State of Colorado

Colorado Department of Transportation

Innovative Contracting Guidelines

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(revised)

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2.0 Acknowledgements

These guidelines were developed and prepared by the Innovative Contracting Branch of Staff Services. The guidelines reflect the lessons learned in the development, implementation and support of Design-Bid-Build Contracts.

Processes and Procedures referenced or implied in the guidelines are consistent with Department Policies, Procedures, Guidelines and Manuals. The guidelines are complimented by the Departments' Design-Build Manual, which should be referred to for design-build contracting needs.

The Innovative Contracting Branch thanks the Support Staff of the Project Development Branch for their assistance in making this document accessible on the Web for all interested users.

The Innovative Contracting Guidelines, as accepted and published, do not create or represent non-existent Colorado Department of Transportation Policy or Procedure.

3.0 Preface

Transportation facilities are directly related to our economic health, and quality of life. The demands on transportation facilities in the State of Colorado continue to grow, along with the competition for available funding and expectations of higher quality and improved levels of service. To ensure timely, efficient and effective responses to these demands the Colorado Department of Transportation supports Innovative Contracting.

Innovative Contracting is not one simple procurement method, or the application of non-traditional methods of development and delivery. It is a process of systematic decision-making, risk identification and allocation, identification of goals and objectives, identification and development of strategies, and creation of a competitive procurement environment.

The successes of these actions can result in effective and efficient delivery of programs and projects in less time, with less disruption, and at less cost. The benefits are far reaching, with direct and indirect impacts. The needs of the Department, funding providers, designers, constructors and end users are blended into cooperative partnerships focused on exceeding customer expectations. These aligned efforts are the foundation of Innovative Contracting.

The choices of Program and Project Delivery are varied. To assist in making these choices consideration should be given to; identifying and defining the complexity of the Program or Project; the Program or Project Goals; the allocation of Risk; the availability of Funding; the capability and experience of Contractor, and; the Departments' ability to develop, implement and manage the Contract. Consideration of these elements will support sound and justified usage of the options identified in the Innovative Contracting Matrix.

The Innovative Contracting Matrix identifies traditional and non-traditional methods of delivery for programs and projects. It also provides a general level (Low, Moderate, and High) of Owner risk associated with each of the innovative contracting methods. The Department traditionally uses Design-Bid-Build for delivery of its programs and projects; however Design-Build is an option that may be utilized where appropriate and approved. Within these two options multiple variations of provisions can be utilized. Risk assessment and allocation must be determined in the utilization of any and all of these options and provisions.

The assignment of risk between the Department and the Contractor will assist in determining which option or provision is best suited for use with a program or project. Low risk allocation to the Department may equate to a high risk allocation to the contractor, and conversely high risk allocation to the Department may equate to low risk allocation to the contractor. Understanding which risks can and must be controlled by the Department, and which risks can and should be shared with the contractor, will result in an efficient and effective bid package, a competitive bidding environment, and overall lower costs.

The Risk Assessment Matrix should be used to identify, compare and evaluate risk allocation for all projects, regardless of the selected provision or delivery method. It is recommended that projects or delivery methods having or creating high risks have specific risk assessment and allocation evaluation meetings.

The Innovative Contracting Manual provides:

- Definitions
- Guidelines
- Appropriate Uses
- Risks and Benefits
- User Authority or Approval Requests
- Documentation Requirements, and
- Reference Resources

for Design-Bid-Build Contracting methods.

Contact the Specifications Engineer when creating or modifying any and all Project Provisions to ensure compliance with Department Policies and Procedures. For additional guidance, and reference materials refer to the CDOT Design Guide (http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm). Assistance and training in Innovative Contracting can be provided by contacting the Innovative Contracting Branch of Staff Services at 303-757-9855.

4.0 Commencement and Completion of Work Contracts

Commencement and Completion of Work Contracts specify the method of measurement for Contract Time. The Department traditionally uses five measures of Contract Time. They are:

- Working Day Contracts
- Calendar Day Contracts
- Completion Date Contracts
- Floating Start Date Contracts
- Cost plus Time Contracts

The uses for each of these contracting methods are further discussed below.

4.1 Working Day Contracts

Definition: This Commencement and Completion of Work provision identifies the Contract duration requirements by Working Day. Subsection 108.07 of the 2005 Standard Specifications for Road and Bridge Construction describes in detail requirements for this application.

Guidelines / Applications: Working Day Contracts are best suited for projects with a limited or less-complex scope. Projects falling into this category may include; Resurfacing; Signing; Signalization; Pavement Marking; Fencing; Landscaping; Guardrail; or Bridge rail projects. The Contract Duration is specified by the number of Working Days. The duration of work identified in these contracts is production based. Allowance of additional Contract Time is not necessary for holidays or weekends as Contract Time is not charged for these days unless work is prosecuted. Partial, or less than full day time charges, are allowed for weather and when the contractor is unable to effectively prosecute the work. Project Standard Provisions require the contractor to prepare, utilize and submit a Project Schedule. The Project Schedule requirement information is identified in Subsection 108.03 of the 2005 Standard Specifications for Road and Bridge Construction. Two options are available for Project Scheduling purposes. They are "Bar Chart" and "Critical Path." For projects utilizing Work Day Contacts the use of a "Bar Chart" Project Schedule is acceptable and recommended.

Delays to beginning work for the delivery of materials (signal equipment, VMS signs and structures, Light Poles…) must be considered in the development of the project schedule (CDOT Form #859) and must be identified in the project provision for Commencement and Completion of Work. Provision shall identify the number of allowed days for delivery of materials, and a specified start date for the contract. To ensure delays are minimized, and for items which require Shop Drawing, it is recommended that the Commencement and Completion of Work provision require the Contractor to order materials after as soon as Reviewed drawings not requiring re-submittal have been received, and that evidence of the materials order be submitted to the Engineer.

To ensure timely completion of milestones, elements, segments, or entire projects, the use of supplemental provisions, in addition to Liquidated Damages, may be considered. They include, Lane Rental, Incentive/Disincentive, Liquidate Savings, and No Excuse Bonus. The use of Cost-Plus-Time (A+B) provisions is not to be used in combination with Working Day Contracts.

Risks: When determining the Contract Duration is vital that reasonable and achievable production rates be utilized along with logical sequencing of the Work. The use of an overly aggressive production rate creates a risk to the contractor. This risk may result in higher bid costs, a reduction in the number of bids submitted, or in extreme cases no responses to the bid request. Conversely, overly liberal rates create a risk to the Department that the work may not be effectively and efficiently prosecuted. Excessive Contract Durations result in higher Engineering

costs; higher user costs do to prolonged facility impacts; and enhanced competitiveness of inefficient contractors. Risk can be allocated more equitability by consulting the Industry and documenting feedback. Where possible, Industry Reviews are recommended for the purpose of reviewing constructability, sequencing and phasing, and identification of production rates to be used in determine the contract duration. The Contractor's submitted "Bar Chart" must be reviewed to determine compliance, completeness, and acceptability with Standard Provision requirements. Failure on either party's part to comply with project scheduling requirements may have adverse affects in a dispute or claim situation.

Benefits: Working Day Contracts reduce the risk of disputes and claims associated with weather sensitive work, or loss of production when only partial working hours can be achieved. This method offers flexibility to the Project Engineer when charging, restoring, suspending or adding Contract Time.

Authority / Approval: Use of Commencement and Completion of Work Provisions shall be consistent with Department and Region Policy. The Department Project Manager, or Resident Engineer, shall prepare an achievable project schedule to be used in determining and identifying the Contract duration. The schedule shall identify the salient features of work, a logical sequence for the work, and duration of time for each salient feature and logical sequence. This information shall be documented on CDOT Form #859.

Reporting: The CDOT Form #859 shall be transmitted to the Resident Engineer. The Resident Engineer shall review the form to determine; the acceptability of production durations for listed salient features; the logical progression of the work; the listing of any work day or work hour restrictions; the identification of any unique project requirement; and identification of a specified Project Scheduling method. After approval and signature by the Resident Engineer the form shall be forwarded to the Program Engineer for review, approval and processing.

Reference Resources: Commencement and Completion of Work Provisions may be found in Section 108.07 of the 2005 Standard Specifications for Road and Bridge Construction, and in the CDOT Project Special Provision Work Sheet website at:
http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005%20Innovative%20Specs/2005innov.htm

The CDOT Form #859 is available at: http://www.dot.state.co.us/FormsMgmt/

4.2 Calendar Day Contracts

Definition: This Commencement and Completion of Work provision identifies the Contract duration requirements by Calendar Day. Subsection 108.07 of the 2005 Standard Specifications for Road and Bridge Construction describes in detail requirements for this application.

