

OPTIONAL BIDDING TECHNIQUES



INTRODUCTION

This guide provides information to the Delaware Department of Transportation (DelDOT) for considering optional bidding techniques on projects. Optional bidding requirements allow the Owner to have a mechanism to speed up project delivery for selected projects.

Critical Path Method (CPM) schedules provide both the contractor and the Owner the ability to monitor contract time during a construction project and agree to changes in real time. It is imperative that the Owner enforce the need for effective monthly updates on CPMs and not let months go by without agreement on the project's current time.

DelDOT currently can use the following types of optional bidding methods. Some or all can be used regardless of the procurement process utilized (e.g., design-bid build, design build, CMGC). Determination of procurement will have been completed through the Project Delivery Selection process. Additional information on this can be found in DelDOT's Policy Implement C-09, Planned Lane Restrictions and Road Closure Policy and the *Project Delivery Selection Process* document. Multiple Techniques are typically not used at the same time; thus it is important for review and evaluations if combinations are considered.

Cost Plus Time (A+B) Bidding | Cost Plus Time or A+B bidding can potentially reduce contract time on projects. Contractors bid the cost for contract work items and the time value (number of days converted into a dollar amount) to complete the project. The contract is awarded to the lowest combination of cost (A) and time (B); however, payment will be based on the overall cost component.

Incentives/Disincentives (I/D) | I/D Specifications or clauses provides monetary incentives to the contractor for early completion of a project or a Phase/Milestone and monetary disincentives from contract payment if the project is late in delivery. I/Ds can be for the whole project or critical portions.

Liquidated Damages/Savings | DelDOT contract administration fees are paid to the contractor as an incentive for early completion and subtracted from payments if the project runs over time.

No-Excuse Bonus | A no-excuse bonus may reduce contract time by tying a bonus to the completion of phase or the project. These types of bonuses are typically tied to a critical path item that may be dictated by construction or third-party factors (e.g., major event, NASCAR, Firefly) where a road must be reopened.

Pay-for-Performance | Pay-for-performance specifications rely on a project's final deliverables measured against the performance criteria set forth in the contract (e.g., pavement rideability, effective lighting standards, successful implementation of EZPass collection rates). If the contractor fails to meet minimum performance criteria, payment is withheld, and corrective action is required.

Warranties | Warranties require contractors to guarantee all or portions of a construction project to be free of defects in materials and workmanship for some defined time. Payment is reduced until the warranty has expired. The contractor is required to correct deficiencies during the warranty period.

Lane-Rental | Lane-rental is a provision that incentivizes contractor work in non peak times. It reduces impacts to the traveling public by minimizing the time lanes are closed. Contractors are charged a fee for closing lanes and shoulders for construction activities. The concept focuses on the time that the public is affected, NOT the overall contract time.

COST PLUS TIME (A+B) PROJECTS

A+B bidding factors time plus cost to determine the successful low bidder. Under the A+B method, each bid submitted consists of two components:

- ▶ A – Traditional dollar amount for the contract items
- ▶ B – Days bid to complete the work

The number of ‘B’ days is multiplied by the Road-User Cost (RUC) developed by the owner and added to the ‘A’ component to obtain the total bid. The RUCs should be calculated using FHWA Guidelines and adjusted to be reasonable to bidding procedures and industry input.

$$(A) + (B \times [\text{Road-User Cost} / \text{Day}]) = \text{Total Bid}$$

This formula only determines the lowest bid for award, not the payment to the contractor.

Advantages

- ▶ Improved advanced coordination between prime and sub-contractors
- ▶ Reduced construction time minimizes impacts to road users
- ▶ Contractors will develop a well-conceived schedule much earlier in the process

Disadvantages

- ▶ Additional work and contract changes can affect completion time and nullify the advantages of A+B bidding
- ▶ Acceleration techniques may require more resources for Owner/inspection team

Project Candidates

A+B bidding should focus on projects with significant impacts to motorists, businesses, emergency services, or other groups that will be directly impacted by the project.

Good Candidates

Well-Defined/Scoped Projects
(changes are magnified in A+B bidding)

Hot Mix Mill and Overlay

Detour Projects

New Construction and Reconstruction

Bridge Painting

Bridge Rehabilitation
(with well-determined quantities)

Intersection Upgrades

Poor Candidates

Complex Interchanges

Projects with Third-Party Controls
(utility impacts, railroads unresolved ROW)

Bridge Rehabilitation with potential
high variable quantities

Signal Systems
(where DeIDOT TMC may control various pieces)

Any Job with Minimal Traffic Impacts
(user delay value is null)

Adjacent conflicting projects

Potential Cost Impacts

A+B contracts can affect project/construction cost. A shorter duration solution may increase the primary item unit costs, but the reduction in roadway impacts due to the decreased time to complete the work could reduce the overall traffic control cost.

