are nearly critical. Delays to these activities can delay your project. The Job Progress Narrative Report should address any changes to float that occurred from the last reporting period.
5. The Critical Path Report lists the percent complete for activities not yet completed, sorted by float and then by early start. This report provides a good status of the project and could help you to identify issues that could impact completing the project within contract time. Any changes to activities on this report should be discussed in the Job Progress Narrative Report.
6. The list of all non-work days will help you to verify the days worked during the reporting period and to plan for non-work days for upcoming work.

108.3.4 Schedules and Submittals

As a project progresses from start to finish, the Contractor is required to submit the schedules listed in subsection 108.03(d) through (i) of the *Standard Special Provision, Revision of Section 108 – Project Schedule* as appropriate. Below are some considerations for reviewing each of these schedules:

1. The Preliminary Schedule is the precursor to the Baseline schedule. This schedule is required to show planned activities for the first 60 working days of the project. Because the Preliminary Schedule is limited in duration and detail, this review should be done at a cursory level. The Preliminary Schedule shall be approved before the Contractor begins work. If the Contractor submits a Baseline Schedule in lieu of a Preliminary Schedule, it shall be approved in

accordance with the requirements for a Baseline Schedule, before work begins. The Project Engineer has 10 days to review and respond to the submittal.

2. The Baseline Schedule serves as the measure for all subsequent schedule submittals and is important for analyzing contract changes and disputes that allege delay. The Baseline Schedule should incorporate the Preliminary Schedule, if one was submitted. No progress should be included in the Baseline Schedule. The Baseline Schedule shall be approved within 45 days after the Contract award, or the Engineer will withhold partial payments.

If the Baseline Schedule has a completion date that is earlier than contract time (called an Early Completion Schedule), the review should focus on determining if the schedule is reasonable. If the schedule shows completion in 85 percent or less contract time, the Contractor must provide production rates for activities that have 10 days of float or less.

The Engineer can request additional Methods Statements for activities with float of 10 days or less, as necessary to analyze the schedule. In addition, the Engineer should:

- a. Ensure that all contract work has been addressed.
 - b. Ensure that durations are realistic.
 - c. Review Methods Statements to make sure that production rates are reasonable. In addition, the Engineer should ensure that actual resources agree with the planned equipment and personnel described in the Methods Statements.
 - d. Track changes throughout the project and require the Contractor to submit Schedule Revisions at the time that changes occur. This will help to determine if delays are attributable to the changes or the result of less efficient operations.
3. Project Schedule Updates must include all actual work completed up to the cut-off date (or, "data date") for the monthly progress pay estimate. Any changes to activities or logic from the previous Project Schedule Update need to be highlighted and explained in the Job Progress Narrative Report. If the Engineer

does not approve a Project Schedule Update, the progress payments for the following payment period will be withheld until a complete monthly schedule has been approved. This provides the Engineer with another month to resolve comments and approve the schedule before impacting progress payments.

Table 3 – Checklist for Reviewing Project Schedule Updates below provides a suggested checklist of items to review. If any of the items in Table 3 are found in the Project Schedule Update, they also should be discussed in the Job Progress Narrative.

The Project completion date can be expected to vary in Schedule Updates. If a Schedule Update is approved that has a completion date later than the contract completion date, approval does not change the contract requirement. Only a contract modification can change the contract completion date. If there is a substantial variation in the completion date in a Project Schedule Update, the Narrative Report should provide the Contractor’s plan for getting the project back on schedule or the Contractor shall submit a written request for an Extension of Contract time per subsection 108.08(d) of the *Standard Specifications*.

Table 3 - Checklist for Reviewing Project Schedule Updates	
Has actual progress been recorded accurately?	
Are there changes to activities?	
Are there changes to logic?	
Are there any delays or unplanned events?	
Have any new constraints been added to the project?	
Have contractual milestones been met?	
Have new dates been added?	
Have dates been changed for activities that were reported previously?	
Are there any changes to actual dates that were entered for a time period occurring before the start of this reporting period?	
Have any actual dates been included that are beyond the data date?	
Are there any activities that are missing actual dates?	
Have dates been entered for suspending or resuming an activity?	
Has progress been entered for suspended activities?	
Is progress indicated, but no actual start date is shown?	
Do activities have an actual start date but show no progress?	

Do activities show completion without an actual finish date?	
Are there activities for which work was accomplished but do not show progress?	
Are all completed activities shown as such?	
Are there any changes to activity code definitions?	
Are there any deleted/added/modified activity codes?	
Are there any deleted/added/modified constraints?	
Are there any out-of-date expected finish dates that occur before the status date?	
Have any relationships been deleted/added/modified?	
Are there any newly “orphaned” activities that are missing predecessor or successor relationships?	
Have any activities started out-of-sequence?	
Compare progress on the critical path to the previous schedule update.	

4. Schedule Revisions must be provided if there is a major contract change. The Schedule Revision must include a description and analysis of the changes, including any impact to the Contractor’s planned completion date or the contract completion date. A Schedule Revision should include the same reports as a Monthly Update Schedule, and when approved, it becomes the current Project Schedule.

If a Contractor submits a request for a weather-based time extension in accordance with subsection 108.08(d)(4) “Extension of Contract Time,” of the *Standard Specifications* the request must include a schedule revision. The analysis of the schedule revision will determine the length of the delay. To analyze the request, the Engineer should:

- a. Review CDOT’s assumptions for non-working weather days used to prepare Form 859. This will indicate if the weather event was within normal expectations.
- b. Determine the Contractor’s assumptions for weather impacts reflected in the Baseline Schedule. Normal weather impacts should be incorporated in the Baseline Schedule, either by including non-working days or by using production rates appropriate to the season. For example, if the average temperature for the region is always below freezing in November, the

- duration of concrete related activities should reflect the amount of work that can be reasonably achieved given the low temperatures.
- c. Determine whether the delayed activity was on the critical path at the time of the delay. Only delays on the critical path impact the project end date. For example, if bridge deck concrete is on the critical path, and an unusually severe storm delays the concrete pour for two days, then the project end date could be delayed for two days. If the delayed activity has float available at the time of a delay, the Contractor must demonstrate that the requested delay exceeds the available float. For example, if landscaping had three days of float available but was delayed five days, it could become critical and the delay could impact the end date by two days.
 - d. Establish if the weather event exceeded “normal” or expected weather in duration or magnitude. In order to be considered for a delay, a weather event must be unusual. Using National Oceanic and Atmospheric Administration (or NOAA, <http://www.noaa.gov/>), National Weather Service (or NWS, <http://www.weather.gov/>) or another reputable source to determine expected weather in the project vicinity for a period of at least 10 years prior to the start of construction. An emergency declaration from the Colorado State Governor or the President of the United States of America can also serve as evidence of unusual weather.
 - e. Review the Contractor’s daily reports and CDOT Daily Diaries to corroborate alleged weather issues that impacted progress. To substantiate delay, these reports should describe impacts to the progress of critical and near-critical activities.
5. The Weekly Planning Schedule shows planned activities for the next two weeks from the schedule date. This schedule is typically detailed at the activity level to allow for planning upcoming activities. The Engineer can optionally accept a simple Bar Graph format for the Weekly Planning Schedule, as long as it is an extraction from the Project Schedule and based on CPM analysis. It is a best

management practice to hold a weekly schedule meeting to discuss upcoming work, traffic patterns and lane closures, and to document the discussions.

108.3.5 When to Approve, Approve with Comment, or Reject a Schedule Submittal

The Engineer will approve the schedule as submitted if it is reasonable and complete.

If the schedule is complete, follows the requirements, and is for the most part, reasonable, but the reviewer disagrees with some specific items, the Engineer can approve the schedule with comments. Comments need to be specific and focused on whether the schedule is reasonable. Comments should not direct the Contractor on how to do the work. By approving with comments, a record is created that can be helpful if problems arise later. Below are some examples when comments are appropriate:

1. If the reviewer questions the durations for specific activities but the Contractor does not agree, the Engineer can approve the schedule with a comment that production rates or durations seem overly optimistic. This comment can be helpful later if the Contractor fails to achieve planned production rates.
2. The reviewer may question logic between activities. Approval can include a comment questioning whether it is really necessary to finish Activity X before starting Activity Y.

Finally, if a schedule is not acceptable, the Engineer should reject the submittal with specific comments in writing and require resubmittal. Table 4 – When to Reject a Schedule Submittal below lists issues that could cause rejection of the Schedule. Be sure to record the dates the schedule was rejected and the Contractor's revised schedule was received.

To assist the Engineer with enforcement, subsection 108.03(d) of the *Standard Special Provision, Revision of Section 108 – Project Schedule* states that work will not begin until the Preliminary Schedule is approved. In addition, Progress payments will be withheld until the Baseline Schedule and Project Schedule updates are approved in

accordance with subsection 108.03(e) of the *Standard Special Provision, Revision of Section 108 – Project Schedule*. Enforcement of these subsections will help ensure that the Contractor provides reasonable and timely schedule submittals.

Table 4 – When to Reject a Schedule Submittal	
Schedule does not include all work items, including submittals, permits, etc.	
Durations to accomplish work seem grossly inadequate. Additional Methods Statements can be requested to justify durations.	
The schedule includes logic, lags, or constraints that are not allowed or have not been approved by the Engineer.	
Baseline Schedule shows completion after contract time, or an Update Schedule shows more than a minor deviation from completing within contract time.	
Update Schedule fails to show actual progress up to the data date or shows actual progress occurring after the data date.	
Activities are missing predecessors or successors other than the first and last activities in the schedule.	
Critical Path is not clearly defined or does not extend continuously from the data date to the last activity in the schedule.	
Narrative Report (not required for Preliminary or Baseline Schedule) or other reports are missing.	
Schedules that are resubmitted by the Contractor fail to address all of the Engineer’s comments in a satisfactory manner.	

108.3.6 When is a Scheduling Consultant Needed?

If a project is large or complex, the services of a Consultant can be acquired to help with Schedule reviews. If scheduling assistance is included in the Statement of Work of a Construction Management contract, the process to bring a consultant onboard can be expedited. The Consultant should have access to the same scheduling software that the Contractor is using and should be skilled in schedule analysis. If a project has medium risk, the Consultant may only need to review the Baseline Schedule. If a project has high risk, assistance may be needed with all of the schedule reviews. The Table 5 - Schedule Risk Analysis Matrix below provides guidance to analyze schedule risk.

Table 5 - Schedule Risk Analysis Matrix				
	High	Medium	Low	Comments
Does the project use Innovative Contracting, A+B, DB, Lane Rentals, etc.	> 1 item applies or item is complex	1 item applies	None	
Project Cost	>\$40 M	>\$10 M	<\$10M	
Are there any Political Implications?	High	Medium	Low	
Are there any Milestones? Weather? Environmental concerns?	Yes	Several	Minor	
Is there a risk of extending into winter or a second construction season?	Yes	Small	No	
Are there known potential delays involving third parties such as Utilities, Railroads, or projects in close proximity?	RR, Utilities, etc.	Minor	None	
Are you confident in the plans? Were there last minute changes in the scope?	Complex or Multiple Changes	Minor	None	
Are you confident that the contract time is adequate?	No	Yes	Yes	
Is the Contractor experienced in developing CPM Schedules?	No		Yes	
What is the Contractor's history for completing the work in Contract time?	Failed on 1	Good	Good	
What is the Contractor's history in requesting time extensions?	High	Med	Low	
Does the Contractor have a history of filing claims?	Yes	Minor	No	
Is the Contractor using Primavera (High) or MS Project (Medium or Low)?	Primavera		MS Project	
Are CDOT Project Personnel experienced in evaluating CPM Schedules?	No	No	Yes	
Has the Project Engineer attended CDOT CPM Training or other CPM Training?	No	No	Yes	

108.4 PAYMENT SCHEDULE

In accordance with the February 1, 2010 Memorandum issued by Executive Director, Russell George, all projects require a drawdown schedule and the data shall be entered in the SAP system. (See Standard Special Provisions Revision of Section 108 Payment Schedule (Single Construction Year) and Revision of Sections 108 and 109 Payment Schedule (Multiple Construction Years)) The purposes for maintaining a drawdown schedule are:

1. To aid CDOT in becoming a “cash management” organization.
2. To providing more accurate time and cost estimates – before and after budgeting projects.
3. To enhance internal communication links at key times.
4. To provide a standardized tool and approach to project management.