Guidelines / Applications: Calendar Day Contracts are suited for projects which are expected to span multiple constructions seasons where work progress during non-traditional work seasons (late fall, winter, or early spring) is advantageous and desired. Projects typically identified for use of a Calendar Day Time count include; new construction; Reconstruction; Bridge Reconstruction; and Major Widening. The number of Calendar Days specified for the Contract Duration is production based, and includes concurrent contract time for the delivery of materials, holidays, weather and weekends. Less than full day time charges are only allowed for inclement weather when the Engineer directs the Contractor not to work for the safety of the traveling public. Project Standard Provisions require the contractor to prepare, utilize and submit a Project Schedule. The Project Schedule requirement information is identified in Subsection 108.03 of the 2005 Standard Specifications for Road and Bridge Construction. Two options are available for Project Scheduling purposes. They are "Bar Chart" and "Critical Path." For projects utilizing Calendar Day Contacts the use of a "Critical Path" Project Schedule is recommended.

To ensure timely completion of milestones, elements, segments, or entire projects, the use of supplemental provisions, in addition to Liquidated Damages, may be considered. They include, Lane Rental, Cost-plus-Time (A+B), Incentive/Disincentive, Liquidate Savings, and No Excuse Bonus.

Risk: When determining the Contract Duration is vital that reasonable and achievable production rates be utilized along with logical sequencing of the Work. The use of overly aggressive production rates creates a risk to the contractor. This risk may result in higher bid costs, a reduction in the number of bids submitted, or in extreme cases no responses to the Bid request. Conversely, overly liberal rates create a risk to the Department that the work may not be effectively and efficiently prosecuted. Excessive Contract Durations result in higher Engineering costs; higher user costs do to prolonged facility impacts; and enhanced competitiveness of inefficient contractors. Risk can be allocated more equitability by consulting the Industry and documenting feedback. Where possible, Industry Reviews are recommended for the purpose of reviewing constructability, sequencing and phasing, and identification of production rates to be used in determine the contract duration. The Contractor's submitted "Critical Path" Project Schedule must be reviewed to determine compliance, completeness, and acceptability with Standard Provision requirements. Failure on either party's part to comply with project scheduling requirements may have adverse affects in a dispute or claim situation.

Caution should be taken in determining delivery time for long-lead items such as structural steel members (girders); VMS sign structures, high-mast lights, mast arm signal poles, or other specialty items not readably available. The Staff Services Branch should be contacted to assist in verifying an appropriate expectation. If specific work days and working hours are desired, or necessary, they must be included in the project special provisions. Unless otherwise specified the contractor has the opportunity to work 24/7, and the Department must respond with all required resources to ensure the contractor's progress is not impeded.

Benefits: Calendar Day Contracts offer the Contractor significant opportunities to schedule and complete work. Lost of production is more likely to be recovered when the contractor is able to work extended hours of any week day. Equally, the opportunity to finish early, or gain production is also made available utilizing a Calendar Day contract. The use of a "Critical Path" Project Schedule provides significant detail and insight into the Contractor's work. Deviations from schedules or losses in production can be readably identified from the submitted information.

This information, when utilized as intended, may allow negative impacts to be mitigated sooner, thus keeping the project "on time and under budget." In addition, this information may also be utilized by the Department for effective and efficient scheduling of staffing resources.

Authority / Approval: Use of Commencement and Completion of Work Provisions shall be consistent with Department and Region Policy. The Department Project Manager, or Resident Engineer, shall prepare an achievable project schedule to be used in determining and identifying the Contract duration. The schedule shall identify the salient features of work, a logical sequence for the work, and duration of time for each salient feature and logical sequence. This information shall be documented on CDOT Form #859.

Reporting: The CDOT Form #859 shall be transmitted to the Resident Engineer. The Resident Engineer shall review the form to determine; the acceptability of production durations for listed salient features; the logical progression of the work; the listing of any work day or work hour restrictions; the identification of any unique project requirement; and identification of a specified Project Scheduling method. After approval and signature by the Resident Engineer the form shall be forwarded to the Program Engineer for review, approval and processing.

Reference Resources: Commencement and Completion of Work Provisions may be found in Section 108.07 of the 2005 Standard Specifications for Road and Bridge Construction, and in the CDOT Project Special Provision Work Sheet website at:
http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005%20Innovative%20Specs/2005innov.htm

The CDOT Form #859 is available at: http://www.dot.state.co.us/FormsMgmt/

4.3 Completion Date Contracts

Definition: This Commencement and Completion of Work provision identifies the Contract duration requirement as a Completion Date. All work must be completed on or before the specified date. A Contract duration (Working Day or Calendar Day) is not utilized or specified.

Guidelines / Applications: The use of a Completion Date Contract is acceptable for nearly all projects. This application is typically utilized when there is a need, or desire, to complete work by a specified date. The need or desire may include impacts or delays to facility users, safety, seasonal restrictions, sequential phasing of multiple projects, funding constraints requiring expenditure rather than encumbrance or commitments to entities or elected officials, or the need to ensure staffing resources are available for other assignments. No extension of the completion date is allowed for inclement weather, foreseeable causes, or conditions under the control of the Contractor.

Project Standard Provisions require the contractor to prepare, utilize and submit a Project Schedule. The Project Schedule requirement information is identified in Subsection 108.03 of the 2005 Standard Specifications for Road and Bridge Construction. Two options are available for Project Scheduling purposes. They are "Bar Chart" and "Critical Path." The specification and use of a "Critical Path" Project Schedule is recommended for all projects utilizing a Completion Date Contract.

To ensure work is begun timely the use of a Fixed Start Date, or a Floating Start Date, may be considered in combination with the specified Completion Date. In addition, the use of a supplemental provision to entice and reward early completion may be considered. Provisions available to accomplish this goal are; Cost-Plus-Time bidding with an Incentive, or No Excuses Bonus.

Risks: The Department must ensure the overall duration of time available is reasonable and completion is achievable. If these conditions are met the risk to both the Department and Contractor are minimized, and the project is likely to be completed "on time and under budget." If these conditions can not be verified a significant risk is created for the Department and for the Contractor. The Department's risks include; the project will not be completed on the specified date; increased costs for extended engineer support; increased potential for losses related to disputes and claims; loss of creditability; potential negative impacts to subsequent dependent projects; and staffing resources not being available to support other projects and or needs. The Contractor's risks include; financial loss for department specified damages; losses for extended labor efforts and project support; and loss of ability to bond, bid and construct other projects. Seasonal and weather impacts must be considered so as not to create additional burden and risks.

Benefits: Utilization of this provision provides the Department and Contractor the ability to schedule staffing resources based on identified completion dates. It promotes proactive planning to respond to immediate and future project needs. A specified completion date sets an ultimate goal, and supports the expectation that both parties will work in partnership as a team to allocate the necessary resources to encourage and ensure success.

Authority / Approval: Use of Commencement and Completion of Work Provisions shall be consistent with Department and Region Policy. Although the number and type of Contract days are not specified the Department Project Manager, or Resident Engineer, shall prepare an achievable project schedule to be used in determining and identifying the Completion Date. The schedule shall identify the salient features of work, a logical sequence for the work, and duration of time for each salient feature and logical sequence. This information shall be documented on the CDOT Form #859.

Reporting: The CDOT Form #859 shall be transmitted to the Resident Engineer. The Resident Engineer shall review the form to determine; the acceptability of production durations for listed salient features; the logical progression of the work; the listing of any work day or work hour restrictions; the identification of any unique project requirement: and identification of a specified Project Scheduling method. After approval and signature by the Resident Engineer the form shall be forwarded to the Program Engineer for review, approval and processing.

Reference Resources: Commencement and Completion of Work Provisions may be found in Section 108.07 of the 2005 Standard Specifications for Road and Bridge Construction, and in the CDOT Project Special Provision Work Sheet website at:
http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005%20Innovative%20Specs/2005innov.htm

The CDOT Form #859 is available at: http://www.dot.state.co.us/FormsMgmt/

4.4 Fixed or Floating Start Date Contracts

Definition: This Commencement and Completion of Work provision identifies a Fixed or Floating Start Date. Fixed or Floating Start Date Contracts are utilized in combination with Working Day, Calendar Day or specified Completion Date Contracts. Fixed Start Date Contracts identify a date on which Contract Time charges shall begin, and the Contractor is expected to start work. Floating Start Date Contracts may specify work to begin within a range of dates, or at the decision of the Contractor.

Guidelines / Applications: Floating Start Date Contracts allow for management of impacts that are undeterminable yet acknowledgeable, or predictable but not definitively schedulable. Examples of these conditions may be; market supply-and-demand trends; materials processing and stockpiling; laborer and equipment scheduling; availability of contractors or sub-contractors; the need to schedule work at other locations of higher priority. The use of this application is not recommended when; the Department needs to have increased control; there is an urgent need to the complete work; there is a significant impact or delay to facility users; or when work must be completed due to safety restrictions. However, by utilizing a Fixed Start Date Contract a project, or project with multiple locations, can be managed to; minimize delays and durations of construction activities at work sites; minimize suspensions of work for seasonal impacts; ensure critical or competing priorities are addressed responsively.

Project Standard Provisions requiring the contractor to prepare, utilize and submit a Project Schedule are required. The Project Schedule requirement information is identified in Subsection 108.03 of the 2005 Standard Specifications for Road and Bridge Construction. Two options are available for Project Scheduling purposes. They are “Bar Chart” and “Critical Path.” The specification and use of a “Critical Path” Project Schedule is recommended for complex projects. The use of a “Bar Chart” Project Schedule is suitable for projects of limited scope or complexity.