DelDOT designers should anticipate that there will be an increase cost for the reduction in days due to:

- Acceleration, multiple crews, specialty/duplicate equipment working simultaneously
- Aggressive subcontractor management and production requirements
- Shift of contractor resources to non- A + B work

DelDOT construction engineering/inspection costs should be reduced due to the anticipated increase in activities occurring at the same time, coupled with the reduced amount of traffic control being used.

Implementation Process

Follow these steps to implement A+B bidding:

Step 1: Is My Project a Good Candidate for A+B?

<u>Yes</u>	<u>No</u>	
Right-of-Way (ROW)		
<input type="checkbox"/>	<input type="checkbox"/>	Will all ROW be secured prior to bid date?
<input type="checkbox"/>	<input type="checkbox"/>	If not, does the phasing plans allow for sequenced work around the conflicts and is a Final ROW acquisition schedule included in the contract documents?
Plans		
<input type="checkbox"/>	<input type="checkbox"/>	Has a thorough field review been conducted?
<input type="checkbox"/>	<input type="checkbox"/>	Was there Design/Construction coordination at various stages (e.g., Prelim, SF, F)?
<input type="checkbox"/>	<input type="checkbox"/>	Has a constructability and bid-ability review been conducted by design and construction?
Utilities		
<input type="checkbox"/>	<input type="checkbox"/>	There is <i>little or no chance</i> that utilities will significantly delay the contractor.
<input type="checkbox"/>	<input type="checkbox"/>	Are utility conflicts clearly identified in the plan and special provisions?
Third-Party Agreements		
<input type="checkbox"/>	<input type="checkbox"/>	Will all Environmental permits/ RR Agreements be secured by the bid date?
<input type="checkbox"/>	<input type="checkbox"/>	Will any City/County/Town agreements (Noise waivers) be secured by the bid date?
Program Impacts		
<input type="checkbox"/>	<input type="checkbox"/>	Have you considered the regional transportation impacts of using an accelerated schedule? Have you considered the potential cost and delivery to other projects?
Soil Conditions		
<input type="checkbox"/>	<input type="checkbox"/>	Proper boring data is available and there is limited risk of poor/unsuitable/contaminated soils adding significant extra work.

Traffic Conditions

Do construction traffic impacts relate to any of the following conditions?

- Lengthy detours
 - Significant delays to motorists
 - Significant impacts to businesses, schools, or emergency services

Staffing Considerations

- Does DelDOT have the staff available if the contractor has an aggressive schedule?
- Does DelDOT have the budget for any additional overtime for in house or consultant crews?

If the answer is **YES** to most of the above questions, the project may be suitable for A+B. If you answered **NO** to some of the questions, your project may still be a good candidate for A+B but carefully consider the impacts to items with a **NO** response.

Step 2: Determine How to Use A+B

A+B techniques can be applied to many aspects of a project; however, it is typically used for the entire project as a means to get a contractor to commit to an accelerated schedule for the duration of a project. Determine how you can best use A+B on your project:

- Entire Contract Length
- Intermediate/Milestones Dates
- Multiple Timeframes (A+B+C)
- Any Other Project Aspect

Step 3: Determine Road-User Costs and Determine the Weight of Influence

- RUC should be developed with DelDOT Traffic Safety Section. Resources included Design Guidance Memorandum 1-24; as well as through coordination with the Transportation Management Center (TMC) and/or MUTCD programs or can be developed through FHWA Guidance within the Work Zone Mobility and Safety Program. The FHWA link is below:

<https://ops.fhwa.dot.gov/wz/resources/publications/fhwahop12005/sec2.htm>

- The Project Manager and/or Consultant should weigh how the RUC may influence the bid to determine the appropriate balance between its 'A' and 'B' portions. The value used should allow for a bid to provide the level of incentive DelDOT wants to complete the job early. If time is of the utmost importance, the increased cost (A) may be something the Owner is willing to accept; however, in the bidding portion, DelDOT may need to adjust the RUC if necessary.

Example

Calculated RUC = \$100,000 per day (DelDOT decides to use \$ 50,000/day)

Bidder #1: \$10,000,000 at 60 Days (A+B = \$13,000,000) – Awarded Contract *Do we want those 15 days?*
Bidder #2: \$11,000,000 at 45 Days (A+B = \$13,250,000)

Revised RUC = \$75,000 per day

Bidder #1: \$10,000,000 at 60 Days (A+B = \$14,500,000)
Bidder #2: \$11,000,000 at 45 Days (A+B = \$14,350,000) – Awarded Contract *We saved 15 days.*

Step 4: Determine Contract Time

- Perform a constructability review on the plan set.
- Assess the time, effort, and equipment impacts to other projects in the area.
- Determine the contract type.
 - ▶ Working days (recommended for short duration projects)
 - ▶ Calendar days (recommended for multi-year projects)
- Determine the Maximum Allowable contract time and any intermediate dates.