108.4.1 Payment Schedule

A Payment Schedule is also known as a drawdown schedule from a contractor and is required for all CDOT construction projects. The larger the project budget the more important it becomes that the drawdown schedule be managed. The contractor shall provide a Payment Schedule for the contract amount, planned force account work and expected incentive payments. The Project Engineer is responsible for estimating and maintaining the drawdown schedule for the project’s encumbered funds not in the contractor’s control. The Project Engineer will need to account for the additional force account funds and other costs that may be expended during the construction phase.

CDOT personnel and consultant construction engineering charges paid from the CE Pool do not need to be included in the drawdown because they are captured through other processes. Bridge Enterprise and CE exempt projects where the charges are applied directly to the project are exceptions meaning the Project Engineer should include them in the drawdown schedule. If Right-of-Way, Utility, or Railroad or other funds will be paid during the construction phase, they should also be included in the drawdown schedule in the Construction WBS. Since they are generally a one-time payment, enter the estimated amount in the future month when the expected payment will be made.

The contractor is required to submit an Initial Payment Schedule at the Pre-construction Conference that includes planned force account work and expected incentive payments. The Project Engineer shall review the submittal for completeness. Once complete the Project Engineer or Resident Engineer shall also enter the information into the SAP system. Only CDOT personnel will enter the information into the SAP system.

Once work begins, a Payment Schedule update is required each month by the first of each month. The best practice is to receive the update after the last progress payment is made. The Project Engineer shall review the update completeness and the appropriate CDOT personnel will enter the information into the SAP system. Drawdown schedules shall reflect the current remaining encumbered balance for the duration of construction. The drawdown data does not need to be corrected for discrepancies between actual cash flow (past) versus the drawdown schedules for previous months.

Many project drawdowns and the encumbered balance will not match and this is expected in order to be accurate. Examples when this may happen are:

1. A construction project where the full encumbered amount will not be spent. The contract may be under budget so the encumbered funds will be more than the drawdown schedule.
2. A construction project that has been completed and there are still funds encumbered but the project has not had final payment yet. The encumbered amount will be more than the drawdown schedule.

3. A project that is running behind schedule.

108.4.2 SAP Guidelines

Only CDOT personnel will enter the information into the SAP system. If the Project Engineer is a CDOT employee they should enter and maintain the data. If the Project Engineer is a Consultant then the Resident Engineer should enter and maintain the information in SAP. Instructions for entering drawdown schedules into SAP can be found at the SAP Training website <http://saptraining/>. When you get to the website go to Engineering then click Project Systems Lifecycle then click Pre-Construction/Construction to access the drawdown documents. The following are the documents you need to refer to for drawdown schedules:

1. CJR2 – Create Drawdown Schedule MS Excel File
2. CJR2 – Create Drawdown Schedule SAP
3. CJR2 – Upload Drawdown Schedule
4. CJR2 – Maintain Drawdown Schedule MS Excel File
5. CJR2 – Maintain Drawdown Schedule SAP
6. CJI4 – Display Drawdown Schedule

108.4.3 Local Agency Project Drawdown Guidelines

Drawdown schedules for local agency construction projects are only required when they are advertised by CDOT. When a Local Agency project is advertised by CDOT, the project shall have a drawdown schedule completed regardless of funding. A drawdown is not required when a Local Agency project is advertised by the Local Agency and the funding source is Federal with a local match. A majority of Local Agency projects fall in this category.

108.5 LIMITATION OF OPERATIONS

Subsection 108.05 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.

108.6 CHARACTER OF WORKERS; METHODS AND EQUIPMENT

108.6.1 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, disputes, and claims. The Project Engineer and project staff must document observations of Contractor operations, equipment, and personnel to ensure that adequate information is available if it becomes necessary to evaluate a request for time extension and a dispute or claim.

108.6.2 Removal of Project Personnel

Subsection 108.06 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. If removal is necessary, request in writing, listing specific factual information, 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. The details of the circumstances leading to the decision will be documented in writing. The notes must be factual without personal comment or opinion.

108.7 WORKPLACE VIOLENCE

Subsection 108.07 of the *Standard Specifications* 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.

Subsection 101.95 defines workplace violence.

108.8 DETERMINATION AND EXTENSION OF CONTRACT TIME

108.8.1 General

After the Final Office Review and the resolution of all design issues affecting the scope of work, the Project Engineer will use CPM scheduling, experience and good engineering judgment to determine the contract time 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 - FHWA Guide for 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/construction/contracts/t508015.cfm>

The Project Engineer will use Microsoft Project software to facilitate and document the determination of contract time.

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

1. urgency of the proposed improvement;
2. impact on local businesses and property access;
3. need for coordination with other projects;
4. requirements for irrigation;
5. impacts of scheduled special events and holidays;
6. time needed for construction surveying;
7. type of traffic management required;
8. interruptions to traffic flow and required construction phasing;
9. inconvenience to the traveling public, including the traffic volume affected;
10. safety of both the public and the project workforce;
11. seasonal impacts on construction activities;
12. time required to obtain permits and mix designs;
13. time required for material fabrication and delivery;
14. concrete curing time, including placement sequence and phasing;
15. special sections and features requiring staged or phased construction; and
16. impact of local noise ordinances on construction activity.

When determining contract time, it will be necessary to establish production rates for items of work on the project. The production rates used in developing the CPM schedule should be included in the “notes” section of the software for each task. Note that accelerated production rates (i.e., those faster than the average Contractor can perform) generally decrease contract time and may increase cost and limit competition. Production rates for items of work that are used to determine contract time should:

1. be project specific, incorporating the special features and construction sequences of the project;
2. represent the production achievable by an average Contractor, unless the work item is of a specialized or critical nature; and
3. 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 can be 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.

108.8.3 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 CPM Schedule:

1. **List Items of Work.** List the items of work, required submittals (MHTs, Shop Drawings, Form 43, etc.) and fabrication times in the chronological order that they will be performed on the project.
2. **Determine Controlling Items of Work.** The controlling items of work on the project or “critical path” will be determined by the software based upon the logic and production rates input into the program. 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. **Project Phasing.** 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 is extended. Consider the following when determining project phasing:

- a. scheduling of material fabrication and delivery,
- b. scheduling of sequential and concurrent construction activities,
- c. completing special project features, and
- d. 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. Determine Production Rates. Determine an estimated daily production rate for each item of work included in the CPM Schedule. Production rates should be included in the "notes" section of the software for each item. 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:
 - i. CDOT Engineering Estimates and Market Analysis Unit,
 - ii. project diaries of similar projects in the same location,
 - iii. experienced Region construction personnel,
 - iv. experienced Region materials personnel,
 - v. method statements from similar projects, and
 - vi. 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 traffic congestion through the work zone will have on production rates.
 - f. Weather. Consider the time of year the work will be performed and the potential for weather impacts to production.
5. Determine Contract time. To determine the Contract time required to complete each controlling item of work, divide the quantity of work by the estimated daily production rate.

108.8.4 Innovative Contract Time Methods

The following methods are innovative contract time methods and explanations of each can be found in the Innovative Contract Guide Manual
<http://www.coloradodot.info/business/designsupport/innovative-contracting-and-design-build>:
build:

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.

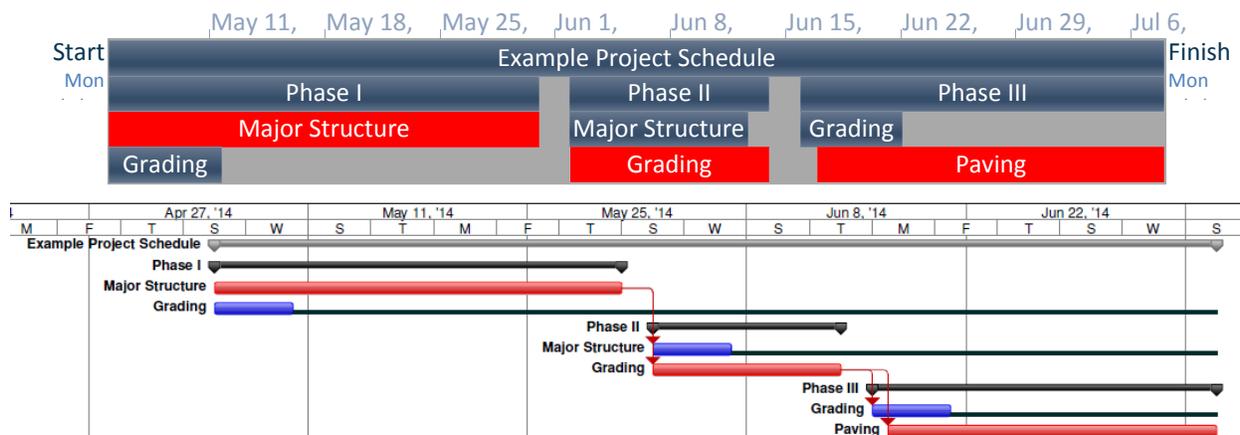
108.8.5 Guidelines for Charging and Reporting Project Time

108.8.5.1 Form 262 and Form 263

Project time charges will be determined and documented by the Project Engineer in SiteManager 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.

108.8.5.2 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. 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 red (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:

1. 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.
2. In Phase 1, full days should be charged when work on the major structure can be effectively prosecuted, whether or not the Contractor works on the structure and even if the grading operation is completely shut down.
3. In Phase 1, 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.
4. Time should be charged if the reason that the Contractor does not effectively prosecute the work was within the Contractor's control.

108.8.5.3 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:
 - a. Contractor not ordering materials in a timely manner;
 - b. suppliers reprioritizing their customer deliveries;
 - c. Contractor reordering and replacing materials rejected by CDOT;
 - d. financial problems of the Contractor, manufacturer, or supplier; or

- e. causes foreseeable by the Contractor, manufacturer, or supplier.
6. Disputes and Claims. If the Contractor notifies the Project Engineer of an intent to file a dispute or claim, continue to charge full working days, as appropriate.

108.8.5.4 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:
 - a. 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.
 - b. 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:

- a. the construction work was delayed by right-of-way, utility, or railroad interference beyond the time frame established in the Contract;
- b. the Contractor did everything required by the Contract to minimize the delay; and
- c. CDOT was unable to exercise effective control of the situation, despite its best efforts.

108.8.5.5 Charges for Free Time

Time count stops during “Free Time” when defined in the Project Special Provisions.

108.8.5.6 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.

108.8.6 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.

If it is determined that an excusable delay occurred, the Project Engineer shall extend the Contract time at the time the delay occurs and the amount of time is known. The Project Engineer should not wait until the end of the project because

the Contractor may make up the time. By waiting, CDOT may become responsible for acceleration of the Contractor's work.

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

108.9 FAILURE TO COMPLETE WORK ON TIME

If the Project Engineer determines the Contractor may not complete the work within contract time, he will write a Form 105 to the Contractor advising him that liquidated damages will be assessed. The Form 105 will include the amount charged per day and the anticipated date contract time will end. The Project Engineer will continue to track time in SiteManager® time count forms. If the contract time is a fixed completion date and was not tracked in SiteManager®, the Project Engineer shall start tracking time.

108.10 DEFAULT OF CONTRACT

Default of contract and termination 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. Default of contract or termination is a contract administration issue that rests with the Chief Engineer.

If situations arise that may lead to the default or termination of any construction contract or default of any contractor or consultant, the Resident Engineer and the Project Engineer will immediately notify the Contracts and Market Analysis Area Engineer, the Program Engineer, and the Region Transportation Director. The Resident Engineer will obtain preapproval from the Program Engineer and the Region Transportation Director. The Resident Engineer 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, Contracts 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. Only the Chief Engineer can issue a Notice of Intent to Default or terminate a contract.

108.11 TERMINATION OF CONTRACT

See Section 108.10 Default of Contract

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 of this *Manual*.

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:

1. a basic tolerance of two pounds in 1,000 pounds;
2. checking of scales once each year by the Colorado Department of Agriculture.

3. renewal of scale license each year before June 30th; and
4. prohibition of split weighing under *Colorado Revised Statute 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:
- a. name,
 - b. phone number,
 - c. scale location,

- d. certified weigher's name,
- e. certified weigher's license number, and
- f. 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 109.04 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 according to subsection 104.03 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:

1. Form 205 – Sublet Permit Application is required for all specialty work;
2. certified payrolls are required for all specialty work on Federal-Aid projects; and
3. force account work will be paid according 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 Division of Accounting and Finance. Accounting 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 Division of Accounting and Finance by calling (303) 757-9569. The Contractor should be reminded of this option at the Pre-construction Conference. Funds are normally available in four to five days after the Resident Engineer authorizes partial payment approval.
5. **Prompt Payment.** Subsection 109.06 *Partial Payment* allows the Contractor to withhold retainage from subcontractors or suppliers. Once all of the subcontractors work is complete and accepted by CDOT, the subcontractor or suppliers may follow the process in 109.06 (f) to have retainage released.