To ensure completion of milestones, elements, segments, or entire projects, the use of supplemental provisions, in addition to Liquidated Damages, may be considered. They include, Lane Rental, Incentive/Disincentive, Liquidate Savings, and No Excuse Bonus.

Risks: Use of these applications requires detailed consideration in the scheduling and prioritization of projects from both the Department and Contractor. Attention to scheduling impacts, unique location needs and specified project constraints must be given. If these actions are not taken the potential for negative cost impacts is significant and the desired completion results are unlikely. Original Contract duration which are overly aggressive, or restrictive, may increase projects costs, increase the likelihood of disputes or claims, and reduce bidding competition. Equally so, Original Contract durations which are excessive in duration may result in higher Engineering costs; prolonged facility impacts; and enhanced competitiveness of inefficient contractors. The Department must ensure the Contact Duration is reasonable and achievable. Floating Start Date Contracts which allow the Contractor to determine the Start Date are not recommended for use unless combined with a Specified Completion Date Contract, or another means of ensuring effective and efficient prosecution of the work.

Benefits: When potential challenges are taken into account both parties are offered maximum flexibility in accomplishing completion “on time and under budget.” This may result in efficient and effective utilization of staffing resources and potential cost savings. This “just-in-time” resource allocation method allows both the Department and Contractor the opportunity to plan and schedule activities without delay or additional cost.

Authority / Approval: Use of Commencement and Completion of Work Provisions shall be consistent with Department and Region Policy. The use of a Floating Start Date provision or Fixed Start provision shall be discussed with the Resident Engineer and Program Engineer to

ensure full understanding of potential related impacts. The Department Project Manager, or Resident Engineer, shall prepare an achievable project schedule to be used in determining and identifying the Contract duration. The schedule shall identify the salient features of work, a logical sequence for the work, and a duration of time for each salient feature and logical sequence. This information shall be documented on CDOT Form #859.

Reporting: The CDOT Form #859 shall be transmitted to the Resident Engineer. The Resident Engineer shall review the form to determine; the acceptability of production durations for listed salient features; the logical progression of the work; the listing of any work day or work hour restrictions; the identification of any unique project requirement; and identification of a specified Project Scheduling method. After approval and signature by the Resident Engineer the form shall be forwarded to the Program Engineer for review, approval and processing.

Reference Resources: Commencement and Completion of Work Provisions may be found in Section 108.07 of the 2005 Standard Specifications for Road and Bridge Construction, and in the CDOT Project Special Provision Work Sheet website at:
http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005%20Innovative%20Specs/2005innov.htm

The CDOT Form #859 is available at: http://www.dot.state.co.us/FormsMgmt/

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4.5 Cost-Plus-Time or (A + B) Contracts

Definition: Cost-plus-time, or A+B contracts involve time with an associated cost for the determination of Award based on low-bid. Under the A + B method, each bid submitted consists of two components:

- The "A" component is the traditional bid for the contract items and is the dollar amount for all work to be performed under the contract.
- The "B" component is a "bid" of the total number of calendar days required to complete the project as estimated by the bidder.

The number of calendar days, "B" is multiplied by the road user cost furnished by the Department and added to the "A" component to obtain the total bid. *This formula is only used to determine the lowest bid for award and is not used to determine payment to the contractor.*

(A) + (B x Daily Cost)

The Daily Cost is based on the failure to complete the entire project by the specified date, and is determined using the C.D.O.T. Work Zone – User Cost Program. The Daily Cost utilized shall be documented in the project file. Note: The Work Zone User Cost Program may be used to calculate full closures, individual lane closures, multiple lane closures, and the operational impacts of cuing which result from individual or multiple lane closures.

To ensure effective and efficient completion of work the use of an incentive/disincentive provision it typically incorporated into the contract. The incentive amount must be capped and identified as such in the Contract. Incentives and disincentives utilized to gain early completion of the entire project are determined using the CDOT *Work Zone – User Cost Program*. Incentives and disincentives utilized to gain early completion of elements or operational features are also determined using the CDOT *Work Zone – User Cost Program*.

Guidelines / Application: All Cost-Plus Time (A + B) Contracts shall specify a Fixed Completion Date or a number of Calendar Days for the contract duration. Working Day time counts shall not be used in Cost-Plus Time (A + B) contracts. When a Fixed Completion Date is specified a "start date" shall also be identified. The number of calendar days between the specified start date and fixed completion date shall be considered as the maximum number of calendar days allowed for completion of the work, and as an acceptable response the to the "B" component of the bid proposal. *Cost-Plus-Time or A+B* bidding should be considered for use on any project that has high road-user delay impacts, when there is an urgent need to "get in and get out" as quickly as possible, or where there may be significant impacts to adjacent property owners or businesses. Multiple variations of the A+B provision are available for use. They are identified as the "Simple," "Substantial," and "Time Limitation." The "Substantial" usage is utilized to identify specific elements, phases, traffic configurations or milestones of work which shall be completed before Acceptance is issued. The "Time Limitation" usage includes a maximum number of calendar days allowed for completion. Any Contractor submitted response for "B" that exceed the Departments' specified "B" is considered "non responsive" and shall not be accepted.

Incentives ("I") are determined based on the number of days the work is completed early as compared to the number of bid calendar days "B" multiplied by the Daily Cost. I = (B-C) x daily cost. "C" represents the number of actual days taken to complete the work. Incentives are paid only for completion prior to the number of days the contractor identifies in their bid response.

Disincentives ("D") are determined based on the number of days the work is completed late, as compared to the number of bid calendar days "B" multiplied by the Daily Cost. D = (C-B) x daily

cost. "C" represents the number of actual days taken to complete the work. Disincentives are applied for each calendar day work continues beyond the contractor proposed number of calendar days. Note: The Disincentive is also applied and accumulated in addition to Liquidated Damages for each calendar days that work continues beyond the number of responsive calendar days or fixed completion date identified in the Contract.

Project Standard Provisions require the contractor to prepare, utilize and submit a Project Schedule. The Project Schedule requirement information is identified in Subsection 108.03 of the 2005 Standard Specifications for Road and Bridge Construction. Two options are available for Project Scheduling purposes. They are "Bar Chart" and "Critical Path." The specification and use of a "Critical Path" Project Schedule is recommended for all projects utilizing Cost-Plus-Time bidding. Project Scheduling submittals for updates and review are vital, and require a thorough understanding to ensure accuracy and completeness reflecting true project progress and planning.

Advertisement periods should reflect a minimum of five weeks for bidders to prepare reliable detailed schedules. For extremely complex projects Advertisement periods of six to eight weeks are not uncommon.

Risks: Cost-Plus-Time contracts inherently demand higher production and innovation to meet or exceed expectations. As a result both the Department and Contactor are at risk to ensure adequate staffing resources are available and responsive. Failure to ensure this on either party's part may result in a failure to compete the project as desired, and may have significant negative financial impact. These risks are heightened by the offering of an incentive, which, if not met will result in an equal disincentive. Because of the complex nature of projects using these provisions any potential dispute or claim must be identified and resolved early to prevent further impacts. It is vital that projects of this nature support and utilize partnering and teamwork. Failure to accomplish this trust may lead to delays, disputes, claims and increased cost to both the Contractor and the Department.

Benefits: Projects utilizing Cost-Plus-Time bidding are likely to be completed in less time, with less disruption and at less cost. Because all bidders must prepare a well-thought-out schedule for the work, including resource availability for subcontractors, and determine the number of contract days they will take to complete the work, they have the highest incentive and level of accountability to ensure success. This "innovation" pays equal dividends to the Department by providing improvements to facility users sooner, thus reducing engineering costs while building accountability.

User Authority / Approval Request: Usage of Cost-Plus-Time provisions shall require discussion with the Resident Engineer and approval from the Program Engineer. Notification shall be given to the Construction Cost Estimates and Market Analysis Branch of Staff Services upon approval for usage by the Program Engineer. The number Calendar Days specified or available up to the specified Completion Date shall be determined by the Department Project Manager, or Resident Engineer. This determination shall be based on an achievable project schedule identifying the salient features of work, a logical sequence for the work, and duration of time for each salient feature and logical sequence. This information shall be documented on the CDOT Form #859.

Reporting: The CDOT Form #859 shall be transmitted to the Resident Engineer. The Resident Engineer shall review the form to determine; the acceptability of production durations for listed salient features; the logical progression of the work; the listing of any work day or work hour restrictions; the identification of any unique project requirement; and identification of a specified Project Scheduling method. After approval and signature by the Resident Engineer the form shall be forwarded to the Program Engineer for review, approval and processing.

Reference Resources: Cost-Plus-Time provisions may be found at:
http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005%20Innovative%20Specs/2005innov.htm

The CDOT Work Zone- User Cost Program may be found at:
http://www.dot.state.co.us/ECSU/Download.asp#CdotWorkZone

The CDOT Form #859 is available at: http://www.dot.state.co.us/FormsMgmt/

5.0 Warranty Contracts

Definition: Warranty Contracts require the contractor to guarantee all, or portions of a construction project, to be free of defects in materials and workmanship for a period of time, or guarantee performance of a completed improvement over a longer life. Work items have material and workmanship performance requirements, or non-compliance thresholds, which are identified in the project provisions. Performance requirements and thresholds must be measurable. The contractor is required to correct deficiencies that occur during the warranty period. Warrantee provisions may also require a Preventative Maintenance Schedule from the Contractor to be utilized during the warrantee period.