If you calculate an overly aggressive schedule, you might not see a significant reduction in the days bid or you may see an increase in the cost portion.

Step 5: Develop Fair but Enforceable Disincentives/Penalties to meet Time (B Component)*Disincentives*

- Recommended for all projects
- Determine disincentive amount
 - ▶ No limit is recommended but typical a limit is used. IF too small contractors will bid it in.
 - ▶ Can be equal to RUC (but need to determine if that will dissuade industry interests)
 - ▶ Should not exceed RUC. It cannot exceed for Federally Participating projects.

Evaluate the feasibility of assessing a disincentive with a high value versus the risk of losing interested bidders.

Clarify in Specification if the disincentive is in-lieu of liquidated damages or if it will be assessed in addition to liquidated damages.

Step 6: Draft Special Provisions that address time impacts

- Inform the design team so that contract time can be added as a bid item and ensure CPM monthly updates are included in contract bid items.
- Special Provisions must be clear as to DeIDOT's intent for bidding and administering an A+B option.

Step 7: Construction Considerations

- Utilize CPM schedule and enforce monthly updates to help administer contract time.
- Prepare staff for aggressive contractor schedules.
- ensure modified review times and resolve issues proactively to reduce time delays caused by DeIDOT.
- Change orders and supplemental agreements should be processed quickly and address contract time extension and reductions. Resolution and agreement between DeIDOT and the contractor should be determined prior to changes beginning.
- Consider safety impacts to the roadway user, contractor personnel, and DeIDOT staff during construction. Consider impact to clear zones during construction, drop-off requirements, and lane-closure requirements.

INCENTIVE/DISINCENTIVE (I/D) PROJECTS

Incentive/Disincentive is a process where the contractor is paid an incentive for completing a project or portion of a project earlier than the time specified in the contract. If the contractor completes the project later than the time allowed, disincentive money is subtracted from payments due.

I/D can be used in a wide variety of projects. It is best applied when DelDOT is willing to pay the contractor to expedite the work to reduce the contract time. It works well with urban reconstruction and bridge-related projects, where highway delays can be substantially reduced.

Advantages

- ▶ Minimize some impact along roadway due to reduced construction time
- ▶ Potential for lower administrative costs
- ▶ Improved public relations by informing businesses/residents that you are committed to completing the project as quickly as possible
- ▶ Better control of project acceleration as I/D can be added during a project

Disadvantages

- ▶ Incentives are typically paid out and Disincentives are vehemently fought by the contractors, who often claim outside sources led to problems and not meeting incentive goals
- ▶ May require additional funding
- ▶ Contract changes can lead to disputes regarding terms and payments

Project Candidates

I/D bidding should focus on projects with significant impacts to motorists, businesses, emergency services, or other groups that will be directly impacted by the project.

<u>Good Candidates</u>	<u>Poor Candidates</u>
Projects Corridors with High Volume and Road User or Business Impacts	New Construction Projects with Minimal Impacts to Road Users
Major Bridge Out of Service/ Bridge Replacements	Projects where ROW or Utilities Not Clearly Identified
Projects w/ Lengthy Detours	Traffic Management System
Bridge Rehabilitation Projects	Congested Intersections with multiple entrances
Projects with Commitments to Open a Roadway as Quickly as Possible	Landscaping <i>(minimal disruption to traffic)</i>
Seasonal Limitations (Schools, Tourism)	

Potential Cost Impacts

I/D contracts can affect project/construction cost. A shorter duration solution may increase the primary item unit costs, but the reduction in roadway impacts due to the decreased time to complete the work could reduce the overall traffic control cost.

Types of Incentive/Disincentive Contracts

- ▶ **Linear** – Contractor receives the same daily amount regardless of the number of days completed, early or late
- ▶ **Non-Linear (Escalating)** – The earlier a job is completed, the greater the daily amount paid to the contractor

Implementation Process

Follow these steps to implement I/D bidding:

Step 1: Is My Project a Good Candidate for I/D? (Review Chart from the A + B Options)

If the answer is **YES** to most of the above questions, the project may be suitable for an Incentive Disincentive Clause.