109.6.2 Reduction of Retainage

109.6.2.1 Retainage by the Contractor

If during the prosecution of the project, a subcontractor satisfactorily completes all work described on CDOT Form 205, or as amended by changes directed by the Project Engineer, the Contractor can request final payment for the subcontractor's work and concurrence to release the subcontractor's retainage. At that time the Project Engineer will inspect, measure and furnish final quantities for all work listed on that subcontractor's Form 205. All paperwork (payrolls, materials certifications, FHWA Form PR-47, etc.) will need to be submitted and correct before the Project Engineer will authorize final quantities for a subcontractor's work. These quantities will NOT be adjusted at the end of the project, so it is imperative that these quantities are accurately measured and paid for in accordance with the contract requirements.

If the total dollar amount of the subcontracted work, as described on the CDOT Form 205, exceeds \$100,000, the Project Engineer is strongly advised to submit the final quantity calculations to the Region Finals Administrator for review, prior to agreeing on the quantity with the Contractor.

Upon CDOT's release of subcontractor's final payment, the Contractor shall release the subcontractor's retainage. Final measurement of the subcontracted item shall not constitute acceptance of the work.

109.6.2.2 Prime 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:

1. the Contractor has completed the project,
2. the Department has accepted the project.
3. the Contractor has submitted all required forms and paperwork,
4. the Project Engineer has approved the final pay quantities, and
5. 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 Administrator. If the Contractor meets the requirements after submission of the final, the Region Finals Administrator may make this reduction as soon as all the paperwork is received.

The Project Engineer should have sufficient justification for withholding retainage. Contact the Contracts and Market Analysis 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*, permits 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 105.22 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 Contracts & Market Analysis 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.

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

**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
 Date 4/22/02

I concur:

 Manager
 Project Development Branch
 Date 4-22-02

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

109.6.4 Fuel Cost Adjustment

Contractors are allowed to “opt-in” (accept) or “opt-out” (not accept) Fuel Cost Adjustments by checking the appropriate line on the Form 85, “Contractor’s Proposal”. They are required to turn in Form 85 at the time they submit their bids. Contractors are not allowed to change their minds regarding Fuel Cost Adjustments after bids are opened.

After receiving a copy of the executed Contract from Contracts and Market Analysis, the Resident Engineer will notify the Project Engineer whether or not to make Fuel Cost Adjustments.

The Project Engineer will pay for the Fuel Cost Adjustment under F/A Fuel Cost Adjustment, Pay Item 700-70016. If the amount of actual Fuel Cost Adjustments exceeds the funding allotted in the Planned Force Account, the remainder of the adjustments should be made using funding from Minor Contract Revisions (MCRs), or by adding funding to the project.

Fuel Cost Adjustments will be made only to those items listed in the specification. The table in the standard special provision lists specific items and associated fuel factors that were developed through cooperation between CDOT and the contracting community. The adjustable pay items are listed in the specification.

If the Contractor accepted Fuel Cost Adjustments, the Project Engineer should calculate the adjustments once per month.

<http://www.coloradodot.info/business/designsupport/construction-specifications/2011-Specs/asphalt-cement-cost-adjustment>

To calculate the adjustment, use the spreadsheet found the bottom of the page at the website referenced above. The spreadsheet contains additional detailed instructions regarding Fuel Cost Adjustments.

Retroactive Fuel Cost Adjustments will not be allowed. In other words, this standard special provision should not be applied or change-ordered into any Contract that did not contain it at the time of bid opening.

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 Administrator, , the Program Engineer, the Resident Engineer and the Projects Accounting and Reporting Section of the Division of Accounting and Finance.

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. Form 473. Letter of Materials Certification has been properly completed and submitted.
2. Right-of-Way. Has been inspected and is free of apparent unauthorized encroachments.
3. 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 Project Engineer notifies the Contractor of project acceptance in writing and sends a copy to the Region Finals Administrator. Once the Finals Administrator enters the final acceptance date in SiteManager®, SAP sends an email message to the Resident Engineer stating the Form 1212 can be completed. When the Resident Engineer fills out the SAP Form 1212, the Resident Engineer will need to print a copy for distribution.

Note that no changes can be made to the SAP Form 1212 after completion, only a checked box will indicate that the Form 1212 has been completed in SAP.

Any missing check marks on the Form 1212, as well as any deficiencies noted in the remarks section will need to be resolved before initiating the Form 1212 in SAP prior to final distribution to the Finals Administrator as outlined in Figure 100G of the *Construction Manual* [original to FHWA and copies to Contracts & Market Analysis and the Projects Accounting and Reporting Section of the Division of Accounting and Finance]. Any exceptions need to be discussed with the Area Engineer and FHWA Operations Engineer.

The Form 1212 must be complete in order to close the project. Failure to complete the Form 1212 in a timely manner may cause the project to be labeled as inactive with FHWA and ties up funds that could be used for other projects.

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 105.22 and subsection 108.08 of the *Standard Specifications*. All costs must be documented by the Contractor and reviewed and approved by the Project Engineer.

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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 complete the project documentation by using 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. Use of electronic documentation is preferable to hard copy. Regardless of which method is used, all the required pay documentation must be provided.

All pay documentation that is not actually in SiteManager® must be attached to, or referenced in SiteManager® so the documentation can be easily located. Hard copies of documentation are not required when documentation is completed in electronic format and should be retained in project files. CDOT forms requiring a signature cannot be submitted electronically without a signature.

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 information was recorded that supports the final pay quantity, i.e. the DWR, electronic or hard copy CDOT form, spreadsheet, etc. The information must document payment according to the procedures described in Section 120.15.2 *Methods of Measurement*, including supporting calculations and measurements as needed. The original source document must be attached to or referenced on the document that authorizes payment.

The term “original source document” does not imply that notes on scratch paper or written documentation created in the field must be included in the documentation to support payment. The original source document may be an electronic document transcribed or created from such notes or documentation. The notes do not need to be included in the final documentation that is submitted to the Finals Administrator but shall be retained in project files.

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://intranet/resources/CDOT-forms/other-forms/>.

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®. At the Project Engineer's discretion hard copies of supporting information that cannot be easily entered into the electronic version of the daily work report (e.g., measurements, charts, sketches) may be properly referenced in the daily work report and maintained as a separate document.

120.1.3.6 Photographs and Video Recordings

When photographs or video recordings are taken on a project, the following information is to be included with the record:

1. project number and project code;
2. name of the person who took the picture or video recording;
3. date and time the picture or video recording was taken; and
4. location and approximate station number or mile marker.

120.1.3.7 Required Documentation from Contractors

The following checklist is to be filled out and updated as necessary by the Project Engineer. The checklist shall be submitted to the Resident Engineer upon first use and after each update and signed by the Resident Engineer. Ex: The Resident Engineer should require that the checklist be submitted with each monthly estimate for his review prior to approving the monthly estimate. The signed checklist will be returned to the Project Engineer and kept in the Project Engineer's project files verifying all required documents have been received from the Contractor:

Submittal	SHALL be submitted prior to construction	SHALL be submitted prior to use	Date Received	Date Approved
Schedule: SSP 108.03, 10 days prior to start of work, CPM unless otherwise specified	X			
Methods Statements: 108.03(a) All salient features listed in COC spec, any others Contractor deems controlling	X			
Written List of All Permits: 107.02	X			
Proposed Subcontractors	X			
Sublet Permit Applications, Form 205 (w/ forms 713, Contractor DBE Subcontractor, Supply and Service Contract Statement, & 715, Certificate of Proposed Underutilized DBE(UDBE) Participation, as appropriate): submitted and approved prior to use		X		
List of Material Sources & Suppliers: 106.01, Preferably at Precon, minimum of 2 weeks prior to material delivery		X		
Mix Designs: HMA, concrete, etc.		X		
List of Haul Vehicles Legal Loads		X		
Project Safety Management Plan: 107.06	X			
Copy of Insurance Certificate 107.15	X			
Transportation Management Plan (TMP) [may incl. Traffic Control Plan (TCP), Transportation Operation Plan (TO) & Public Info (PI)] 630.10	X			
Transportation Management Plan (TMP) [may incl. Traffic Control Plan (TCP), Transportation Operation Plan (TO) & Public Info (PI)] 630.10		X		
Method of Handling Traffic (MHT) Initial 630.10(a)	X			
Method of Handling Traffic (MHT) Other 630.10(a)		X		
TCS Certification: at Pre-con, 630.11	X			

Submittal	SHALL be submitted prior to construction	SHALL be submitted prior to use	Date Received	Date Approved
Flagger Certification: 630.14		X		
Contractor's Schedule for Temporary & Permanent Erosion Controls 208.03	X			
List of Potential Pollution Sources: 107.25(b)6	X			
Spill Prevention, Control, and Countermeasure Plan (SPCC): 107.25(b)6	X			
Surveying Schedule: 625.03 submitted prior to Pre-survey Conference	X			
Form 1337, Contractor Commitment to Meet OJT Requirements: no later than Precon	X			
Form 1378, Contractor Selection of Litigation or Arbitration	X			
Contractor's EEO Policy & Procedures	X			
Letter confirming EEO Policies & Procedures orientation meeting was presented to supervisory personnel: prior to construction & every 12 months	X			
Letter describing Contractor's EEO complaint procedures	X			
Letter describing Contractor's method & schedule for monitoring subcontractor EEO compliance schedule	X			
Letter communicating Contractor's tentative date of first project EEO meeting	X			

Project Engineer: _____
 Resident Engineer: _____

Date: _____
 Date: _____

120.1.4 Responsibilities

120.1.4.1 Resident Engineer

The Resident Engineer is responsible for ensuring 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, and verify, 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 will be prepared on CDOT letterhead.

Use Letters to document the following:

1. Partial or Final Acceptance
2. Dispute or Claim decisions
3. Written Notice of intent to default
4. Written Contract Termination Notice
5. Complex issues involved in Contract performance that require lengthy responses

120.3.2 Acceptance Letters

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

1. date and time of acceptance;
2. a detailed list of documentation and forms that the Contractor must submit before the Project Engineer is permitted to reduce retainage;
3. a detailed list of documentation and forms that are required from the Contractor before submittal of the final estimate for payment;
4. date that the final estimate quantities will be available for Contractor review;
5. name and telephone number of the CDOT contact person from whom the Contractor can obtain information regarding the final estimate; and
6. 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 Administrator, Program Engineer, Resident Engineer, and the Projects Accounting and Reporting Section of the Division of Accounting and Finance.

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:

1. directions and interpretations given the Contractor;
2. instructions to Contractor for work formalized later with a change order;
3. agreements between the Project Engineer and the Contractor; and
4. transmittal of project documents and other project information, including to the Contractor, internal CDOT staff, and consultants working on the project.

Example: For instances relating to erosion control where action needs to be taken by the Contractor, the Project Engineer should prepare and issue a CDOT Form 105 to give the appropriate direction to the Contractor for correcting the noted deficiencies and place a copy in the project file and the SWMP notebook. Failing to notify the Contractor on a Form 105 in accordance with subsection 208.09 of the December 23, 2008 standard special provision, the August 26, 2010 standard special provision, or the 2011 *Standard Specifications* is being viewed by CDPHE as a non-compliance issue.

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.

120.4.1 Use of Email Is Not an Acceptable Alternative

Email is not the Construction Manual established manner for CDOT project staff to communicate the information listed in Section 120.4. Therefore, the use of an email as an alternative method of documenting these communications in lieu of a Form 105 – Speed Memo is not acceptable.

An email “read receipt” or any of other form of tracking delivery or receipt of an electronic copy of a Form 105 – Speed Memo is not an acceptable alternative to obtaining a copy of a Form 105 – Speed Memo signed by the Contractor.

Additionally, in the case of the Contractor refusing to sign the form, the use of an email to deliver a Form 105 – Speed Memo is not an acceptable alternative to sending the Form 105 Speed Memo by registered mail to the home office of the Contractor. (The use of email to deliver a Form 105 – Speed Memo is an acceptable method of sending the Form 105 to the Contractor in other circumstances. The Contractor should return a signed copy to the Project Engineer.)

It is recommended that CDOT’s use of Form 105, as detailed above, be discussed with the Contractor at the start of the project.