Guidelines / Applications: CDOT currently uses Warranty provisions for Rigid (Concrete) and Flexible (Hot Bituminous Pavement) pavements. The Warranty periods range between three (3) and five (5) years in length. Experimental projects with warranty periods up to ten (10) years have been implemented and are under evaluation. Warranty provisions are also allowed for use in Design-Build procurement processes. FHWA must approve the use of Warranty Provisions on all National Highway System (NHS) projects. The use of Warranty provisions require Industry input in the project and warranty element identification. Warranty provisions are not allowed for use to accomplish general maintenance activities. The use of Federal-aid funds for routine maintenance is prohibited by law. Warranty provisions, by CFR, shall be for specific construction products or features. Warranties are prohibited for items not within the control of the contractor. During the warrantee period it is vital that the Departments' Engineering and Maintenance forces, along with the Contractor, work together to ensure the schedule of Preventative Maintenance is followed. Prescriptive provisions are not recommended for use in warrantee applications. However, the use and development of performance provisions are recommended. The "Policy Memo" on Warrantees shall be reviewed before proceeding with inclusion of any Warrantee Contract.

Risks: The Department must insure that the warranty guidelines are reasonable and enforceable. If the guidelines are too restrictive, or place an undue burden on the contractor, it may be impossible to enforce the warranty, thereby negating any benefits. It is also possible that submitted bid costs may exceed the project budget. Consideration to "Bid Bonding" impacts on the Contractor, Insurer, and Product providers must be considered. The cost of inspections during the warranty period for items such as lane closures, traffic control, equipment, and staffing wages must be estimated, funded and budgeted. Prescriptive warrantee provisions are likely to be challenged and are generally un-enforceable.

Benefits: During the warranty period Department costs for preventative maintenance activities are reduced, thus allowing financial resources, and staffing resources to be utilized in other priority areas. Performance warrantee provisions may allow for a reduced level of inspection during construction, thus allowing staffing resources to be aligned in areas of need or on other projects. Performance warrantee provisions seek quality in materials, workmanship and performance. When implemented in management processes and construction applications it is likely that the Contractor, Department, and tax paying citizens will benefit.

User Authority / Approval Request: Warranty use shall be restricted to projects identified and agreed upon by the Region Transportation Director, Program Engineer, Resident Engineer, and Materials Engineer. Cooperative communication with the Industry, Staff Materials Engineer, and affected Staff Branches (Project Development, Bridge, Research, and Innovative Contracting) as well as the Chief Engineer is required. FHWA must approve the use of Warranty Provisions on all National Highway System (NHS) projects.

Reporting: Use of all Warranty provisions shall be reported for per each usage at the time of advertisement by Resident Engineer, or Project Manager to the Contracts and Agreements Branch of Staff Services. Annual reports of warrantee inspections shall be submitted by Region's Resident Engineer, or Project Manager to the Project Development Branch of Staff Services.

Reference Resources: Applicable guidelines for uses of Warranty provisions may be found in Chapter 16 of the CDOT Design Guide.
http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm

Policy Memo #13 on Warranties may be found at:
http://www.dot.state.co.us/DesignSupport/Policy%20Memos/013%20-%20Dec%202002%20warranty.doc

6.0 Value Engineering Contracts

Definition: Value Engineering encourages the Contractor to identify, evaluate, develop, offer and implement innovative solutions to project challenges beyond the solutions presented by the Department in the original plans and specifications. The offering must be equal to or better than the original plan solution. It must be of lower cost and improved quality. Value Engineering Change Proposals (VECP) are further defined, and allowed, in subsection 104.07 of the 2005 Standard Specifications for Road and Bridge Construction and as revised by the Standard Special Provision referenced in the "Note" below.

Guidelines / Applications: Specifications do not allow Value Engineering Change Proposals to be used to provide substitution for N.E.P.A. requirements. Value Engineering Change Proposals can only be submitted by the Contractor after Contract Award. All bid proposals and bid prices shall be based on the work as presented in the owners' original plan. The Department is not required to accept a VECP, and the Contractor has no claim (compensable or non-compensable) against the Department for rejection of any VECP submitted for consideration. Under current provisions all cost savings that result from accepted Value Engineering Change Proposal shall be equally shared by the Contractor and Department.

Note: A Standard Special Provision for Value Engineering has been finalized for use on all projects. The special provision classifies Value Engineering Change Proposals (VECP) by two categories, Category "A" and Category "B." The new provision allows for bridge structures to be included in proposals. However, proposals for pavement design and materials selection are not being considered for inclusion, approval or acceptance. Category "A" proposals have a realized cost savings of $250,000 or more, and Category "B" proposals have a realized cost saving of less than $250,000. To ensure consistent application and fairness the revised provision identifies the review process for approval and acceptance of all VECP's. For more information on VECP contact the Project Development Branch of Staff Services.

Risks: The Department must insure that the VECP is acceptable to all parties (Staff Bridge, Region Specialty Sections, and FHWA). Considerable review and evaluation is required from all stake holders – thus scheduling time to review and document input may be considerable. Consideration must be given to accumulative impacts of the proposal. This includes environmental impacts, duration of activity impacts to facility users or adjacent property occupants, previously agreements or project commitments, impacts to right-of-way, impacts to utilities, phasing, seasonal work restrictions, DBE commitments to the Contract, and the overall performance and service life of the proposed modification. A thorough evaluation is a must. Incomplete proposals are unacceptable, and shall be returned to the Contractor for correction and re-submittal.

Benefits: Value Engineering encourages both the Department and Contractor to develop and implement improved construction techniques, alternative materials, and other innovations. The results of these actions may reduce overall constructions durations, provide cost savings to both parties, reduce impacts and delays to facility users, and set new higher standards for future projects. Successful VECP's may also build trust and teamwork between the Contractor and Department.

User Authority / Approval Request: Use of provisions other than those included by Standard Specification shall be developed in cooperation with the Project Development Branch of Staff Services. All other applications are allowed by inclusion of the Standard Provision. All Value Engineering Change Proposals shall be brought to the attention of the Resident Engineer and Program Engineer. Proposals on projects which have Federal Funding shall be brought to the attention of the FHWA Area Engineer.

Reporting: All Value Engineering Proposals shall be reported to the Project Development Branch of Staff Services.

Reference Resources: The Standard Special Provision for Value Engineering may be found at: http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005SSP/104vecp.doc

7.0 Incentive / Disincentive Contracts

Definition: Incentives provisions provide daily incentives to the Contractor for each calendar or working day that a specified milestone or salient feature is completed ahead of a prescribed schedule. The prescribed schedule may specify a specific date, or an allowed duration of days to complete the work. Failure to complete the work as specified shall result in the Contractor being assessed a daily Disincentive. The daily Disincentive amount shall be equal to the Incentive amount, and applied for each calendar day or working day by which the specified date or duration is exceeded.

The use of "Quality" incentives may also be considered when justified and approved. Justification may include benefits to reducing life cycle costs and or increase service life. An example would be the desired use of a Material Transfer Device for the placement of Hot Bituminous Materials. The Department established value per ton for materials placed using the device would be provided as an Incentive payment. The use of the equipment shall not be specified as mandatory, and shall be an option at the Contractors' discretion.

Guidelines / Applications: The Incentives / Disincentive provision may be applied where warranted and justified on virtually all types of projects. Justification may include the need to complete projects or elements early due to various conditions such as project milestone commitments, local official or community commitments, construction impacts, user delay, phase openings, seasonal restrictions or other justifications as documented. Project types may range from night-time resurfacing projects to major interchange construction projects. The application of a Disincentive is in addition to any and all other Contract Payment Reduction actions. The maximum number of contract day eligible, and or maximum amount of incentive to be paid shall be specified. The Incentive/Disincentive amount shall be calculated and based on the *Work Zone – User Cost Program*, and shall be documented in the Project File. Incentives are not to be used to ensure Regulations, or requirements of Permits, are complied with. The Contractor shall comply with all Regulations and Permit requirements under standard Contract practice.

Risks: The Department must insure that the specified timeframe, milestone date, or completion date for which the Incentive is being offered is reasonable, and is neither to restrictive or excessive. Failure to ensure the specified time frame is reasonable may result in fewer potential bidders, higher bid costs, and possible budget overruns. Overly excessive time durations may result in increased engineering costs, un-necessary user impacts, and enhanced competitiveness of inefficient contractors. The Department must also ensure that all reasonable and diligent actions have been taken to prevent "owner caused" delays and impacts. Failure to negate "owner caused" delays and impacts may result in cost overruns, disputes and claims, and failure to achieve the specified goal. The Department's Resident Engineer must insure that the project budget can support payment of the incentive.