Step 2: Determine I/D Amounts

- Incentives should be based on items such as Road-User Costs (RUC). DeIDOT should use either their MUTCD as a model for developing costs or FHWA Work Zone Mobility and Safety Program, Chapter 2 Work Zone and Road User costs. A link is found below:

<https://ops.fhwa.dot.gov/wz/resources/publications/fhwahop12005/sec2.htm>

- Incentives must be high enough to encourage contracting teams and generate potential bidding interest, stimulate innovative ideas, and increase profitability of meeting tight schedules. If Incentives are not enough to cover the contractor's cost for the extra effort, there is little motivation for the contractor to accelerate production.
- Maximum Incentives should not exceed?? % of the total contract amount with a maximum stated.
- Incentives should be equal to or less than the Disincentive rate.

Example → WHERE is the Right number

For each day that all work under this contract is completed before June 30, 2020, the contractor will receive an Incentive according to the following schedule:

Scenario #1: Complete 1-10 Days Ahead of Schedule - \$0 per Day	<i>How important is it for job to be completed before summer traffic begins?</i>
Scenario #2: Complete 11-20 Days Ahead of Schedule - \$5,000 per Day	
Scenario #3: Complete before Memorial Day (5/31) - \$10,000 per Day	

Step 3: Determine Contract Time

- Be very clear on what additional days will be allowable to incentivize to the contractors.
- Assess and state what days/times are outside of regular working hours but still not allowable due to localized restrictions such as NASCAR, Firefly, Festival days Beach traffic, Evacuations routes etc...

- Determine the contract type.
 - ▶ Typically, on larger more impactful contracts with I/D's, use Calendar days
- Determine the Fair contract time and any intermediate dates.

Step 4: Develop Fair but Enforceable Disincentives

- Determine disincentive amount which is typically the same as the Incentive amount
 - ▶ Should be enforceable and impactful enough for contractor to stay focused to their work and the contract Schedule
 - ▶ Can be equal to RUC.
 - ▶ Evaluate the feasibility of assessing a disincentive versus losing industry interest in the project.
 - ▶ Disincentive should not be so large that contractors will feel threaten to be put out of business leading to adversarial discussion on every contract item and situation

Example: Road User Cost (RUC) is calculated to a Road User Delay of \$ 85, 000/ day.

If we use \$ 75,000/day for the disincentive and a contractor gets 2 weeks behind, the Contractor could be out over \$ 1M. This is a risk many contractors may not be interested in bidding into or their overall bid may be higher to cover the risk. Consider making the I/D about \$ 25,000/day. It will still provide the contractor with a pretty hefty disincentive \$ 250,000 to deal with but may not put them out of business.

Step 5: Draft Special Provisions that address time impacts

- Inform the design team so that contract time can be added as a bid item and ensure CPM monthly updates are included in contract bid items. Clarify in Specification if the disincentive is in-lieu of liquidated damages or if it will be assessed in addition to liquidated damages.
- Special Provisions must be clear as to the intent for bidding and administering an I/D option Spec.
- Work with Contract Administration to ensure the Incentive/Disincentive language and Maximum Contract time is at the beginning of the Specifications and not isolated on a traffic control or phasing plan sheets. If the incentive/Disincentive is significant, consider making the stakeholders aware as well as consider having a Prebid for the contract to discuss DeIDOT's expectations.

******The contract must clearly define what constitutes the start and the completion of the I/D phase(s). Either or both may differ from the start or completion of the project ******

Step 6: Construction Considerations

- Require using a CPM schedule.
- Time extensions should not be given unless overruns occur on critical path.
- Prepare staff for an aggressive contract schedule.

LIQUIDATED SAVINGS/DAMAGES (LS/LD) PROJECTS

Liquidated Savings (LS) is a process where the contractor is paid an incentive equal to the amount of DeIDOT’s contract administration fees for early completion. If the contractor completes the project later than the time allowed, Liquidated Damages (LD) are subtracted from payments due. LS/LD can be used on a wide variety of project types. It is best suited when DeIDOT is willing to pay the contractor to expedite the work to reduce the contract time.

Advantages

- ▶ Reduced construction time
- ▶ Potential for lower contract administration costs

Disadvantages

- ▶ May require additional funding
- ▶ Contract changes can lead to disputes regarding incentive payments
- ▶ Incentive value may not be significant enough for the contractor to accelerate work

Project Candidates

LS/LD...bidding should focus on projects with significant impacts to motorists, businesses, emergency services, or other groups that will be directly impacted by the project.

<u>Good Candidates</u>	<u>Poor Candidates</u>
<p>Smaller Urban and Rural Rehabilitation & Reconstruction Projects</p> <p>Smaller Bridge Rehabilitation Projects</p> <p>Projects with Reduced Contract Administration Time <i>(staffing resources need to be utilized on other projects)</i></p>	<p>Large Construction Projects <i>(Liquidated Savings may not be large enough to incentivize earlier completion)</i></p> <p>Projects with Minimal Traffic Impacts</p> <p>Projects with Minimal Staffing Concerns</p> <p>Projects involving Railroads</p>

Potential Cost Impacts

LS/LD contracts can affect project/construction cost. A shorter duration solution may increase the primary item unit costs, but the reduction in roadway impacts due to the decreased time to complete the work could reduce the overall traffic control cost.