120.5 FORM 103 – PROJECT DIARY

The project diary should be prepared on Form 103 – Project Diary in either hand written or electronic 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:
 - a. work in progress,
 - b. labor and equipment used,
 - c. acceptability of materials used,
 - d. details of problems encountered, and
 - e. 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.
105.09	Discrepancy in Contract documents and the decision as to which will be followed.
105.10	Objective comments on the competency of supervision and organization of Contractor. No comments should be included that could be perceived as derogatory.
105.11	Utility conflicts, status and details concerning any delay to Contract progress. Record the Contractor’s effort to locate and protect utilities.
105.17	Unacceptable work – Include date and discussions leading to remedial action or rejection and ultimate resolution.
105.18	Problems concerning legal load restrictions.
105.19	Contractor efforts to maintain Contract work.
105.20	Project Engineer’s action if such maintenance is not performed.
105.21	Actions taken in relation to partial or final acceptance. Include directions for completion of or correction of unsatisfactory work.
105.22	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.
106.08	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.
106.09	Method of Handling Materials – Damage and problems caused by transportation methods, production procedures, etc.
106.10	CDOT furnished materials. Record source, quality, cost, and handling.
106.11	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 <i>Manual on Uniform Traffic Control Devices</i> 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.
108.08	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.
108.10	Documentation of events leading to default or termination of the Contract must be carefully and concisely recorded.
108.11	
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 will be made in accordance with subsection 108.08 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 are automatically generated.

120.6.3 Project Financial Status Report (Form 65)

120.6.3.1 Accessing Form 65 in SAP

The Project Engineer is responsible for monitoring the financial status of the project and the Project Financial Status Report (Form 65) is the tool which provides the information necessary to do this. To access the Project Financial Statement: Form 65 in SAP use transaction code ZJ20 – Project Financial Statement: Form 65. Because the Form 65 is in SAP only CDOT employees can generate the Form 65. There are Help documents that guide you through this in the SAP Training website: <http://saptraining/>. Select *Engineering* then select *Project Systems Lifecycle* then select *Project Month End/Period Close*.

120.6.3.1.1 Checking Funds for a Change Order

The Project Engineer will check the Financial Statement when developing a Change Order. The steps for doing this are:

1. Maintain the Overs and Unders report in Trns*port® SiteManager® Accessories, by ensuring they are up to date. This information displays in the Over/(Unders) – Inc Bid Items, CMOs and Plan F/A line just above line [6] Total CMOs & Overs/(Unders).
2. When developing a change order, enter the planned amount for the Change Order in SAP using transaction CJR2. The Help document that guides you through this is CJR2 – Enter Planned Contract Expenditure on the Form 65.
3. Run the Form 65 Financial Statement. The planned change order amount will appear on line [9] Planned Contract Expenditure and it will adjust the amounts in Line [14], [15], and [16]. This is helpful to determine how the change order amount, CE costs and indirect charges affect the project. For further assistance, see the Help document ZJ20 – Review Planned Contractor Expenditures.
4. Review line [25] Total Cost of Project compared to the next two lines (Curr Allotment and TCA Allotment).
 - a. If line Curr Allotment and TCA Allotment are positive (+) or in surplus there is funding in your project for the change order.
 - b. If line Curr Allotment and/or TCA Allotment are negative (-) or in deficit you will need to add money to the project. Contact your Region Business office for guidance to move forward. Refer to 120.6.3.2 Requests for Additional Funds. You will use this Fform 65 to justify the amount you need to add to the project.
5. To avoid accounting for the planned change order twice, this next step is crucial. You must remove the amount entered for Planned Contract Expenditure. The

Help document that guides you through this, CJR2 – Remove Planned Contract Expenditure on the Form 65, is located in the SAP Training website: Select *Engineering* then select *Project Systems Lifecycle* then select *Project Month End/Period Close* then select CJR2 – Remove Planned Contract Expenditure on the Form 65.

6. Now you are ready to create the change order in Trans*port SiteManager® and approve. See section 120.7 of this manual.
7. You will need to manually adjust the Projected Quantities for the newly added items in Trans*port SiteManager® Accessories under the Contract Administration tab.
8. Run the Form 65. Check that line [9] is zero and that Curr Allotment and TCA Allotment are positive (+) or in surplus. The Help document that guides you through this is ZJ20 – Project Financial Statement: Form 65.

120.6.3.1.2 Maintain Form 65 for the Estimate

The Project Engineer will follow steps one and eight above to generate and check the Financial Statement monthly and submit it along with the Progress Payment Estimate from SiteManager®.

120.6.3.1.3 Adding Comments

To enter comments in the comments field at the bottom of the form, use SAP transaction CJ20N - Project Builder and in the Structure tree on the left select the Construction WBS (XXXXX.20.10). Then in the Work Area on the right click on the Long text tab and enter your comments starting in Line 2. Do not enter comments in line 1, because it is not displayed on the Form 65 and is reserved for the WBS element description.

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 Pre-construction 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). A funding letter is created by completing Form 1186 Contract Funding Increase/Decrease & Approval Letter. The following procedures should be used to process funding letters:

120.6.3.3.1 Funding Letters Related to CMO's

The Contract & Market Analysis Branch Area Engineers will modify highway construction PO's for funding letter requests that are related to Contract Modification Orders (CMO's).

1. The Project Engineer will enter a SAP Purchase Requisition, provide a draft of the CMO Form 90, a draft of the explanation letter and any pertinent attachments to the Region Business Office.
2. Upon approval of the SAP Purchase Requisition by the Region Business Office and the Program Engineer, the Business Office will submit the request, with all attachments and the funding letter, to the Area Engineer and the Budget and Policy Analyst in OFMB. The Region Business Office will submit the completed funding letter to the CDOT Controller.
3. Once the CMO is in compliance with the requirements of Section 120.7 of this *Manual* and OFMB concurs with the request, the Area Engineer will modify the PO.

120.6.3.3.2 Funding Letters Not Related to CMO's

The Area Engineers will also modify highway construction PO amendments not related to CMO's for funding letter requests for general increases or decreases. The process steps shall be as follows:

1. The Project Engineer will enter a SAP Purchase Requisition and provide documentation, including Form 65 and Overs/Unders report, as to what has changed in the project scope that requires the increase or decrease.
2. Upon approval of the SAP Purchase Requisition by the Region Business Office and the Program Engineer, the Business Office will submit the request, with all attachments and the Funding Letter, to OFMB to determine whether the change

is due to a budget issue. The Region Business Office will submit the completed funding letter to the CDOT Controller.

- a. If the change is related to justifiable cost overruns or underruns and project budget is available, the request will be immediately forwarded to the Area Engineer to modify the PO.
 - b. If the change is not justifiable or there are other concerns, the request will be returned to the Region for additional clarification.
3. Upon receipt of a PO modification request that has been reviewed by OFMB, the Area Engineer will proceed with modifying the PO.

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 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 and the Region Transportation Directors are the only CDOT individuals with authority to make an administrative settlement between CDOT and a

contractor. CDOT Policy Directive 16.0, *Regional Transportation Director Authority for Administrative Settlement of Construction Contract Claims*, delegates authority to Region Transportation Directors (RTD's). Region personnel other than the RTD 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 dispute 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 dispute 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 or \$50,000) and cannot be made by Region personnel other than the RTD.

If the request cannot be supported by the facts and Contract requirements in accordance with subsection 105.22 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 Request For Equitable adjustment 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 Form 90 will be completed and shall be signed by CDOT and 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 approval requirements in section 120.7.5 for additional approvals that are required on specific types of change orders.

In some cases, time constraints may prevent the Form 90 being created and signed before work starts. If it is necessary to commence work before the Form 90 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 Form 90 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. See Section 120.7.7 for Types of Change Orders. For change orders considered minor (Minor Contract Revision or MCR), it is acceptable to include more than one MCR line item on each Form 90.

The Project Engineer will submit a copy of the Minor Change Order Items Summary worksheet from SiteManager® Accessories to the Resident Engineer and Region

Program Engineer for review on a monthly basis as the items are added to the Contract. Upon completion of the project, all minor change order (MCR) Form 90's shall be packaged and submitted by the Project Engineer with one Letter of Explanation to the Region Program Engineer for final signature. The approved Letter of Explanation and MCR package will then be forwarded on to the Contracts and Market Analysis Branch by the Region Finals Administrator.

In accordance with CRS 24-30-202, the CDOT Form 90 must be "fully executed", i.e. signed by both the Contractor and CDOT, before payment can be made to the Contractor for the change order work. Typically, the CDOT signature required to fully execute the change order would be that of the CDOT Project Engineer. In cases where there is a consultant project engineer, the Resident Engineer's signature is required. Obtain the remaining signatures on the CDOT Form 90 and finalize the explanation letter as soon as possible thereafter.

Payment for the change order work will be made on the monthly or interim estimate as the work is completed. Barring disputes or missing documentation, completed work shall be paid for monthly if the contractor is satisfactorily performing the work.

120.7.3.2 Required Information for the Form 90

The Form 90, Contract Modification Order, 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 form 90. Form 90's will include the following information:

1. **Heading Information.** Ensure that the heading information on the Form 90 is correctly completed including the change order title block. Include "Minor Contract Revision" in the title block by selecting it from the pull down menu if appropriate.

2. **Cost Adjustments.** Include the estimated increase or decrease in project cost associated with the change order; SiteManager automatically fills this field. The cost of a Minor Contract Revision type of change order will always be zero because added cost will be balanced against Item 700-70010 F/A Minor Contract Revisions.
3. **Opening Statements.** The use of one of the following opening statements is required on all Form 90s:
 - a. “You are hereby authorized to”
 - b. “Your Contract is hereby modified to include”
 - c. “Your Contract is hereby revised to”
4. **Minimum Information.** The Form 90 must clearly describe, at a minimum, the following information:
 - a. description of work or change;
 - b. location of change;
 - c. description of materials, including quantities and specifications;
 - d. construction requirements including plan and specification references;
 - e. method of measurement; and
 - f. basis of payment.
5. **Contract Time.** Ensure that contract time is properly addressed in the Form 90 and specify if the time is calendar or working days. Note that time adjustment must match the contract time type (working or calendar) in the original contract. If no time will be granted, add the statement “No additional time will be added for this work” to the form 90.
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 Form 90. If new or revised plan sheets are required, ensure that they are referenced as attachments to the Form 90 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 all change orders for completeness and conformance with established CDOT policies and procedures. The Area Engineer is available for assistance with any change order but is not, however, authorized to approve change orders. The Project Engineer will contact the Area Engineer for advice and assistance on all Contract Modification Orders. The Area Engineer is available to assist with all MCR’s. At a minimum, the following items will be discussed:

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

120.7.5 Approval Procedures for Change Orders

Regardless of the funding source, the Project Engineer will obtain pre-approval from the Resident Engineer before the Contractor signs a Form 90; and, upon notification, the Resident Engineer should consult with the Region Program Engineer in responsible charge of funding decisions. The Resident Engineer must pre-approve the change order before the Project Engineer discusses it with the FHWA Operations Engineer.

Other approvals may also be required, as discussed in Section 120.7.7. These approvals are dependent upon the nature of the change order. For example, a structural change would require concurrence of the structural designer. A materials change would require the concurrence of the Region Materials Engineer and/or Staff Materials.

For projects with FHWA Oversight, written approval from the FHWA Operations Engineer (OE) is required prior to work being performed for Major CMOs, defined as a CMO that meets any of the following conditions:

1. Project Termini Extensions, regardless of oversight (as defined in 23 CFR 635.102 and CDOT's Construction Manual, 120.7.7.3)
2. Major Design Changes (as defined in CDOT's Construction Manual, 120.7.7.1, "significant" to be determined via discussions between Operations Engineer and CDOT)
3. Material Change to the Scope of Work (i.e. additional capacity, additional access, major extra work, deletion of work, etc.)
4. Changes affecting Environmental Commitments
5. Administrative Settlement of Claims (excluding Dispute Review Board Recommendations)

All CMOs on FHWA Oversight projects require FHWA approval as described by the procedure below. The following bullet points describe the general process that should be followed for CMO approval.