Benefits: Incentive/Disincentive contracts help to ensure the project or milestone of a project is completed on or before the specified date. The additional offered compensation may result in the contractor dedicating sufficient resources to ensure the goals and objective are successfully met. When combined with reasonable timeframes (not constrained or excessive) bid conditions favor effective and efficient contractors. Contractors able to plan and perform work in this manner are able to reduce unit bid prices, thereby gaining a bid advantage, and recover compensation through earning incentives.

User Authority / Approval Request: The Incentives / Disincentive provision use shall be identified and agreed upon by the Resident Engineer and Program Engineer.

Reporting: Use of the Incentives / Disincentive provision shall be documented by the Resident Engineer and reported per each use at the time of advertisement to the Project Development Branch of Staff Services.

Reference Resources: Applicable guidelines for uses of Incentives may be found in Chapter 16 of the CDOT Design Guide.
http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm

The CDOT *Work Zone – User Cost Program* may be found at:
http://www.dot.state.co.us/ECSU/Download.asp#CdotWorkZone

7.1 Lump Sum Incentive

Definition: A Lump Sum Incentive provides the Contractor a predetermined incentive amount for completing a specified milestone or salient feature by a prescribed schedule or date. The number of days by which the Contactor exceeds the expectation does not alter the amount of incentive earned. Failure to complete the work on or ahead of the prescribed schedule shall result in the Contractor being assessed a Lump Sum Disincentive. The Lump Sum Disincentive amount shall be equal to the offered Incentive amount, and shall not increase or decrease with the duration of time.

Guidelines / Applications: Lump Sum Incentives are utilized when then there is no appreciable gain, or identified need, to finish the work earlier than the prescribed schedule or date. Unlike other methods for incentive payments no additional compensation will be awarded to the contractor for finishing the work sooner than prescribed schedule or date. When justified and warranted the Lump Sum Incentive may be applied on virtually any type of project. Justification may include the need to complete projects or elements early due to various conditions such as project milestone commitments, local official or community commitments, construction impacts, user delay, phase openings, seasonal restrictions or other justifications as documented. Project types may range from resurfacing projects to bridge replacement projects. Application of a Disincentive is in addition to any and all other Contract Payment Reduction actions. The amount of the Lump Sum Incentive shall be calculated and based on the *Work Zone – User Cost Program*, and shall be documented in the Project File. Incentives are not to be used to ensure Regulations, or requirements of Permits, are complied with. The Contractor shall comply with all Regulations and Permit requirements under standard Contract practice.

Risks: The Department must ensure that the specified timeframe, milestone date, or completion date for which the Lump Sum Incentive is being offered is reasonable, and is neither to restrictive or excessive. Failure to ensure the specified time frame is reasonable may result in fewer potential bidders, higher bid costs, and possible budget overruns. Overly excessive time durations may result in increased engineering costs, un-necessary user impacts, and enhanced competitiveness of inefficient contractors. The Department must also ensure that all reasonable and diligent actions have been taken to prevent “owner caused” delays and impacts. Failure to negate “owner caused” delays and impacts may result in cost overruns, disputes and claims, and failure to achieve the specified goal. The Department’s Resident Engineer must insure that the project budget can support payment of the incentive.

Benefits: Lump Sum Incentive contracts help to ensure the project or milestone of a project is completed on or before the specified date. The additional offered compensation may result in the contractor dedicating sufficient resources to ensure the goals and objective are successfully met. When combined with reasonable timeframes (not constrained or excessive) bid conditions favor effective and efficient contractors. Contractors able to plan and perform work in this manner are able to reduce unit bid prices, thereby gaining a bid advantage, and recover compensation through earning incentives.

User Authority / Approval Request: The Lump Sum Incentive provision use shall be identified and agreed upon by the Resident Engineer and Program Engineer.

Reporting: Use of the Lump Sum Incentives provision shall be documented by the Resident Engineer and reported per each use at the time of advertisement to the Project Development Branch of Staff Services.

Reference Resources: Applicable guidelines for uses of Incentives may be found in Chapter 16 of the CDOT Design Guide.
http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm

The *Work Zone – User Cost Program* may be found at:
http://www.dot.state.co.us/ECSU/Download.asp#CdotWorkZone

7.2 Liquidated Savings

Definition: Liquidated Savings is an incentive payment to the Contractor for each calendar or working day that the entire project (including punch list work) is completed ahead of the prescribed schedule or completion date. The amount of the daily incentive payment is identified in subsection 108.071 of the 2005 Standard Specifications for Road and Bridge Construction.

Guidelines / Applications: The Liquidated Savings provision is suited for projects with a limited scope, few salient features, and budgets under $500,000.00. Scopes of work for these projects may include fencing, pavement marking, signalization, and guardrail. Because of the limited available budget the use of other incentive methods is not justifiable or affordable. The Liquidated Savings provision offers a modest amount of incentive that would normally not be offered. The amount shall be calculated and based on an Estimated Original Contract Amount, and documented in the Project File. The maximum number of contract day's eligible, and or maximum amount of Liquidated Savings to be paid shall be specified.

Risks: The Department must ensure that the project budget can support payment of the incentive, and that the specified contract duration or completion date is reasonable, and is neither to restrictive or excessive. Overly constrained time durations may result in fewer bidders, high bid costs, potential budget overruns, and an increased number of disputes and or claims. Overly excessive time durations may result in increased engineering costs, un-necessary user impacts, and enhanced competitiveness of inefficient contractors.

Benefits: Liquidated Savings contracts help to ensure the project or milestone of a project is completed on or before the specified date. The additional offered compensation may result in the contractor dedicating sufficient resources to ensure the goals and objective are successfully met. When combined with reasonable timeframes (not constrained or excessive) bid conditions favor effective and efficient contractors. Contractors able to plan and perform work in this manner are able to reduce unit bid prices, thereby gaining a bid advantage, and recover compensation through earning incentives. The amount of the savings is easily calculated based on the Liquidated Damages Table.

User Authority / Approval Request: The Liquidated Savings provision use shall be identified and agreed upon by the Resident Engineer and Program Engineer.

Reporting: Use of Liquidated Savings provision shall be documented by the Resident Engineer and reported per each use at the time of advertisement to the Project Development Branch of Staff Services.

Reference Resources: Applicable guidelines for uses of Incentives may be found in Chapter 16 of the CDOT Design Guide.
http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm

The Liquidated Savings provision may be found at: Revision of Section 108 Liquidated Incentive.

7.3 No Excuses Bonus

Definition: The No Excuses Bonus provides the Contractor with a bonus to complete the entire project, or identified element of the project, within a specified time frame or by a specified date. However the Contractor will not receive the bonus, or any portion of the bonus, if they fail to meet the requirements regardless of the reason. This includes weather, utility delays, unforeseen conditions, modifications in contract time, work completed by contract negotiations and or change orders, or any other factual or non-factual basis. Simply stated – there are "no excuses."

Guidelines / Applications: The No Excuses Bonus provision may be applied to any project with a need to complete projects or elements early due to various conditions such as milestone commitments, local official or community commitments, construction impacts, user delay, phase openings, seasonal restrictions or other justifications as documented. Project types may range from night-time resurfacing projects to major interchange construction projects. The amount of the bonus shall be calculated and based on *Work Zone – User Cost Program and* documented in the Project File.

Risks: The Department must ensure that the project budget can support payment of the Bonus, and that the specified contract duration or completion date is reasonable, and is neither to restrictive or excessive. Overly constrained time durations may result in fewer bidders, high bid costs, potential budget overruns, and an increased number of disputes and or claims. Overly excessive time durations may result in increased engineering costs, un-necessary user impacts, and enhanced competitiveness of inefficient contractors. Caution should be given to ensure "Differing Site Conditions" or potential for "Significant Changes in the Character of the Work" are thoroughly evaluated, identified and where possible resolved in advance of the Contract, or as part of the Contract.

Benefits: No Excuses Bonus help to ensure the project or milestone of a project is completed on or before the specified date. The additional offered compensation may result in the contractor dedicating sufficient resources to ensure the goals and objective are successfully met. When combined with reasonable timeframes (not constrained or excessive) bid conditions favor effective and efficient contractors. Contractors able to plan and perform work in this manner are able to reduce unit bid prices, thereby gaining a bid advantage, and recover compensation through earning incentives.

User Authority / Approval Request: The No Excuses Bonus use shall be restricted to projects identified and agreed upon by the Chief Engineer, Region Transportation Director and Program Engineer.

Reporting: Use of the No Excuses Bonus provision shall be documented by the Resident Engineer and reported per each use at the time of advertisement to the Project Development Branch of Staff Services.

Reference Resources: Applicable guidelines for uses of Incentives may be found in Chapter 16 of the CDOT Design Guide.
http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm

The *Work Zone – User Cost Program* may be found at:
http://www.dot.state.co.us/ECSU/CdotWorkZone

8.0 Lane Rental

Definition: Lane rental is a concept used to encourage contractors to efficiently plan, utilize, and minimize the number and duration of lane closures. The contractor will be required to pay a Lane Rental Fee for occupying or obstructing any travel lane (through lanes, acceleration lane, deceleration lane, and or turn lane), or closure of a facility to perform any element of work. The lane rental fee is based on the estimated cost of delay or inconvenience to the user during the rental period.