Costs for administration costs by the owner should be spelled out at the beginning of the contract to ensure both parties recognized the amounts to be considered.

Accurate Record Keeping is paramount when evaluating working days and not working days.

DeIDOT designers should anticipate that there will be an increase cost for the reduction in days due to:

- Acceleration and multiple crews working simultaneously
- Aggressive subcontractor management and production requirements
- Specialty equipment or duplicate equipment to ensure completion

DelDOT construction engineering/inspection costs should be reduced due to the anticipated increase in activities occurring at the same time, coupled with the reduced amount of traffic control being used.

LS/LD Amounts

- LS amount should equal the LD amount
- LS amount does NOT need to be capped at a maximum

Implementation Process

Follow these steps to implement I/D bidding:

Step 1: Is My Project a Good Candidate for Liquidated Savings Clauses? (Review Chart from the A + B Options)

If the answer is **YES** to most of the above questions, the project may be suitable for Liquidated Savings/Damages. If you answered **NO** to some of the questions, your project may still be a good candidate for but carefully consider the impacts to items with a **NO** response.

Step 2: Determine How to Use Liquidated Savings/Damages

Liquidated Savings/Damages techniques can be applied to different aspects of a project; however, it is often used for a meeting a substantially complete date; when the owner can substantially reduce the contract administer staff and costs. Determine how you can best use I/D on your project:

- Entire Contract Length
- Intermediate Dates
- Multiple Timeframes
- Any Other Project Aspect

Step 3: Determine Contract administrating costs anticipated and determine the per day costs.

- Determine if the project is being administer in house or though outside
- Determine the Maximum Allowable contract time and any intermediate dates.

Step 4: Construction Considerations

- Utilize CPM schedule and enforce monthly updates to help administer contract time.
- Prepare staff for clear and correct daily reports and days worked assuming a somewhat aggressive contractor schedule.
- Change orders and supplemental agreements should be processed quickly and address contract time extension and reductions. Resolution and agreement between DelDOT and the contractor should be determined prior to changes beginning.

NO EXCUSE REWARDS

No Excuse offers contractors an incentive for reaching a project milestone. Unlike traditional incentives, the No Excuse Reward does not allow a contractor to receive a time extension and still receive the incentive payment. The bonus is set to a specific date, which may or may not be the completion of the entire contract. Unless a change is made by DelDOT; and thus, required a time extension, all other changes/impacts /conditions are a project risk the contractor takes upon themselves to achieve the bonus. The Locked Incentive Date (LID) is fixed. No Excuse Rewards also requires the contractor to waive all claims if they accept the payment.

FHWA must approved No Excuse clauses on federally participating construction projects.

Advantages

- ▶ Adds potential innovative techniques to achieve the bonus
- ▶ Emphasizes focus on schedule and meeting or exceeding a completion date
- ▶ Eliminates disagreements on fault due to change or unanticipated field conditions and potential impacts to schedule

Disadvantages

- ▶ Work Quality may be reduced due to focus on getting bonus
- ▶ Time is needed after project completion to ensure product performance
- ▶ Owner changes will require extensive discussion as contractor will demand additional days to offset other changes not attributed in the schedule increase.

<u>Good Candidates</u>	<u>Poor Candidates</u>
<p>Projects adjacent to another project where a start date can be affected</p> <p>Critical roadway openings associated with a major event such as NASCAR/FIREFLY</p>	<p>Projects will major public influence that can likely continue to change</p> <p>Project with unknown utility locations</p> <p>Projects with potential environmental or permitting problems not resolved before NTP</p>

Potential Cost Impacts

No Excuse Clauses contracts can affect project/construction cost. Initial costs can be somewhat higher as contractors may put some of the potential value bonus into the bid items in case they don't reach the milestone date and thus get none of the bonus; even though they expanded effort to try and reach it.

Implementation Process

Follow these steps to implement No Excuse Clauses in Bidding:

Step 1: Determine If Project should be using a No Excuse Clause.

<u>Yes</u>	<u>No</u>	
<input type="checkbox"/>	<input type="checkbox"/>	Are there substantial public impacts if this project does not meet the anticipated milestone date or is there substantial public benefit if the LID is used to advance a milestone date?
<input type="checkbox"/>	<input type="checkbox"/>	Have the potential risks for project delay been identified? Have other options been considered to mitigate these risks?
<input type="checkbox"/>	<input type="checkbox"/>	Have you tried to mitigate these risks using items besides the LID (e.g., other innovative contracting, additional design)?
<input type="checkbox"/>	<input type="checkbox"/>	Are you able to define clear LID milestone dates and events in the contract?
<input type="checkbox"/>	<input type="checkbox"/>	Have you developed a contingency plan if the contractor does not meet the LID date?
<input type="checkbox"/>	<input type="checkbox"/>	Will the public accept paying an incentive?
<input type="checkbox"/>	<input type="checkbox"/>	Is the amount of the incentive calculated based on risks and impacts? Is the amount of the incentive high enough to offset potential claims and acceleration costs? Is there funding for an incentive?