1. When a Major CMO is required on a FHWA Full-oversight project, the CDOT Project Engineer notifies the applicable Operations Engineer (OE) as soon as possible of the proposed change prior to the work commencing. This is to start the early coordination between FHWA and CDOT. Upon notification, the OE will determine the appropriate level of FHWA involvement. If the change is determined to be a Major CMO, the following process applies.
2. The Project Engineer will submit to the OE an electronic draft of the CMO (form 90) and draft of the Letter of Explanation, which includes a detailed description of the work, location of change, description of materials, construction requirements,

- method of measurement, and basis of payment including any contract time extensions, etc.
3. The OE will review the CMO and supporting documentation in accordance with the “Evaluation of Change Orders” section of the FHWA procedures.
 4. The OE will notify CDOT of any needed additional information, or provide comments to CDOT within 5 business days. The OE shall verify that all pertinent information relating to the CMO, along with an independent cost analysis (as described in section 120.7.6.2 of the Construction Manual), is included in the submittal. The method and degree of analysis can vary by project, but it must support the final compensation determination.
 5. The OE will not provide prior approval, but will discuss the CMO with CDOT so that they may prepare the final Form 90 and gather necessary CDOT signatures
 6. The CDOT Project Engineer will submit a final Form 90 to the OE for approval.
 7. The OE, through signature of the Form 90 will provide formal approval of the CMO. The OE should receive the Form 90 and all attachments before the contractor performs any of the work. If the work is emergency work that must begin with the written notice from the Project Engineer (i.e. via 105), the Project Engineer shall contact the FHWA Operations Engineer and their Area Engineer prior to beginning such work. The Form 90 can be submitted as a PDF for FHWA signature.
 8. The OE will sign the Form 90 and return the Form 90 with the original signature to the Project Engineer within 5 business days of receipt.
 9. When time allows, the original Form 90 shall be routed through CDOT and FHWA to collect original signatures for final project documentation. All attachments, including the explanation letter, emails and signed PDF documents should be circulated with the original form 90 to hasten this process.

120.7.6 Letter of Explanation

A Letter of Explanation is required to explain and justify each Contract Modification Order. This letter is not distributed to the Contractor. The Letter of Explanation will provide the essential information to support sufficient justification.

It is acceptable to submit one letter of explanation for all of the minor (MCR Type) change orders at the completion of the project or a letter for each MCR Form 90. This letter will be drafted as MCRs are added.

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 Change. Provide a clear and detailed explanation of the change being made.
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 adjusted, ensure that the letter thoroughly explains and justifies the adjustment. Time adjustments should only be made if an analysis of the project schedule determines that there is a change to the critical path of the Contractor's current approved schedule.

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, if necessary.
9. Status of Work. Include a notation regarding work status, such as “No work has started” or “Because of the emergency nature, work was authorized to commence by Form 105, dated xx/xx/xx” and attach a copy.

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 for every new contract item. Federal and state statutes require that a cost justification accompany all change orders. The purpose of the cost justification is to establish or verify a reasonable cost for the work, not to determine exact costs. The price will be justified by one of the methods discussed in this Section. Contact the Area Engineer, as needed, for advice and assistance.

The price justification will be detailed. If the price justification is simple include all the details in the Letter of Explanation. If the price justification is long or complicated, it

should be summarized in the Letter of Explanation and any detailed supporting attachments 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. To be used for price justification, the cost analysis will include breakouts of all costs for:

1. labor,
2. specific equipment,
3. material, and
4. an appropriate allocation of related fixed costs (i.e., overhead).

Fixed costs are usually offered as a percentage loading of the direct costs. A fixed cost of 15 percent or less is acceptable. A fixed cost greater than 15 percent should be analyzed for reasonableness and justified in the explanation letter.

The Project Engineer may use the cost analysis to justify an agreed unit price or lump sum, provided that the analysis is reviewed for reasonableness by the Project Engineer and the Letter of Explanation contains the following statements:

1. The labor and equipment hours are reasonable.
2. The labor rates and the equipment rates are reasonable.
3. The material quantities and prices are reasonable.
4. The total cost, including overhead, is reasonable.

To help the Project Engineer determine if the cost analysis is reasonable, he may use wage decisions, contractor payrolls, the Rental Rate Blue Book of Rental Rates for Construction Equipment, average equipment rates from the QC Training Manual for Construction Contract Administration, quotes from equipment rental firms and material suppliers, or other sources. The Contractor's Cost Analysis is not required to use exact numbers from any of these suggested reference sources.

For Contract changes that are considered minor (MCR), the Project Engineer need only to review the Contractor's Cost Analysis for accuracy and completeness and attach it to the Letter of justification. The Project Engineer shall include those statements described above as required for the MCR Letter of Explanation verifying that the costs have been reviewed, properly documented, and are considered reasonable. No further documentation is required to be submitted beyond what is stated here for minor (MCR) change orders.

120.7.6.2.2 Independent Cost Analysis

The Project Engineer may prepare an independent cost analysis, also called a 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 by more than 15 percent.

To help the Project Engineer estimate the costs, he may use wage decisions, contractor payrolls, the Rental Rate Blue Book of Rental Rates for Construction Equipment, average equipment rates from the QC Training Manual for Construction Contract Administration, quotes from equipment rental firms and material suppliers, or other sources. The force account analysis is not required to use exact numbers from these reference sources. The intent is to provide a simple but reasonable cost estimate.

For minor change orders (MCRs) a tiered approach for handling smaller cost changes and larger costs is acceptable. For MCR's under \$10,000 (use aggregate amount) an estimated method as shown in the following example may be used. For MCR's over \$10,000 a more detailed analysis is required using payrolls, invoices, equipment rates following the method outlined in the *CDOT Standard Specifications*, subsections, 109.04(a) through 109.04(e).

Example Minor Change Order \$0 to \$10,000 – Estimated Method:

Ex: Added item 603-30036 36inch Steel End Section, Contractor submitted price \$1,200 each for 1 each. Total cost \$1,200.00. Project Engineer's force account analysis:

Categories			Totals
Labor:			
Laborer	4 hr X \$20/hr	\$ 80.00	
Operator	4 hr X \$30/hr	\$ 120.00	
Labor Total		\$ 200.00	\$ 200.00
Equipment:			
Combination Loader	4 hr X \$ 90/hr	\$ 360.00	
Pickup	4 hr X \$50/hr	\$ 200.00	
Equipment Total		\$ 560.00	\$ 560.00
Materials:			
End Section	1 X \$400/each	\$ 400.00	
Materials Total		\$ 400.00	\$ 400.00
Total:			\$1,160.00
Price of up to \$1334 is acceptable.			

The Force Account estimate procedure as stated above shall be used only when the total dollar amount of the minor (MCR) contract change is equal to or less than \$10,000.

For a major contract change, a more detailed analysis is required as outlined in *CDOT Standard Specifications*, subsections 109.04(a) through 109.04(e). The Project Engineer shall provide all necessary documentation to justify the costs documented in the cost analysis.

Example MCR /Major Change Order Over \$10,000 – Estimated Method:

Repair to Existing MSE Wall: The Contractor submitted a lump sum cost of \$12,500.00 to repair the wall. This work includes the removal of block facing, excavation of existing material, and the replacement of backfill material and blocks. Concrete slope and ditch paving will be placed to prevent further erosion.

The information below includes wage rates taken from the project Wage Decision and rounded to the nearest dollar, equipment rates from the 2007 historical data in the QC Manual and rounded to the nearest dollar, and material rates that were quoted by the suppliers.

Categories			Totals
Labor:			
Laborer (3)	144 hr X \$18.00/hr	\$ 2,592.00	
Operator	48 hr X \$20.00/hr	960.00	
	67% loading	<u>2,380.00</u>	
Labor Total		\$ 5,932.00	\$ 5,932.00
Equipment:			
Flatbed Truck	16 hr @ \$20.00/hr	\$ 320.00	\$ 320.00
Rental Equipment:			
Backhoe	6 days @ \$200/day	\$ 1,200.00	
	10% Loading	<u>120.00</u>	
Rental Equipment Total		\$ 1,320.00	\$ 1,320.00
Materials:			
Concrete CIB	14 cu yd @ \$250.00/cu yd	\$ 3,500.00	
Facing Blocks	100 blocks @ \$12.00 each	1,200.00	
	15% loading	<u>705.00</u>	
Materials Total		\$ 5,405.00	\$ 5,405.00
Subtotal:			\$ 12,977.00
	Administrative loading per 109.04(e)		<u>640.00</u>
Total:			\$ 13,617.00
Therefore, the contractor's submitted price of \$12,500.00 is acceptable.			

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 complete year of the *CDOT Cost Data Book*. The *CDOT Cost Data Book* should be used in a statistically meaningful way. If the proposed unit price is unreasonable or significantly greater than the average yearly 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. If market prices for a particular item are volatile it may be reasonable to use data from the current (partial) year to justify the Contractor's submitted price.

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 of up to 15 percent. 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.

Comparisons can be made to selected projects based on the quantity involved or the project location, and but the rationale for the data selection will be included in the Letter of Explanation. Either average bid or award prices can be used. A weighted average will be calculated based on the selected data. It is also reasonable to consider inflation and unusual project factors. The latest full year issue of the *CDOT Cost Data Book* should be used for these comparisons. Consider the following example:

Example of Weighted Awarded Bid Average: Is \$350.00/LF a reasonable price for 80 LF of Item 503-00036, Drilled Caisson (36 In)?

From the 2012, *CDOT Cost Data Book* using projects with similar quantities:

Project	#LF X \$/LF. =	Cost
FBR095A-011, SH95, Sheridan Bridge	76 @ \$205.00	\$ 15,580.00
FSA002A-005, SH2: 12 th Ave & EB I70	88 @ \$238.00	\$ 20,944.00
FSA0142-054, SH257 & SH14	76 @ \$270.00	\$ 20,520.00
NH160A-019, In Pagosa Springs	76 @ \$575.00	\$ 43,700.00
STA0504-066, US50B in Rocky Ford	76 @ \$462.00	\$ 35,112.00
	392 LF	\$135,856.00

$\$135,856.00 / 392LF = \$ 346.57/LF$. Since the price is within 15% of calculated weighted average, \$350.00/LF is reasonable.

Note: Comparison to a single project may be acceptable if that project work is similar in nature, location, and quantity. Rationale for the comparison will be explained in the Letter of Explanation.

If a submitted price is greater than the highest of either of these averages, then the Engineering Estimates and Market Analysis Unit of the Contracts and Market Analysis Branch may be contacted to review the submitted price and verify that it is reasonable. The Engineering Estimates Unit may also 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; however, written concurrence and justification from the Engineering Estimates Unit will suffice for price justification and should be included with the explanation letter.

120.7.6.3 Budget Actions

The Project Engineer is required by Procedural Directive 715.1 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 715.1 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 email 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*:	<input type="checkbox"/> Does not exceed approved Project Commitment Amount** - No Form 1186 required <input type="checkbox"/> Exceeds approved Project Commitment Amount** - Form 1186 Required <input type="checkbox"/> 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 [25] Total Cost of Project is*:	<input type="checkbox"/> <5% Over Current Allotment*** - No Budget Action is required <input type="checkbox"/> >5% Over Current Allotment*** - Budget Action is required
The amount listed in PROJ'D TO COMPL column on Line [25] Total Cost of Project is*:	<input type="checkbox"/> <15% Over Current TCA**** - No Commission Action required <input type="checkbox"/> >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) 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.

****The Current TCA (TRANS COMM ACTION) is listed in Line 26 (top right corner) of Form 65.

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 is responsible for determining 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.

Examples of Major and Minor Contract Revisions

Type of Change	Scope of Change
Major	<ul style="list-style-type: none"> • Major Design Changes • Project Termini Extensions • CDOT Field Engineering Errors • Settlement of Contract Claims • Changes to Traffic Control Plan (TCP) • Purchase of Authorized Materials
Minor	Everything Not Described Above And as Determined by the Resident Engineer
Note: The Project Engineer shall consult Resident Engineer for the type of change being addressed.	

120.7.7.1 Major Design Changes

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

1. significant errors or omissions in the original design,
2. significant design features that are unsuitable for field conditions,
3. Value Engineering Change Proposals,
4. significant increase in cost, and
5. 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: Where the Contractor’s design is a revision to a structure in the bid plans, the organization (CDOT or consulting firm) that provided the original design shall review the contractor’s proposal for the Project Engineer. The following submittal requirements shall be provided by the Contractor:
 - a. Construction plans sealed by Colorado PE
 - b. Design Calculations
 - c. Independent design check calculations

A copy of the Contractor’s proposal shall also be sent to Staff Bridge for review and archiving. This submittal shall be made to the Staff Bridge PE II assigned to the applicable Region.