Guidelines / Applications: Lane Rental alternatives may be considered when potential exists for recurring impacts. Lane Rental alternatives are recommended for consideration when there is an urgent need to "get in and get out" as quickly as possible. They are also recommended when impacts extended over lengthy durations of time, or on facilities where major directional flows of traffic will be impacted (Intestates, Arterials, Interchanges). The Department and Contractor should meet after each lane rental usage to evaluate the effectiveness and efficiencies, and to take actions to improve performance where possible.

A Lane Rental Fee may be assessed for; durations of time; length (feet or miles) and number of lane(s) impacted for a duration of time; and per each incident after exceeding the specified number of incidents allowed.

The rental fee rates are stated in the bidding proposal dependent on the provision utilized. Five variations currently exist for usage and can be accessed at the link provided below. All costs shall be based on the CDOT Workzone User Cost Program, and documented in the project file.

Risks: Lane Rental Provisions place risk on the prime contractor, and subcontractors, to schedule and perform work as efficiently and effectively as possible. The Departments authority to control lane closures is minimized, and the risk is allocated to the Contractor. The Contractor must plan, prepare, communicate, coordinate, schedule, and control all work for the lane rental. The Department must consider the reasonableness of the Contractor's submitted schedule to perform and control the work, and the importance of communication with the Public Information Office.

Benefits: Lane rental fees encourage effective and efficient usage of each impacted lane of traffic by not only the contractor, but also sub-contractors. Advanced and thorough scheduling complements and facilitates the use of lane rentals by allowing advanced and improved public relations to inform those directly and indirectly impacted. The efficiencies of the Contractors work may reduce the Department's engineering costs and project costs. The Department benefits by releasing control and risk to the Contractor. The number and duration of lane closures is likely to be reduced thus benefiting both the Contractor and Department.

User Authority / Approval: Use of Lane Rental Provisions should be consistent with Department and Region Policy. Communication of the intent to allow impacts to travel lanes, or closures of facilities, shall be communicated to the Resident Engineer, Program Engineer, Region Transportation Director, Region Traffic Engineer and Region Maintenance Superintendent. Significant facility impacts (Interstate facilities and or Interchanges) should be disclosed to the Public Information Office and the Chief Engineer.

Reporting: Use of Lane Rental provisions shall be documented by the Resident Engineer or Project Manager and reported per each use at the time of advertisement to the Project Development Branch of Staff Services.

Resources: Lane Rental Provisions are available at:
http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005%20Innovative%20Specs/2005innov.htm

The CDOT *Work Zone – User Cost Program* may be found at:
http://www.dot.state.co.us/ECSU/CdotWorkZone

9.0 Multiple Bid Schedule

Definition: The Multiple Bid Schedule process allows the Department to competitively bid all elements of work identified within the full scope of a project's intent at the maximum established budget. Currently Policy allows for a maximum of three (3) Bid Schedules. Schedule "A" is the base option, or maximum amount of scope achievable within the identified budget. Alternates "B" and "C" are reduced in scope where "C" is of the least scope, all within the identified budget.

Guidelines / Application: The intent of the Multiple Bid Schedule concept is to accomplish the maximum amount of work for the minimum amount of cost, and to reduce the number of project extensions. The philosophy of this concept is, "if we have the opportunity to bid work, we should." It is preferred to identify and bid the work in the initial procurement process rather than increase work utilizing a Project Change Order. This assures competitive bidding on the entire project, provides opportunities for smaller contracting firms, and assures that the Department receives fewer complaints from the Industry about adding work after-the-fact.

The Multiple Bid Schedule process can be utilized on all projects facing the scope-budget challenge. If there are significant "value-added" elements that are within the original scope and limits of the project, yet pose potential budget complications, the Multiple Bid Schedule method may be the solution to ensure maximum benefit. Potential budget complications may be resolved by early communication with your Program Engineer and Business Office. Additional guidelines and information on the use of the Multiple Bid Schedule process may be found at link provided below.

Risks: As with all projects the Department must defined the scope, prepare clear and accurate plans and provisions, and accurately estimate and communicate the project cost. Failure to ensure all of these actions are taken will increase risks to both the Department and the Bidders. Risks include the likelihood of not accomplishing the goal of completing the maximum amount of work for the minimum amount of cost; the possibility of having to re-advertise the project; increased engineering costs and delays in delivering the improvements; and reduced bidding competition. Consideration should be given to increasing the Advertisement period to allow ample time and opportunity for bid preparation.

Benefits: When the Department has defined the scope, prepared clear and accurate plans and provisions, and accurately estimated and communicated the project budget needs the opportunities for success are maximized. By allowing bidders to submit proposals on three options, with decreasing scope and estimated cost, the likelihood of Award is increased, and the likelihood of re-advertisement is decreased. Further, an increase in competition is generated, thus increasing the possibility that the Department may receive a proposal for alternate "A" within the budget limits. The simplified process utilized in identifying the work for each alternate as part of a single set of plans and provisions, reduces the Department's design engineering costs. The need to add work is reduced along with the need to negotiate Contract Modification Orders.

User Authority / Approval Request: Approval for use of the Multiple Bid Schedule method shall be received from the Chief Engineer before utilization. Usage shall be discussed with the Region's Resident Engineer, Program Engineer, Transportation Director and Business Office. An example Chief Engineer Approval Request is available at: Multiple Bid Schedule

Reporting: Utilization of the Multiple Bid Schedule method shall be documented and reported to the Project Development Branch of Staff Services at the time of advertisement.

Reference Resources: The Multiple Bid Schedule guidelines are available at: http://www.dot.state.co.us/DesignSupport/Construction/2005SpecsBook/2005%20Innovative%20Specs/05-MBS.doc

10.0 Alternate Bid Schedule

Definition: Alternate Bid Contracts allow the Department to competitively bid equal or better elements of work identified within the full scope of a project's intent. Currently Policy allows for two Bid Schedules, "A" and "B." The schedules create a competitive bidding environment between comparative products or materials with equal expectations of performance and service life.

Guidelines / Application: Alternative bids are usually associated with the construction of bridges, such as concrete versus steel options, but can also include drainage structure options and other designs where it is likely that more than one alternative can provide the function over the design period.

Alternative bidding may provide an opportunity to increase competition between rigid and flexible pavement types. This application of alternative bidding requires the Life Cycle Cost difference (based on the "design") to be included as an additive cost element to the alternate which has the lesser design life. The additive cost is determined by the Department and reflected in the appropriate bid schedule as a lump sum cost increase to the bid amount.

The alternate bid schedule concept requires full plan and specification development for both alternatives. The Summary of Approximate Quantities and subsequent plan sheets contain details and tabulations for both alternates. Project provisions are also specified for each alternate dependent on the needs.

The Contractor will usually bid one of the alternatives based on their ability to construct one option in a more efficient and cost-effective manner. CDOT may reserve the right to require the Contractor to bid on all options.

Alternative bids are generally used only on large projects where the potential for cost savings are substantial enough to justify the additional costs for alternate design and bids. The use of alternative bids is generally limited to projects where viable alternatives clearly exist and potential cost savings are high. The ability to construct an alternate in a safe and efficient manner should be considered in the selection process. The major factors for considering alternative bids are initial costs, maintenance costs, and construction/material considerations. The overall estimated project cost for both alternates must fall within the same project budget. Alternative designs should not be produced if the analysis clearly shows only one option to be cost effective. The decision to use alternate bids should be documented with an initial economic analysis comparing the bid options, maintenance costs and any relevant secondary factors considered.

Risks: The use of the alternate bid schedule method creates increased cost in preparation. It also creates increased potential errors in plan for conflicting details, quantities and project provisions. All of these may lead to confusion in bid preparation and disputes or claims after Award. This risk may be mitigated by increasing the number of weeks allowed for advertisement. Precaution should be taken to limit the types and number of combinations created in developing an alternate bid schedule project.

Benefits: When the Department has defined the scope, prepared clear and accurate plans and provisions, and accurately estimated and communicated the project budget needs the opportunities for success are maximized. By allowing bidders to submit proposals on one or both of the options bidding competition is increased, and bid saving are likely. The Department's engineering costs to prepare and reproduce plans for advertisement is reduced.

User Authority / Approval Request: Approval for use of the Alternate Bid Schedule method shall be received from the Chief Engineer before utilization. Usage shall be discussed with the Region's Resident Engineer and Program Engineer. Documentation supporting the decision to use alternative designs and bid packages should be finalized and saved in the project file prior to the Final Office Review.

Reporting: Utilization of the Alternate Bid Schedule method shall be documented and reported to the Project Development Branch of Staff Services at the time of project advertisement.

Reference Resources: The complete guideline and associated provisions for usage are available in the CDOT Design Guide.
http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm

11.0 Phase Funding

Definition: Phase Funding Contracts are Projects or Programs Advertised and Awarded in advance of full funding for construction. Contract language states that work shall not begin until authorized in the Notice to Proceed, and as specified in specific Task Orders reflective of the funds available. The Contract and Work identified for future funding shall be terminated if funding is not obtained by a specified date. Because funds are not available they can not be encumbered. The Department makes no guarantee that funding to complete any of the work will be available or encumbered.