Step 2: Determine time for the specific milestone date or substantial completion dated.

- Review the designer CPM schedule and review with constructability resources.
- Determine specific details for what is considered “substantially complete”.

Step 3: Draft Special Provisions to be addressed

- Ensure contract time can be added as a bid item and ensure CPM monthly updates are included in contract bid items.
- The Contractor is compensated a certain amount of money for achieving Substantial Completion before the expiration of the assigned completion date.
- Special Provisions must be clear as to DeIDOT’s intent for evaluating substantially complete

Step 4: Construction Considerations

- Utilize CPM schedule and enforce monthly updates to help administer contract time.
- Prepare staff for aggressive contractor schedules and address potential quality issues versus complete work disagreements.
- Resolve issues proactively to reduce time potential delays caused by DeIDOT.
- Change orders and supplemental agreements should be processed quickly and address contract time determinations. Resolution and agreement between DeIDOT and the contractor should be

PAY-FOR-PERFORMANCE

Pay-for-Performance is a process where the contractor is paid for work on a graduated scale based on the quality and longevity of the work over time. Pay-for-Performance specifications rely on final outcomes that can be measured against performance criteria set forth in the contract. If the contractor fails to meet minimum performance criteria, payment is withheld, and corrective action is required.

FHWA 23 CFR 635.413 has policy over use of warranties clauses except in Design Build Projects. DeDOT may require state funding for projects to seek to enforce a warranty.

Unlike traditional specifications when DeDOT prescribes the methods and/or means of producing or constructing an item, if the contractor complies with specifications, but the outcome is not acceptable, the contractor is not responsible for corrective action.

Advantages

- ▶ Eliminates determining party when there is a problem with the quality of a specific work item
- ▶ Shifts the risk of providing a quality product to the contractor
- ▶ Provides higher quality products for a longer duration

Disadvantages

- ▶ Time is needed after project completion to ensure product performance is met
- ▶ Longer project close-out (e.g., completing finals)
- ▶ Monitoring and inspection are time-consuming
- ▶ Contractor may be required to finance a portion of the work during the performance period

Project Candidates

<u>Good Candidates</u>	<u>Poor Candidates</u>
Well-Defined/Scoped Projects or Pieces of a Project	Complex Interchanges
Hot Mix Mill and Overlay	Projects with Many Third-Party Controls
	Arbitrary type Contracts
	Painting and rehabilitation Projects

Potential Cost Impacts

Pay for Performance contracts can affect project/construction cost. Initial costs can be somewhat higher as Contractors will argue that they need assurances and additional QA/QC that the product is completed properly the first time. This should be the normal cost of doing professional work, but owners should be prepared for the argument.

Implementation Process

Follow these steps to implement Pay for Performance Bidding:

Step 1: Determine Items that will be reviewed for Performance

- Entire Contract area or certain parts

Step 2: Determine Duration Time and any interim requirements

DelDOT should highlight minimum requirements and time/lane mandates

- Perform a constructability review on the plan set.
- Assess the reasonable time frames to complete the work, effort, and equipment impacts to other projects in the area.
- Determine the Maximum Allowable contract time and any intermediate dates.

Step 3: Ensure Special Provisions that address time impacts

- Inform the design team so that contract time can be added as a bid item and ensure CPM monthly updates are included in contract bid items.
- Special Provisions must be clear as to DelDOT's intent for bidding and administering an A+B option.

Step 4: Construction Considerations

- Ensure production and completion of performance items is made within the contract requirements.
- Consider safety impacts to the roadway user, contractor personnel, and DelDOT staff during construction. Consider impact to clear zones during construction, drop-off requirements, and lane-closure requirements.

WARRANTIES

Warranties require contractors to guarantee all or portions of a construction project to be free of defects in materials and workmanship for a period. The contractor is required to correct deficiencies that occur during the warranty period.

FHWA 23 CFR 635.413 has policy over use of warranties clauses except in Design Build Projects. DeIDOT may require state funding for projects to seek to enforce a warranty.