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 HMA 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 staff beyond the office of the Resident Engineer and legal staff 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. Disputes or Claims. A dispute or claim situation may occur if the Contractor encounters conditions that differ materially from those indicated in the Contract. If the Contractor files a dispute or claim, refer to subsection 105.22 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 108.08 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 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 Project Development Branch Manager and the Region Transportation Director (see Section 120.7.7.3.3). For all Project Termini Extensions, regardless of oversight, FHWA should be notified to determine their level of involvement. The Contractor must not sign the change order nor commence work until these approvals have 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:
 - a. The Contractor is willing to do the extra work.
 - b. The Contractor has obtained sufficient additional bonding and insurance for the additional work.
 - c. The need for the work was initially established during the design process, but the work was omitted because of funding constraints.
 - d. 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.

- e. Project funds are available and the work can be completed at reasonable unit prices.
- f. 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.
- g. 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.
- h. 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.
- a. The Region Environmental Manager has completed the necessary environmental clearances and permits and has given written concurrence.
- i. The Resident Engineer, Program Engineer and pertinent specialty groups have concurred with the proposal.
- j. Contact the FHWA Operations Engineer to determine the level of involvement FHWA wants with this change order. If the FHWA Operations Engineer will sign the Form 90, follow the procedure in 120.7.5.

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 apply to change orders for Type II Extensions on State-funded projects:
 - a. The Contractor is willing to do the extra work.

- b. The Contractor has obtained sufficient additional bonding and insurance for the additional work.
- c. The proposed work is in reasonably close proximity to the project.
- d. The need for the work is of a critical nature for reasons of safety, structural adequacy, or design deficiency.
- e. Project or other funds are available to cover the cost of the proposed work.
- f. The cost of the proposed work is not expected to exceed 50 percent of the value of the original Contract.
- g. 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.

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

- i. The Region Environmental Manager has completed the necessary environmental clearances and permits and has given written concurrence.
- j. Contact the FHWA Operations Engineer to determine the level of involvement FHWA wants with this change order. If the FHWA Operations Engineer will sign the Form 90, follow the procedure in 120.7.5.

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:
 - a. Written pre-approval by the Project Development Branch Manager and Region Transportation Director is required for all project extensions.
 - b. 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 Project Development Branch Manager and the Region Transportation Director.
 - c. 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. Once the signature is obtained, the document will be returned to the Area Engineer who will send it to the Region Transportation Director for a final signature.
 - d. The Project Development Branch Manager and Region Transportation Director will determine that the authorization of this work will not be at the expense of an identified priority needed elsewhere in the Region or State.
2. Federal-Aid Projects. In addition to the criteria required for State-funded projects, written approval (FHWA signature on the Form 90) may be required from the

FHWA Operations Engineer for use of Federal funds for either type of project extension in accordance with subsection 120.7.5 of this manual. The following are items that the Project Engineer should be prepared to discuss with the FHWA Operations Engineer:

- a. What is the reason for extending the project termini?
- b. Is the additional work programmed (i.e., included in the description of the original project or another project in the Statewide Transportation Improvement Program)?
- c. 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.
- d. What is the justification for not using competitive bidding?
- e. 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.

120.7.7.4 Contract Time Adjustments

Contract time is not automatically extended for additional work. The timing of the added change order work and how that work fits in the schedule with critical path work will determine if a time adjustment is warranted. No time adjustments will be made for work that can be completed concurrently with other work on the project.

An adjustment to contract time requires a change order and is governed by subsection 108.08 of the *Standard Specifications*. There are two types of change orders regarding contract time adjustments:

1. **Contractor Request.** If an adjustment 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 change the completion of the project. If accepted, the Project Engineer will initiate a change order.
2. **Changes in Work.** Time adjustments for changes in work will be made only when a schedule analysis shows an impact on the critical path. No time adjustments will be made for work that can be completed concurrently with other work on the project. The Project Engineer must justify the time adjustment with an analysis showing how the work affects the critical path. Record the amount of time adjustment on the change order, even if it is a zero adjustment.

120.7.7.5 Dispute and Claim Resolution

When the Chief Engineer resolves a claim, the Area Engineer will provide sufficient information to the Region 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, 105.19, and 107.17 of the *Standard Specifications* (see Sections 104.4, 105.19, 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:
 - a. The item damaged was not included in the Contract work, and the damage was sustained through no fault of the Contractor.
 - b. 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*.

- c. 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.
 - d. 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:
- a. The reason the Contractor could not have foreseen the event that caused damage to the Contract work item.
 - b. 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

When it is determined that utility work is essential to the satisfactory completion of the Contract 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. The Region Utilities Engineer will execute the new agreement with the utility.
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 according to 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 for the utilities agreement. 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. a materials purchase, such as gravel for a maintenance stockpile, from a Contractor who has a Contract with CDOT; and
 - b. Contractor purchased materials that were included in the Contract but not used on the project.
2. Change Order. The change order must include:
 - a. material specifications,
 - b. location and delivery requirements,
 - c. method of measurement, and
 - d. 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:
 - i. If the material can be used by Maintenance, the material should be charged to the Maintenance Section. The Region Maintenance Superintendent must give prior approval.
 - ii. If the material cannot be used by Maintenance, it must be processed as a participating cost as follows:
 - A. If the material can be restocked, pay the restocking charge based on the certified supplier's invoice.
 - B. If the material cannot be restocked, pay the Contractor for the cost of the material based on the certified supplier's

invoice. 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 Fully Executed Form 90

Signed Form 90s are not required under any of the following conditions:

1. Deleted or Unused Items. A change order is not required if a Contract pay item is deleted or not used, 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. Material Changes. No change order is required if the contract stipulates or allows for choices of different types of material. If the contract does not stipulate or provide for material alternatives, but the contractor proposes to change materials, this would be a change to the contract and therefore a change order would be required.
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 Items. A change order is not required to add items that are included in the Contract. Some examples include:
 - a. liquidated damages,
 - b. piling cutoffs,
 - c. supplier lien deductions, and
 - d. extra construction surveying paid in accordance with 105.13(a) of the *Standard Specifications*.

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:
 - a. overruns or underruns of plan item quantities; and
 - b. 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 Completed Change Orders

120.7.9.1 General Requirements

The Region will distribute Contract Modification Orders, excluding MCR Change Orders after the Form 90 is signed by the Program Engineer and FHWA Operations Engineer, where necessary. All MCR Change Orders will be submitted to Contracts & Market Analysis as a single document by the Region Finals Administrator after project completion. Distribution of the final change order – Form 90, letter of explanation and all attachments – is as follows:

1. Area Engineer – original;
2. Project Engineer;
3. Resident Engineer;
4. Region Program Engineer and Region Finals Administrator; and
5. Contractor, excluding the Letter of Explanation.

After reviewing the change order for compliance with the requirements in this *Manual* and obtaining corrections from the Region, the Area Engineer will distribute change orders as follows:

1. Records Center, original with all attachments; and
2. Center for Accounting, copy of Form 90 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 Project Engineer will transmit the draft change order with attachments to the FHWA Operations Engineer for review, and then again for final approval and signature in accordance with Section 120.7.5. The FHWA Operations Engineer will return the approved final change order to the Project Engineer. The Project Engineer will send the approved final change order to the Area Engineer and a copy to FHWA.
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 Project Engineer will send a copy with all attachments to the FHWA Operations Engineer. FHWA approval is not required.

120.8 EMERGENCY CONSTRUCTION PROJECTS

For additional information on Emergency Construction Projects visit CDOT's SharePoint site at:

<http://connectsp/sites/eep/SitePages/Home.aspx>

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:

- a. The scope and nature of the emergency work,
- b. Start date and time frame for completion,
- c. Pay items and estimated quantities (where appropriate),
- d. Estimated cost,
- e. 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 Contracts 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:

- a. Scope of work and project limits,
- b. The required time to start work,
- c. Expected duration of the work,
- d. Estimated quantities,
- e. Method of measurement,
- f. Basis of payment, and
- g. 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. 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.)
- b. 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)
- c. 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 email (liliya.gershman@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:

1. A copy of the request for emergency contracting approved by the Chief Engineer.
2. 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.
3. The basis of payment for the contract.
 - a. 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.
 - b. 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:

1. the items of work that will be subcontracted to the Underutilized Disadvantaged Business Enterprise;
2. the dollar value of the subcontract for the Underutilized Disadvantaged Business Enterprise;
3. the total dollar amount of all Underutilized Disadvantaged Business Enterprise subcontracts on the project; and

4. 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:

1. Program and Project Analysis Unit of Contracts and Market Analysis Branch,
2. Region EEO/Civil Rights Specialist,
3. Resident Engineer, and
4. 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:

1. Contracts and Market Analysis Branch,
2. Region EEO/Civil Rights Specialist,

3. Resident Engineer,
4. Project Engineer.
5. Office of Public Relations, and
6. 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.

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:
 - i. include owner/operators on the Contractor's payroll with the required information, or
 - ii. 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:
 - i. 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.
 - ii. 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:
 - a. is considered part of the Contractor or subcontractor organization, and
 - b. 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:
 - a. is not considered part of the Contractor or subcontractor organization, and
 - b. 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:
 - a. who rents or leases the equipment;
 - b. whether the equipment is rented or leased, with or without an operator; or
 - c. 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 108.08, and to evaluate disputes and claims, in accordance with subsection 105.22 .
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 contract administered by the Contracts and Market Analysis 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. 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 acknowledgement 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 changed 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 106.08 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 Pre-construction Conference

120.13.1.1 Purpose

As soon as practical after a Contract is awarded, the Project Engineer will arrange a Pre-construction Conference with the Contractor to discuss the prosecution of work. The Pre-construction 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 Pre-construction 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 Pre-construction Conference Agenda

The Pre-construction Conference should follow a carefully prepared agenda, similar to the example presented in Appendix A. Emphasize at the Pre-construction 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 Pre-construction 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 HMA 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 HMA 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 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.

120.14.2 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

Documentation of the various pay items included in the contract shall be done in the SiteManager® Daily Work Report (DWR). Additional documentation may be prepared using CDOT numbered forms electronically attached to the DWR's or appropriately referenced in the DWR as described in Section 120.1.3.5. Other supplementary documentation shall be electronically attached to the DWR or appropriately referenced in

the DWR as described in Section 120.1.3.5 Hardbound field notebooks shall not be used for pay item documentation due to the large volume of irreplaceable documentation that would be lost if a field book were destroyed or misplaced. The project diary will not be used to document pay items.

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 will be used for pay items that can be measured or counted as the work progresses. The source document will be used to support payment of actual quantities as the work is performed. Quantities of this type will be entered in the Daily Work Report in SiteManager® and automatically posted to the Item Summary.
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. Interim measurements will be entered in the Daily Work Report in SiteManager® and automatically posted to the Item Summary. 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:

Load counts may be used to verify estimated quantities, however they are not a substitute for actual measurements and shall not be used 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 quantity unless changes or errors are found.
206 – Structure Excavation/Backfill	A percentage based on the plan quantity.	Plan quantity unless changes or errors are found.
207 – Topsoil	A percentage based on the original calculations.	Measured quantity pursuant to SS 207.04
208 – Erosion Control	Actual amount used.	Actual amount used.
209 – Watering	Actual amount used based on approved meters or measured in the vehicle at the point of delivery	Actual amount used based on approved meters or measured in the vehicle at the point of delivery.
210 – Resets	A percentage based on the whole amount.	Item is complete. Actual quantity completed.
212 – Seeding and Fertilizing 212 – Sodding	A percentage based on the plan quantity.	Plan quantity unless changes or errors are found.
213 – Mulching	A percentage based on the plan quantity.	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 scale tickets or measured quantity as applicable.
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 specification.	Final measurement 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:
 - a. required types,
 - b. available sources,
 - c. quantities and rate of use,
 - d. pricing, and
 - e. 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:
 - a. owned, leased, or rented equipment and any mobilization required;
 - b. equipment type (e.g., scraper, backhoe, haul truck);
 - c. size of equipment (e.g., five cubic yard, 15 cubic yard);
 - d. number of each equipment type required (e.g., one each, 20 each);

- e. starting date required for each type of equipment; and
- f. 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 it 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 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:
 - a. description;
 - b. equipment number from Form 580;
 - c. equipment disposition (i.e., designated operation or on standby);
 - d. hourly equipment rental rate from Form 580; and
 - e. 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:

1. If the equipment is idle because of a mechanical failure, there is no obligation for reimbursement.
2. If the equipment is used for other non-force account work, standby rates should not be used.
3. If equipment has been ordered available for work but is idle through no fault of the Contractor, standby rates should be used.
4. If the cost for holding the equipment on site is less than the cost for removal and remobilization, standby rates should be used.