Guidelines / Application: This method is used when program or project funding is delayed, yet projected in the budget and STIP. Project specific language must be included for "Phased Funding" and "Phased Funding Commencement and Completion of Work." Any work that is funded, and for which a task order is issued, must yield safe and operational benefits. This requires detailed prioritization, scheduling, planning and implementation. Task Orders are issued only for work that can be completed within the funds encumbered. Because these types of contracts are financially constrained, higher levels of attention must be given to remaining at or under budget. The cost of any and all work completed in excess of the task order amount is not eligible for payment.

Risks: The use of Phase Funding Contracts creates potentially high risk to both the Department and Contractors. There are no guarantees of funding to either begin work, complete work, or to provide reimbursement for work overruns. As a result, there may be fewer bidders and higher bid costs to offset unknowns and uncertainties. The uncertainties of funding, issuing task orders and project start-up may cause delays in the mobilization of staff, equipment and materials, and completion of the work. Adequate staffing must be provided to ensure work completed is within the financial constraint of the task order amount.

Benefits: These types of contract allow the Department to advertise projects in advance of funding and budgeting actions, thereby securing contracting commitments to complete work contingent on pending funding actions. When combined with advance planning and scheduling both the Department and Contractor can efficiently and effectively respond to prioritized needs.

User Authority / Approval Request: Approval for use of the Phase Funding method shall be received from the Chief Engineer before utilization. Usage shall be discussed with the Region's Resident Engineer, Business Manager, Program Engineer, and Regional Director. Projects with Federal Funds shall require the approval of FHWA.

Reporting: Utilization of the Phase Funding method shall be documented and reported to the Project Development Branch of Staff Services at the time of project advertisement.

Reference Resources: The complete guideline and associated provisions for Phase Funded Contracts is available at:
http://www.dot.state.co.us/DesignSupport/Construction/Phased%20Funding%20Special%20Provision/Phased%20Funding%20Index.htm

12.0 Force Account Contracts

Definition: Force Account Contracts identify the Method of Measurement and Basis of Payment for Projects or Programs by Labor, Materials and Equipment. Work is paid for based on the actual cost, plus approved additives. Subsection 109.04 of the 2005 Standard Specifications for Road and Bridge Construction describes in detail requirements for this application.

Guidelines / Application: This method is used when the most *cost effective* solution for the program or project work can not be defined to a specific quantity or number of units. The term *cost effective* shall mean the efficient use of labor, equipment, materials and supplies to assure the lowest overall cost. Force Account contracts, or negotiated contracts, may be utilized for adjustment of railroad or utility facilities, and similar types of facilities owned or operated by a public agency. When the work is completed by the railroad, or utility company, they shall be qualified to perform the work in a satisfactory manner.

Federal Guidelines state that contracting methods shall be based on competitive bidding for work financed with the aid of Federal funds unless the State transportation department demonstrates, to the satisfaction of the FHWA, that some other method is more cost effective, or that an *emergency* exists. *The term emergency shall mean immediate action is necessary to; minimize the extent of the damage; protect remaining facilities, or; restore essential travel.*

In all circumstances (emergency and non-emergency) the Department shall submit an approval request to FHWA when Federal funds are utilized. The request shall identify and describe the project and the kind of work to be performed, the estimated costs, the estimated Federal funds to be provided, the reasons that a force account or a negotiated contract for the project is considered cost effective, and whether the work is emergency or non-emergency.

Risks: Due to the undefined nature of the work the Departments' risk include; potential cost overruns for unpredicted and unexpected work; higher engineering costs to prepare plans quickly, and staff construction administrative needs; and potentially fewer bidders due to the undefined nature of the work. The Contractors' risks are equally defined by the unknowns of the work, and being unable to plan and respond to other bidding opportunities as a result. However the Contractors' financial reimbursement for the work is of limited risk due to the nature of payment. Communication and documentation are key to ensure agreement on the work, and proper payment.

Benefits: Benefits to the Department include; the ability to quickly respond to needs, regardless of the geographic location; the ability to control costs for work completed based on actual costs with negotiated profit; and reduced numbers of disputes or claims as all work is agreed to and documented on an on-going basis. A high level of teamwork is supported and facilitated with the Department and Contractor.

User Authority / Approval Request: Approval for use of the Force Account Funding method shall be received from the Chief Engineer before the letter of approval request is prepared for FHWA. Usage shall be discussed with the Region's Resident Engineer, Business Manager, Program Engineer, and Regional Director.

Reporting: Utilization of the Force Account method shall be documented and reported to the Project Development Branch of Staff Services at the time of project advertisement.

Reference Resources: The complete guideline and associated provisions for usage Force Account Contracts is available at:
http://www.dot.state.co.us/DesignSupport/Design%20Bulletins/Force%20Account%20Projects%20Const.doc

13.0 Lump Sum Contracts

Definition: Lump Sum Contracts identify the Method of Measurement and Basis of Payment for all work as "Lump Sum" with a single unit for payment of "One." All Labor, Materials and Equipment necessary to complete the work is included. Plans, Details and Specifications are prepared to clearly define the work and expected results. The Contractor utilizes these elements to determine a lump sum bid for all work.

Guidelines / Application: This method may be used when program or project work can be clearly identified and defined, the scope is unlikely to change, and delays or impacts are unlikely. It is best implemented on projects with very limited scope and risk. Typically these are projects with very few bid items and short completion durations. Such as traffic marking, fencing, guardrail, sidewalk, signing, lighting, landscaping, or bridge painting projects. The Lump Sum Contract method should not be used on complex projects or projects with potential utility delays. The Department must develop a cost estimate for the purpose of identifying and establishing a budget. It is recommended that the Advertisement period be extended to allow potential bidders adequate review and bid preparation time, as well as time for amendments to be made if necessary.

Risks: Because all items, materials and associated elements of the work are paid for as a single unit it is vital the plans, details and provisions sufficiently describe the work. Each of these requirements must be accurately and thoroughly completed to minimize risks. If these actions are not taken there is an increased likelihood that bid results may exceed the budget; competition by bidders may be reduced; there may be numerous disputes and claims; and costs to both the Department and Contractor may exceed expected expenditures. Additional Administrative efforts will be needed to ensure compliance with documentation requirements.

Benefits: This method may reduce time required to deliver a program or project to Advertisement. Construction administrative staffing may be reduced, thus reducing engineering costs.

User Authority / Approval Request: Approval for use of Lump Sum Contracts shall be received from the Chief Engineer before utilization. Usage shall be discussed with the Resident Engineer, Program Engineer, and Regional Director. Projects with Federal Funds shall require the approval of FHWA.

Reporting: Utilization of the Lump Sum method shall be documented and reported to the Project Development Branch of Staff Services at the time of project advertisement.

Reference Resources: The complete guideline and associated provisions for usage of Lump Sum Contracts is available in Chapter 16 of the CDOT Design Guide.
http://www.dot.state.co.us/DesignSupport/Design%20Guide%2005/Index.htm

14.0 Emergency Contracts

Definition: Emergency Contracts are utilized to respond and resolve an emergency situation as defined by Fiscal Rule 2-2. Fiscal Rule 2-2 defines an emergency as "… any situation that creates an immediate threat to public health, welfare, or safety, the functioning of state government, or preservation or protection of property."

Guidelines / Application: Emergency Contracts shall comply with, and follow, the requirements of the CDOT Emergency Procedure Process (reference August 2004 CDOT Construction Manual Section 120.8 EMERGENCY CONSTRUCTION PROJECTS). All emergency situations shall be determined as an "emergency" by the Regional Authority or Regional Transportation Director. The Regional Authority shall determine and assign a Project Manager. The Project Manager shall be the administrator of the Emergency Contract.

The Advertised documents shall identify that the work is for Emergency Repair; the location by highway designation and milepost; a beginning date or expected Notice to Proceed, a maximum duration for all work to be completed within; plan details, standards, special provisions, required phasing, sequencing, or methods of handling traffic; any other elements necessary to fully describe the work and method of measurement and basis of payment; an official contact person for the Department; and for bonding purposes, an estimated cost to complete the work, including force account items.

To ensure sufficient response and expedient completion of the work the use of Cost-plus-Time bidding, along with an incentive/disincentive is recommended.

Risks: Failure to follow the Emergency Procedures Process may result in fewer responsive bidders, high bid costs, deficient project funding, delays in award and beginning work, and longer durations to complete the work than desired.

Benefits: This method reduces the time required to advertise, award and issue a notice to proceed. Thus accelerating the response time to begin repairs and create a safe condition.

User Authority / Approval Request: Approval for use of Emergency Contracts shall be received from the Chief Engineer before utilization. Usage shall be discussed with the Resident Engineer, Program Engineer, Regional Director, Staff Services - Contracts and Agreements Branch, and the Department's Attorney General Representative. Where Federal Funding is utilized FHWA processes shall be included along with notification.

Reporting: Utilization of Emergency Contracts shall be documented and reported to the Project Development Branch of Staff Services at the time of project advertisement.