Advantages

- ▶ Quality and durability of selected work items guaranteed for a specific time
- ▶ Longer timeframe for acceptance means DeIDOT can ensure the contractor is performing high-quality work
- ▶ Decreased inspection level on Warranty projects allows states to allocate resources elsewhere

Disadvantages

- ▶ Owner must ensure that warranty guidelines are reasonable and enforceable
- ▶ Warranty may not be collectable if guidelines are too restrictive or place undue burden on the contractor
- ▶ Requires additional staffing to monitor the Warranty after construction

Project Candidates

Warranties can be used on a variety of different construction items. Listed below are a few items that are good candidates for Warranties.

<u>Good Candidates</u>	<u>Poor Candidates</u>
Bituminous Pavement	Contract where contractor will not be returning to site within reasonable access
Grading (<i>settlement</i>)	Concrete Roadway paving
Culvert and Pipe (<i>Joints and settlement</i>)	
Route & Seal	
Landscaping	

Potential Cost Impacts

Warranties in contracts can affect project/construction cost. A longer duration for the warranty will require continual inspection and monitoring past the construction completion date.

Warranty Period

- ▶ The length of the Warranty period can vary on each project and Warranty item
- ▶ The longer a Warranty, the more difficult to enforce
 - The recommended Warranty length is 2-3 years

- The maximum Warranty length is 5 years

Warranty Enforcement

Monitoring the Warranty is the responsibility of the District Office or Maintenance groups and not DeIDOT's PD Group or Contract Administration. Consultant services can assist with assessing the products during the Warranty period, but the ultimate responsibility remains with the Districts.

Warranty Dates

- ▶ Establishing a clear date when the Warranty begins is essential to its enforcement

Long-Term/Multi-Stage Projects

- ▶ Consider starting the Warranty at the completion of various stages
- ▶ Vague terms such as "substantial completion" or "all work is completed" should not be used in the contract; these are items that are open to interpretation and can significantly change the FCA date

Warranty Criteria

Warranty threshold criteria must be established within the contract for the Warranty to be enforceable. In addition, DeIDOT may also want to indicate corrective actions required if the threshold limits are exceeded.

Warranty criteria should be developed in conjunction with DeIDOT's specialty offices (e.g., Bituminous or Concrete Units).

Warranty criteria should be compared to other past projects. Enforcing a Warranty will be difficult if criteria change from project to project.

Warranty Specifications

- ▶ Warranty specifications should be in similar format. Several examples are available on DeIDOT's Innovative Contracting Website.
- ▶ Contact the specialty office or OCIC's Director of Innovative Contracting to obtain the latest specifications if you are using an established Warranty specification item.

Recommendation

Warranty start date (FCA or Final Construction Acceptance) should start when construction is complete and the roadway is open to the public without restrictions.

Example

A 3-year construction project has a 2-year bituminous Warranty. The contractor completes the paving on eastbound during Stage 1 and switches traffic over to the new pavement. Two years later, the contractor completes westbound during Stage 2 and opens the roadway to unrestricted traffic.

The Warranty should be broken into two segments:
Eastbound – Warranty period should begin at the end of Stage 1
Westbound – Warranty period should begin at the end of Stage 2

Implementation Process

Follow these steps to implement Warranties bidding:

Step 1: Is My Project a Good Candidate for Warranty?

- Are there features that DelDOT wants to ensure for longevity beyond normal projects.
- IF warranty is needed, are State dollars available.
- Per FHWA 23 CFR 635.413, the warranty cannot be used on the project unless it is a Design-Build Project
 - <https://www.fhwa.dot.gov/programadmin/contracts/cacc.pdf#page=61>

Step 2: Determine How to Use a Warranty and what features of the project will be under the warranty

- Determine a timeframe (Typically no more than 5 years) for the warranty and what parameters will be used to measure the effectiveness
- The longer the Warranty, the more difficult it is to enforce

Step 3: Construction Considerations

- Establish a firm and clear date when the Warranty period begins
- Notify the contractor of the date that the Warranty period begins
- Notify DelDOT Maintenance of the Warranty; this will preclude Maintenance from doing work that will void the Warranty
- Identify a District personnel or consultant services to monitor the work during the warranty period;
- Review work periodically during the Warranty period; document deficiencies

LANE RENTAL

Lane Rentals encourage contractors to minimize road-user impacts and incentivize work to be done during non-peak hours. Contractors pay a Rental fee for closing lanes and shoulders to perform construction operations. A Rental fee is included in the contract. Lane Rental fees are based on the estimated cost of delay or inconvenience to the road-user during the time those lanes are being utilized for construction work (The Rental Period). The fee is assessed for the time that the contractor occupies or obstructs part of the roadway and is then deducted from the monthly progress payments.

Of Note: DeIDOT does not currently utilize Lane Rentals but it could be considered in future use.

Lane Rental is best used to focus on the time that roadway users are impacted by specific construction traffic or distinct operation (e.g., setting bridge beams or reopening ramps).