5. 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.
6. 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 according to subsection 109.04 of the *Standard Specifications*.
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 according to 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 plus 10 percent. 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 bill, 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 Administrator. 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:
 - a. materials,
 - b. rented or leased equipment, and
 - c. 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). The bill and payrolls will be reviewed for accuracy by the Project Engineer. A statement "Payrolls were checked by (Project Engineer name)" will be noted on the face of the Force Account Billing.
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. A loading of 10 percent will 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. 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 Administrator. Submittal will include the following original documents as necessary:
 - a. Form 10,
 - b. Form 580,
 - c. Contractor billings,
 - d. subcontractor billings,
 - e. certified invoices for materials,
 - f. statement of materials taken from stock,
 - g. certified invoices for specialty firms, and
 - h. 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:

- a. Form 10,
- b. Form 580,
- c. certified payrolls, and
- d. certified invoices.

Items #1, #10, and #11 are not applicable to this payment procedure. After calculation by the Project Engineer, all documentation will be included with the final documentation submitted to the Region Finals Administrator.

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

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 Accounting and Reporting Section of the Division of Accounting and Finance 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 630.16 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 Administrator 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 a record that supports the final quantity. All final measurements and quantities will 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 acceptable format. The following are examples of acceptable formats:
 - a. Electronic records in ProjectWise (see <https://www.codot.gov/business/designsupport/cadd> for consultant access information and the CDOT ProjectWise Reference Manual for the Construction file structure)
 - b. Electronic records in SiteManager®

- c. CDOT numbered forms, bound and indexed;
- d. Contractor scale tickets, totaled and checked;
- e. data processing output, checked and signed;
- f. drawings and calculations, checked and signed; and
- g. plan and cross-section sheets, checked and signed.

When electronic documentation is submitted, hard copy duplicates of this documentation need not be submitted, but will be retained in the project file.

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 45 calendar days after receiving all Contractor submittals and resolving all Contractor claims and supplier liens (i.e. completion of all Contract requirements).
5. The intent of the Finals Checking Procedure is to ensure reasonable conformance to CDOT Policies and Procedures, and specification requirements; and to audit the accuracy of quantity measurements.

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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.

The Project Engineer is responsible for ensuring that all quantities have been checked 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, 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.

The Project Engineer will complete and submit final documentation to the Finals Administrator within 45 calendar days of issuing the acceptance letter. The Project Engineer is responsible for all time from the date of the acceptance letter until he has

submitted all documents under his control, i.e. all documentation for which the Contractor is not responsible.

121.1.3 Responsibilities of the Region Finals Administrator

The Region Finals Administrator is responsible for:

1. providing guidance in the Region to ensure uniformity in project documentation pursuant to the requirements of this manual;
2. auditing project documentation for conformance to CDOT specifications, policies and procedures, Federal, State and other rules and regulations;
3. auditing calculations to ensure accurate and uniform application of specified methods of measurement and basis of payment;
4. auditing accuracy of posting quantities;
5. verifying all disputes/claims have been resolved and settlements posted to the final estimate;
6. verifying all subcontractor/supplier liens and/or *lis pendens* are resolved; and
7. authorizing final payment to the Contractor.

The Region Finals Administrator will begin the finals checking process as soon as practicable. Finals checking or submittal of the final will not be delayed while waiting for documentation.

The Region Finals Administrator will complete his review of the final documentation within 45 calendar days of receipt of the documentation from the Project Engineer. The Region Finals Administrator is responsible for all time from the time that the Project Engineer has submitted the project final as defined in Section 121.2.7 of this *Manual*, until the Finals Administrator completes the checking of those documents.

The Finals Administrator is responsible for accurately tracking and reporting these time durations to the Contracts and Market Analysis Branch via the Project Closure Report.

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 beginning and end dates of work.
2. Each. Document the final quantity as counted in the field.
3. Linear Foot. Document the final field-measured length or plan quantity, whichever is specified in the Contract.
4. Ton (Measured by Weighing). Quantities for items such as HMA 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 shall be labeled with the following information:
 - i. date and project number;
 - ii. material;
 - iii. location of spread (e.g., scale ticket, Form 282, spreadsheet);
 - iv. total; and
 - v. 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 shall contain the following information:

- i. Identification mark,
- ii. vehicle length,
- iii. tare weight,
- iv. number of axles,
- v. the distance between extreme axles, and
- vi. information relative to determining legal weight, including the permit No. and permitted weight of each vehicle for which the State has issued an overweight permit.

Obtain new copies of this information whenever there is a change.

5. Ton (Asphalt Cement). Include invoice or tank stabs, if used. Meter readings are acceptable.
6. Area (e.g., Square Yard). Include Final measurements and calculations.
7. Hour or Day. Document the total number of days and hours for each item.
8. M-Gallon (e.g., water for landscaping). Quantity will be determined by measuring and calculating tank volume or by using meter readings.
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 will be included.
10. Pound (e.g., structural steel, reinforcing steel). Quantity will be based on plan quantity or recalculation of field changes or errors. Form 279 (see Appendix B) can be used to document quantities of reinforcing steel.
11. Area (e.g., seeding, fertilizer, mulching). Ensure that tags were submitted. Document in the project records that tags were submitted. Retain the tags in the

project records. 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:
 - a. recalculation based on field change or error;
 - b. computer output check, signed and dated;
 - c. final measured dimensions and calculations, checked and signed; or
 - d. 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:
 - a. recalculation based on field change or error;
 - b. computer output – checked, signed, and dated;
 - c. final measured dimensions and calculations, checked and signed;
 - d. field notes or plotted cross-sections and calculations, checked and signed;
 - e. design-aid factor and source identified with number and date; or
 - f. pro-ratio – 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.

For the items which will not be measured but shall be the quantities designated in the contract, i.e., plan quantity, spot checking of plan quantities is a good practice to ensure accurate quantities. If field changes are ordered or discrepancies in the plans exist, the Project Engineer is required to measure and document.

The location of completed work will be documented on the source document.

For items which are measured, the Project Engineer will follow the method of measurement and basis of payment for the item. Over-runs and under-runs will be documented on the source document.

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 will 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 should be completed using electronic software. See the CADD Manual for electronic completion of As-Constructed Plans using MicroStation® or Redline software. If other software, such as Adobe, is used to complete As-Constructed Plans, the work shall closely approximate what is described in the CADD Manual for electronic software.

Each set of As-Constructed Plans will be prepared under the supervision of the Project Engineer who supervised construction. The Project Engineer should prepare As-Constructed revisions as construction progresses, but must not make revisions to the original electronic software file. A backup copy of the original file will be created before revisions are made. Do not delete data from original plans; rather, cross out information that is no longer needed or accurate. The following Sections discuss the procedures to revise As-Constructed Plans.

121.2.3.2.1 Electronic and Manual Procedures

The following applies to both electronic and manual 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:
 - a. Contractor;
 - b. Resident Engineer;
 - c. Project Engineer;
 - d. start date;
 - e. project acceptance date;
 - f. comments;
 - g. project number;
 - h. five-digit project code (subaccount), if not already shown;
 - i. beginning and ending location; and
 - j. 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
 - a. Complete a "Summary of Final Quantities" with change order numbers beside affected items.
 - b. It is unnecessary to indicate planned or final force account dollar amounts.
 - c. Any force account items added by change order should be shown.
 - d. Any items that have been deleted must reference the change order or the CDOT Form 105 that authorized the deletion.

8. Structures. Use the following procedures to prepare structural sheets:
 - a. Show tip elevation of piling for each pier, wall, or abutment.
 - b. Show structure changes for both minor and major structures.
 - c. Show type, manufacturer, manufacturer's project number, and shop drawing number of bridge expansion and bearing devices installed.
 - d. 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.
 - e. Vertical and lateral clearances should be indicated.

9. Plan and Profile: Use the following procedures to prepare plan and profile sheets:
 - a. Show the final location of new utility placements, unknown utility discoveries, relocations, and changes. Abandoned utilities should be shown and noted.

- b. Show all geometric revisions to alignment, superelevation, and grade. Include the change order number as appropriate.
 - c. Show significant changes in revised slope catches specifically ordered in the field. Include change order numbers as appropriate.
 - d. Show final locations of minor structures.
 - e. As-constructed information must be completed on the item tabulations for significant items such as structures. However incidental tabs for items such as landscaping, delineation, etc. may be crossed out instead.
 - f. Show locations of any petroleum-contaminated soils incorporated into earthwork for disposal, as approved by the Region Planning and Environmental Manager.
 - g. Show locations of discovered underground features, such as foundations or pipes, which are left in place.
 - h. Show detailed information on the location of all buried material within the CDOT right of way or project limits.
 - i. Detail any new or deleted accesses.
10. Tabulation of Quantities. Individual tabulations of separate pay items may or may not be edited, as determined by the Project Engineer, to reflect the actual as-constructed quantities. It is important that all individual tabulations match the final quantities, if not crossed out. If tabulation information is not corrected, the tabulation shall be crossed out and a reference made to "See Summary of Approximate Quantities Sheet No. X".
11. Altering Verbiage. Notes may be altered to reflect the as-constructed condition.

12. Landscape Plan Sheets will not be updated except that the tabulations may be updated as determined by the Project Engineer.

121.2.3.2.2 Electronic Procedures

See the CADD Manual for electronic completion of As-Constructed Plans using MicroStation® or Redline software. If other software, such as Adobe, is used to complete As-Constructed Plans, the work shall closely approximate what is described in the CADD Manual. Revisions will not be made to original electronic software 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:

1. Leave original data in the electronic file intact.
2. Do not delete any layers in the electronic file.
3. All text revisions are to be completed using the AsConst font in MicroStation® or Redline. If other software is used to complete As-Constructed Plans, a freehand print font available through the electronic software may be used.
4. 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*.
5. Additional levels will be created in the electronic software file to enter as-constructed information as described in the CADD Manual. These levels will be labeled as described in the CADD Manual. 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).
6. 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.

7. When as-constructed revisions are completed using electronic software, 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."
8. In addition to the hard copy distribution, electronic copies of As-Constructed Plans developed using electronic software will be retained by the Resident Engineer.

121.2.3.2.3 Manual Procedures

Use the following procedures to manually prepare As-Constructed Plans:

1. Complete all revisions in red using a non-smearing writing implement.
2. Line out plan data being corrected.
3. Indicate removals, by crossing out, when construction operations have obliterated features that were originally shown on the plans as existing.
4. 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."

121.2.4 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 Administrator.
2. Region Finals Administrator. 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 Accounting and Reporting Section of the Division of Accounting and Finance 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 Final Project Records

The following final project records, books, and documents will be submitted to the Region Finals Administrator. Electronic format is preferred:

1. documentation supporting pay quantities,
2. civil rights and labor compliance documentation,
3. survey documentation,

4. as-built plans,
5. materials documentation, and
6. any additional documentation required by CDOT Specifications, FHWA or other state or local regulations.

A Final Notebook or Packet will be submitted by the Project Engineer to the Region Finals Administrator. The Project Final Submittal Check List (Appendix B) will be used as the table of contents to assemble a tabbed notebook for the project documentation.

A separate Final Materials Notebook or Packet will be submitted to the Region Finals Administrator for the project materials documentation. The Final Materials Submittal Check List (Appendix B) will be used as the table of contents to assemble a tabbed notebook for the project materials documentation.

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.
<p><u>Legend</u></p> <p>X. Round to the nearest whole unit.</p> <p>.X Round to the nearest tenth.</p> <p>.XX Round to the nearest hundredth.</p> <p>.XXX Round to the nearest thousandth.</p>	

ROUNDING CRITERIA FOR PAY ITEMS

Figure 100E

121.2.7 Contractor Reports

The following reports and forms shall be submitted by the Contractor to the Project Engineer, who will forward them to the Region Finals Administrator:

1. 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.
2. 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.
3. Buy America Certification. Buy America Certification is required for steel and iron products.

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 Administrator, 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 Administrator 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 Administrator 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 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 accumulate in this category beginning at Final Acceptance and continuing until all required paperwork under the control of the Project Engineer has been submitted to the Finals Administrator. Final documentation submittal by the Project Engineer will not be delayed by outstanding disputes or claims. Final checking by the Finals Administrator on all submitted documentation will be done in accordance with established procedures except preparation of the final estimate and submission of CDOT Form 96. Any necessary corrections by the Finals Administrator will be done prior to and independent of any dispute or claim resolution. When disputes or claims are resolved, necessary changes will be made and the final estimate and CDOT Form 96 will be submitted to the Contractor.