Reference Resources: Complete guidelines for the usage of Emergency Contracts are available in Section 120.8 at the following link:
http://www.dot.state.co.us/DesignSupport/ConstructionManual/Construction%20Manual%20Revisions%202004/Index%20for%20Revised%20Sections.htm

The example of the complete Emergency Contract project process is available at: (Document 1, Document 2, Document 3, Document 4, Document 5, Document 6, Document 7).

15.0 Indefinite Delivery / Indefinite Quantity

Definition: Indefinite Delivery / Indefinite Quantity can best be described as a "task order" contract, where the quantity of work or exact time of delivery is "indefinite." With this process the Department identifies tasks and specifications for each task. Prospective Contractors bid on the task by unit prices, and contracts are awarded based on Low Bid. When the need for the task arises the "Low Bid" Contractor is called "at will" to perform the task(s).

Guidelines / Application: Indefinite Delivery / Indefinite Quantity contracting is appropriate for single activity repetitive processes. This may include pavement marking, noxious weed control, debris removal, graffiti removal, lawn mowing, snow removal, traffic signal system maintenance, lighting maintenance, roadway surface maintenance activities, and street sweeping.

Each task must be completely defined such that the only unknowns are the exact time of need and the number of times the task may be needed. Contract should clearly define the required outcomes and measures of acceptance. Response time may be one such example. These contracts have duration of one to two years, with an optional one-time one year extension. The contracts also allow for escalation costs, and have a maximum Contract amount.

Risks: Because the work is well defined and not complex much of the risks to both the Department and Contractor(s) is manageable and limited. Risks to the Department include poorly defined performance outcomes or measures, and possible higher unit bid prices inherent in the use of indefinite delivery / indefinite quantity contracts. Contractor risks include; escalation costs for materials, labor and equipment; uncertain usages of the contract; work flow or labor shortage conflicts, and; potential bonding capacity impacts for the term of the "ID /IQ" contract.

Benefits: Needs can be responded to in a "just-in-time" and "as-needed" manner. Work needs and outcomes are not subject to interpretation or negotiations. There is an increase in flexibility for the Department to meet staffing resource needs for priority or emergency work. Less frequent, but predicted or known types of work can be "outsourced" thus reducing full time staffing needs and associated costs. The industry specializes in these types of work and is prepared to provide the resources required to meet the demands.

User Authority / Approval Request: Approval for use "ID / IQ" Contracts shall follow Department Procurement (Brooks Act) requirements, and shall be approved by the Chief Engineer, Regional Director, Regional Business Office and the Procurements Branch. When Federal funds are utilized FHWA processes shall be included along with notification.

Reporting: Utilization of "ID / IQ" Contracts shall be documented and reported to the Project Development Branch of Staff Services at the time of project advertisement.

Reference Resources: Contact the Procurement Branch for contract development and implementation.

16.0 Design-Build

Definition: Design-Build is an Innovative Contracting Process approved for usage by Federal Regulations and State Statutes with specific conditions. Design-Build combines, rather than separates responsibility for the design and the construction phases of a project.

Guidelines / Applications: All Design-Build programs and projects shall meet The Federal Code of Regulations, Title 23, Part 636 – Design-Build Contracting requirements. Projects not conforming to the above definition MUST receive Federal Approval before utilization of the Design-Build procurement process.

In addition, all projects shall meet requirements of Part 14 of Article 1 of Title 43 of the Colorado Revised Statue, Colorado Court Rule 2 CCR601-15, Policy Directive 504.0 and the Department's Design-Build Manual.

FHWA and CDOT have three approved Procurement Methods for use with Design Build Contracting. They are:

The "Two-Phase" selection procedure which consists of a Request For Qualifications (RFQ) followed by a Request for Proposal (RFP). The Award criteria options include; Lowest Price, adjusted low-bid (price per quality point), meets criteria / low bid, weighted criteria process, fixed price / best design, and best value.

The "Single-Phase" selection procedure which consists of a RFP only, and is issued based on the utilization of a pre-qualification list. The Award criteria options are the same as those listed for the Two-Phased Selection.

The "Modified Design-Build" selection procedure consists of a "two-phase" or "single-phase" selection process. In either application the Award criteria is based on "lowest price / technically acceptable."

Award criteria for all Design-Build Contracting methods shall be based on "Best Value." Best Value has two components, Technical Requirements and Total Cost. Technical Requirements are defined as:

- Time
- Innovation
- Scope
- Quality
- Work Management
- Aesthetics
- Project Control
- Other Requirements as Identified

16.1 Construction Management @ Risk (or CM / GC) is considered an application of Design-Build Contracting. The responsibility of ensuring a constructible design, administering the construction contract, and executing the work is transferred to the selected firm for a guaranteed maximum price.

Partial design plans and specifications are used by the owner to advertise for the CM @ Risk services. The CM firms submit a guaranteed maximum price to provided construction input in the design, manage the construction contract, and deliver the completed work.

Award is based on “Best Value” (Total Cost and Technical Elements). The CM firm works with Design firm to ensure innovation, cost savings and reduced delivery time.

The use of CM @ Risk contracts are best suited for projects that:

- Must be Fast-Tracked
- Have limited Owner staffing resources
- Have budget encumbrance (funding) deadlines
- Are complex and have many construction phases

CM @ Risk Contracts are generally developed and awarded through use of a Two-Phase Selection Process.

16.2 **Public-Private-Partnerships** create a Contract between private entities or developers to provide financial support or other project or program required resources in return for monetary compensation derived from the transportation improvement(s). Public-Private-Partnerships are typically associated with, and utilized in, Design-Build Contracting, “Turn-Key” projects, and Tolling. Colorado does have P-P-P legislation in place for use in Transportation. When P-P-P contracts are utilized they typically utilize the “two-phase” process of Design-Build.

The private entity or developer may design, construct, operate, maintain and finance the improvement. The Contract with the Department shall identify the work or resources provided the contracting delivery method, and the method and payment schedule for reimbursement. Solicited Public-Private-Partnerships are preferred as opposed to un-solicited because they provide the Department improved levels of risk management, Contract negotiation, and determination of Best Value.

16.3 **Design Sequencing** is a technique of advertising and awarding projects with partial plan definition. Minimal detail in plans, bid items, and estimated quantities are provided to the Contractor for bidding purposes. This process utilizes the design-bid-build process, however the lack of definition and partial plans, require it be applied though the design-build exceptions process of SEP 14 or SEP 15. Completed plans along with bid items and estimated quantities are provided to the contractor for construction in a logical “bottom-up” or “phasing” sequence. Significant quantity overruns, and resultant Contract Modifications Orders are common for this contracting method. There is considerable risk to both the contractor and owner. An owner may opt to utilize this delivery strategy to ensure the rapid encumbrance of funds. Use of this method requires approval by the Chief Engineer and FHWA.

Risks: The development of a Design-Build package requires dedicated staffing and specialty assistance of those knowledgeable of Design-Build Contracting. Care must be taken to ensure 100% of the Departments’ expectation is developed into the Contract. Design-Build teams develop and base their technical responses and cost proposals on the information provided. A lack of detail or a lack of definition may have sever and adverse impacts to both the Department and Design-Build Teams. Improper or unbalanced allocation of risk may also result in server and adverse impacts. Prescriptive provisions are not conducive to innovation or the basic principles of Design-Build, and should not be used. Provisions should be based on performance or end-results. When these actions and assurances are not taken the number of competing Design-Build Teams may be reduced, and the overall pricing results may be in excess of the available funding.

Risk consideration for the use of Design-Build or the traditional Design-Bid-Build method can be developed, assessed and allocated based on the Risk Assessment Matrix. Independent process meetings for Risk should be planned and held to thoroughly assess and allocate risk. A general rule to use in Risk Assessment and Allocation is:

- Identify and Define the Risk.
- Determine the Likelihood of the Risk occurring.
- Determine the Consequences of the Risk occurrence.

Benefits: When projects suited for Design-Build procurement are properly developed and executed the amount of time to deliver a project from design to construction is reduced. Innovation of the Design-Build Teams is utilized in the design stage, and the resultant cost savings are realized at the time of award. Risks allocated to the party that can best manage the risks, control the likelihood, minimize the consequences and reduce or control the costs. The Department's Contract Administrative efforts are simplified to oversight and assessment rolls. This reduces the number of individuals required and the overall engineering costs. The Design-Build team is given the responsibility for Quality Control and Quality Assurance for Design, Construction and Materials. This QC/QA approach places the Design-Build team in full responsibility and thereby eliminates the conflict of errors and omissions. The Contract is based on a "Best Value" which includes cost and technical elements. The Department's risk for overall cost, and costs overruns, is reduced by utilizing a "Fixed Fee" or "Maximum Payment" for a "Lump Sum" Contract.

User Authority / Approval Request: Use of the Design-Build Contracting process is subject approval of the Chief Engineer and subsequent approval of the Transportation Commission. All projects developed utilizing the Design-Build Procurement Process requires cooperative communication and assistance with the Innovative Contracting Unit and FHWA.

Reporting: The Resident Engineer, Program Engineer and Region Transportation Director shall provide updates to a Project Oversight Committee as agreed to in the development of the Project and Process.

Reference Resources: The Department's Design-Build Manual is available at: http://www.dot.state.co.us/DesignSupport/