Advantages

- ▶ Better coordination of prime and sub-contractors and their means and methods control
- ▶ Minimized impact to the travelling public
- ▶ Better public perception due to fewer un-utilized lane closures

Disadvantages

- ▶ Extremely difficult for Owner to manage public expectations
- ▶ Extra effort by staff to monitor Lane Rental
- ▶ Negotiating Lane Rental adjustments can be difficult with contract changes
- ▶ Potential added costs to the project

Project Candidates

Lane Rental should be used on projects with significant impacts to motorists. General guidelines for using Lane Rental are provided below:

<u>Good Candidates</u>	<u>Poor Candidates</u>
Hot Mix Mill and Overlay	Concrete Rehabilitation and New Construction <i>(high probability of overruns)</i>
Grading Projects with Intermittent, Temporary Lane Closures	Detour Projects
Guardrail Projects	Projects with Long-Term, Permanent Lane Closures
Signing/Striping Projects	Bridge Re-Deck or Overlays
Bridge Painting	Multi Year Projects
Crack Sealing	
Signal Systems/ ITS Project	

Potential Cost Impacts

Lane Rentals will require additional costs in areas of public outreach and providing real time information. This could be in the areas of:

- Message Boards
- Highway notification signs
- Marketing materials

This will be needed in advance of the project explain parameters to stakeholders, as well as during the contract as Contractors determine rentals needs as the project evolves.

Safety Considerations

Safety needs to be addressed with every Lane Rental project. Plans and specifications should identify cases when lane closures (clear-zones, drop-offs) will be required to reduce the chance that contractors will take safety risks to reduce Lane Rental charges.

Assessing Lane Rentals (Incentives/Disincentives)

On a Lane Rental project, the contractor bids a lump-sum amount for Lane Rental. DelDOT specifies Lane Rental rates and the contractor estimates the number of hours in each Lane Rental category. Lane Rental use is tracked by project personnel as the project progresses. At the end of the project, contractors receive either an incentive or disincentive as determined below:

- ▶ **Incentive** – An incentive is usually paid for the difference between the lump-sum bid amount and actual Lane Rental use. The incentive encourages contractors to reduce traffic impacts during construction.
- ▶ **Disincentive** – A disincentive will be charged if the contractor exceeds the lump-sum bid amount.

Implementation Process

Use the following procedure to incorporate Lane Rental in your project:

Step 1: Is My Project Suitable for Lane Rental?

<u>Yes</u>	<u>No</u>	
Contractor Bidding		
<input type="checkbox"/>	<input type="checkbox"/>	Can the contractor accurately predict the duration of activities that will impact a lane rental or lane need?
Third-Party Agreements		
<input type="checkbox"/>	<input type="checkbox"/>	Little or no third-party impacts that can delay aspects of the project relative to Lane Rental.
Traffic Considerations		
<input type="checkbox"/>	<input type="checkbox"/>	Traffic restrictions or lane closures with no or limited alternate routes that result in a high user cost.
<input type="checkbox"/>	<input type="checkbox"/>	Opportunities exist to reduce closure times (e.g., staging, construction of temporary work that will impact traffic).
<input type="checkbox"/>	<input type="checkbox"/>	User fees are substantial enough to offset the potential cost increase.

Safety

- The plan and/or special provisions can accurately ensure that the safety of the construction operations will not be jeopardized by using Lane Rental.

Design Uncertainties

- Confidence that plan additions and significant overruns that may impact lane closure times have been minimized.

Step 2: When and Where Do I Allow Lane Rentals?

- ▶ Determine locations for Lane Rental whether on the mainline or auxiliary areas like shoulder ramps and turn lanes. Also need to determine times frames that will and will not be available for those lane rentals; such as peak hours, evenings, weekends etc...:

Step 3: Determine Road-User Costs (RUC)

- Obtain RUC from DeIDOT's Traffic Safety Section or as discussed in the A + B Section of this document.
- Hourly RUC should be applied to various times and locations.

Step 4: Construction Considerations

- Prepare staff for monitoring the Lane Rental schedule. Ensure all parties understand the restriction, limitations and allowable for available lanes to be rented and times frames.

Consider a Mandatory Pre-Bid Meeting with Contractors to clarify all lane rental criteria.

- Review the requirements with the contractor at the pre-construction meeting.
- Consider safety impacts to the roadway user, contractor personnel, and DeIDOT staff during construction. Consider impact to clear zones during construction, drop-off requirements, and lane-closure requirements.

Example

Mainline Closure on an I-95

Scenario #1: 7:00 PM to 9:00 PM - \$5,000 per lane/ per hour (Max 1 Lane)

Scenario #2: 9:00 PM to 6:00 AM - \$1,000 per lane/ per hour (Max 2 Lanes)