For example, a project is accepted on January 15, and the Project Engineer submits all documentation except for required paperwork from the Contractor on February 15. The time that the Residency is responsible for will commence on January 15 and accumulate until February 15.

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, Buy America Certification Letter, Certificates of Compliance, certified payrolls), the final will be submitted to the Region for checking.

- b. Region Finals Administrator. Time will accumulate in this category beginning when the Project Engineer has submitted all documentation under the control of the Project Engineer. For example, the Region Finals Administrator receives the final documentation package from the field on March 27, and completes the Region review on April 7. The Contractor submits missing forms on April 14 and the Region sends out the Form 96 on April 16. The Form 96 is again received by the Region on April 28, and final payment is made on April 30. The Finals Administrator is responsible for the time from March 27 to April 7, April 14 to April 16, and from April 28 to April 30.
- c. Contractor. The Contractor shall be responsible for other periods of time when the only item holding up the review is the lack of documentation from the Contractor.

This procedure will ensure final payment is made as soon as possible.

When the Region is experiencing difficulty obtaining the required documentation from the Contractor the following escalation procedure will be used:

- a. The Project Engineer or Resident Engineer will notify the Contractor in writing regarding the need for missing documentation.
 - b. If the Contractor does not respond within 30 days, the Resident Engineer will escalate the issue to the appropriate Region Program Engineer.
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 Administrator will review the final project documentation to ensure that the field personnel responsible for creating and checking the project documentation have reasonably followed CDOT specifications, policies, and procedures.

A Final Documentation Risk Analysis will be used to determine the extent of the documentation review required. The Region Finals Administrator 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 RISK ASSESSMENT		
Project Number:		
Project Code Number:		
Description:		
Factor	Risk	
	High	Low
Final Cost/Bid Cost (More than 110% = High Risk).		
Project History (Construction problems?).		
Experience of Project Staff.		
Project Size (Number of pay items/project dollars).		
Complexity of Project (Phases, multiple construction types).		
Number and size of Change Orders.		
Consultant/CDOT Team Performance.		
Organization and Detail of Documentation.		
Percentage of Force Account Work (More than 10% = High Risk).		
Lump Sum Pay Items in excess of 10% of the project		
Comments:		

Region Finals Administrator

Date

FINAL DOCUMENTATION RISK ASSESSMENT FORM
Figure 100F

Final documentation will be reviewed as follows:

1. **Review Identification.** The Region Finals Administrator will identify information each has reviewed by using a red check mark.
2. **Periodic Field Reviews.** The Region Finals Administrator may conduct periodic documentation field reviews of active projects.
3. **Extensive Reviews.** The Region Finals Administrator 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.
 - a. Two pay items will be completely reviewed per each \$1 million of final Contract amount (e.g., three pay items would be completely reviewed on a project with a final Contract amount of \$1.5 million). Major or high risk pay items will be checked first.
 - b. If any significant documentation deficiencies are found, one additional pay items per \$1 million of final Contract amount will be reviewed. The Project Engineer will meet with the Region Finals Administrator to review the documentation and correct all deficiencies.
5. **Other Pay Item Reviews.** The Region Finals Administrator may 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 Administrator 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 Administrator 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 Administrator

After the Region Finals Administrator has received, reviewed, and checked all the required and applicable documentation, one copy each of the forms will be distributed by the Region Finals Administrator as illustrated in Figure 100G.

Document	Distributio n
Form 325	Contracts & Market Analysis Branch Records Center/Central Files Projects & Grants Section (Center for Accounting) Resident Engineer
Form 17	Contracts & Market Analysis Branch (Original) EEO Business Programs
EEO COC	Records Center/Central Files Resident Engineer
Form 1212	FHWA Records Center/Central Files Projects & Grants Section (Center for Accounting)
Form 96 (signed by Contractor)	Projects & Grants Section (Center for Accounting)(Original) Region Business Office Resident Engineer
Final Estimate	Projects & Grants Section (Center for Accounting)(Original w/original voucher) FHWA (Oversight projects only) Materials Engineer Resident Engineer
Form 250	Records Center/Central Files Region Materials Engineer Resident Engineer FHWA (Oversight projects only)
Buy America	Records Center/Central Files FHWA (Oversight projects only) Region Materials Engineer Resident Engineer
Form 473	Records Center FHWA (Oversight projects only) Materials & Geotechnical Branch Resident Engineer
Form 262/263	FHWA (Final time count only on Oversight projects)
List of Items Retained by Region	Records Center/Central Files Resident Engineer
As-Constructed Plans	Send to Printing & Visual Communications Center (Reproduction) <ul style="list-style-type: none"> • 1 set 8 ½" x 14" to Central Files • 1 e-file copy to Staff Right-of-Way • # of copies needed + original to Region

DISTRIBUTION BY REGION FINALS ADMINISTRATOR
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:

- i. Contractor submittals not received and discussion verifying that the Contractor has been informed of any deficiencies;
 - ii. Contract dispute issues and status of the issues;
 - iii. claims against the Department and status of the claims; and
 - iv. 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:
 - a. 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.
 - b. The notification will include the information presented in Items 1.a through 1.d above.
 - c. A copy of this notification will be forwarded to the Contracts and Market Analysis Branch.
 - d. 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:

- a. 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 Accounting and Reporting Section of the Division of Accounting and Finance and the Contracts and Market Analysis Branch.
- b. The request will explain why project charges cannot be placed in escrow or borne by a like-funded project.
- c. The Projects Accounting and Reporting Section will record the additional phase extension upon approval.
- d. 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.
- e. 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 one of the following applies:

1. The Contractor has filed a claim in accordance with subsection 105.23 of the *Standard Special Provision, Revision of Section 105 – Disputes and Claims for Contract Adjustments* [projects controlled by the 2005 Spec Book].
2. The Contractor has filed a claim in accordance with subsection 105.24 of the *Standard Specifications* [projects controlled by the 2011 Spec Book].
3. The amount of any payment is in dispute.

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 Administrator will notify the Projects Accounting & Reporting Section of the Division of Accounting and Finance 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:
 - a. The Projects Accounting & Reporting Section will charge the project for the amount of the labor complaint and escrow the funds.
 - b. Upon notification, the Region Finals Administrator will run the final pay estimate, close the project, and initiate or request initiation of Form 950.
 - c. When the final estimate is run, the amount of the labor complaint previously withheld from the Contractor will be zeroed out in SiteManager® and the term “Escrowed” entered in the supplemental item description field in the Items Window in SiteManager®.
 - d. The Contracts and Market Analysis Branch will track the labor complaint and notify both the Region Finals Administrator and the Projects Accounting & Reporting Section when the complaint has been resolved.
 - e. The Projects Accounting & Reporting 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:
 - a. The Region Finals Administrator will run the final estimate, close the project, and initiate or request initiation of Form 950.
 - b. When the final estimate is run, the amount of the lien previously withheld from the Contractor will be zeroed out in SiteManager® and “Escrowed” entered in the supplemental item description field in the Items Window in SiteManager®.
 - c. Simultaneously, the Finals Administrator will submit to the Projects Accounting & Reporting Section a request to escrow the funds. This written request will include:
 - i. project number,
 - ii. project code number (PCN),
 - iii. location,
 - iv. reason for escrow,
 - v. dollar amount escrowed,
 - vi. vendor number (from contractor payment voucher),
 - vii. contractor name, and
 - viii. the contractor address.
 - d. When the final pay estimate is processed for payment, the Projects Accounting & Reporting Section will establish an escrow for the same amount as the lien.
 - e. When the Projects Accounting & Reporting 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 Accounting & Reporting Section will notify the Region Finals Administrator 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, except when final quantities and additional payment may be affected:
 - a. The Region Finals Administrator 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.
 - b. Simultaneously, the Finals Administrator will submit to the Projects Accounting & Reporting Section a request to escrow the funds. This written request will include:
 - i. project number,
 - ii. project code number (PCN),
 - iii. location,
 - iv. reason for escrow,
 - v. dollar amount escrowed,
 - vi. vendor number (from contractor payment voucher),
 - vii. contractor name, and
 - viii. the contractor address.
 - c. Upon written notification by the Region Finals Administrator, the Projects Accounting & Reporting Section will prepare a journal voucher for the final payment and establish an escrow account.
 - d. When the Contractor submits the required forms, the Region Finals Administrator will notify the Projects Accounting & Reporting Section to release the escrowed final pay estimate amount to the Contractor.
 - e. If any of the overdue forms relate to 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

Administrator. The Region Finals Administrator will revise Form 96 and make distribution of copies. The Projects Accounting & Reporting Section will release the appropriate amount to the Contractor.

The Projects Accounting & Reporting Section will provide a quarterly status report of escrowed final pay estimate amounts to the Region Finals Administrator and the Area Engineers in 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.

_____	_____	_____
<i>Signature</i>	<i>Title</i>	<i>Date</i>

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:

- a. project inspection and testing;
- b. approval of material sources;
- c. record keeping (e.g., testing, inspection, pay documentation);
- d. preparation and approval of pay estimates;
- e. monitoring of project financial status; and
- f. 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:
 - a. If additional Federal-Aid funds are available and can be added to the project, the Region will complete the required budget actions.
 - b. 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, on the monthly pay estimate, or in the Field Review Form.

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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SECTION 123

COMBINED BRIDGE ENTERPRISE AND CDOT FUNDED PROJECTS

123.1 BACKGROUND

The Bridge Enterprise (BE) and CDOT are two separate entities with two separate funding sources. The BE is funded from an increase in registration fees for vehicles and is a result of legislation passed in Colorado in 2009. CDOT is funded from federal and state highway user taxes on gasoline.

CDOT projects can be set up in Trns*port® to accept several different funding sources. The funding sources are identified in Trns*port® and assigned a priority which defines the order in which each source of funding is spent. There are fundamentally four reasons why BE and CDOT funds cannot be comingled into one project this way.

1. *TABOR Legislation* – TABOR legislation prohibits one state governmental entity from giving money to another state governmental entity.
2. *Trns*port® Voucher System* – The Trns*port® system is set up to pay a contractor for work from a single owner, or CDOT, and is not capable of paying a contractor from two different owners. The Trns*port® Shazam/SAP interface that assigns a payment voucher from CDOT to the contractor would have to be modified to accommodate two owners.
3. *Construction Engineering (CE)* – CDOT has a CE pool from which indirect costs such as vehicles, buildings, Staff Services, etc. are funded. The BE will be billed directly for these types of charges. Because BE projects are not subject to the CE rate the CE work will have to be separated into two projects.
4. *SAP* – Numerous forms within SAP would require modification to accept a combination project (i.e. Form 65).

Region personnel must ensure that the work designed and performed is funded from the appropriate source. BE work must be accounted for and paid for separately from other work on the project and to do this the project should be entered into Trns*port® as a combination project (combo-project) before the project is advertised. Multiple Projects combined under one Contract/Proposal in the Trns*port® Project modules is a combo project. This Combo project approach allows for associating several projects under one Contract, with one Prime project, and one Proposal, for more efficient management both in our software system and in the field. Each project must begin as a separate project with a unique five-digit project code and associated funding in SAP. For further information and assistance with combo-projects, please contact the AASHTOWare Project and Labor Compliance Manager at (303) 757-9541.

123.2 GUIDANCE

1. Administer the project like any other typical project. However, as issues arise the PE and RE must keep BE funds absolutely separate from CDOT funds, or funds from any other source. Differences between the BE work and the other work should be clearly identified in the plans.
2. There could be split plan force account items in the BE category and the other work category. Be sure to post work items in the proper category in the Daily Work Report. Inspectors need to post to the correct item/category (i.e. MCR, OJT, Incentive/Disincentive, etc.) Refer to the category definitions above for additional information.
3. There will be a planned force account dollar value for Minor Contract Revisions (MCR) in the BE work category as well as the other work category.
4. Change Orders, if required, must be added to the appropriate category of work. For example, if liquidated damages need to be assessed, two separate lines for posting may need to be added (one for the BE work category and one for the other work category). The PE and RE will determine an accurate proportional difference in costs based on engineering judgment if the change order impacts

both the BE work and the other work. Cost justifications will need to clearly identify the funding source, or sources for the additional work.

5. Stockpile materials requests will have to be analyzed to determine if the materials will be used on the BE work, the other work, or as a portion of a like item. If the materials are part of a like item the materials will have to be proportioned and assigned to the appropriate category.
6. Since there is just one contract, retainage is not a concern and can be handled similarly to standard CDOT projects.

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