



# ***INNOVATIVE CONTRACTING GUIDELINES***

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**A+B Bidding**

**Lane Rentals**



**Incentives/  
Disincentives**



**Constructability Reviews**

**Locked Incentive Dates**

**Design-Build**

**Warranties**

**Pay for Performance**

**CPM Schedules**



## Introduction

This manual provides guidance to Mn/DOT, counties, cities and other agencies construction and design personnel in identifying projects that can utilize innovative contracting techniques. Mn/DOT's Innovative Contracting website provides additional tools such as specification templates, sample specifications, and case histories.

([www.dot.state.mn.us/const/tools/innovativecontract.html](http://www.dot.state.mn.us/const/tools/innovativecontract.html))

**Innovative contracting starts early during the design phase.** Design and construction staff need to work closely together during the development of preliminary (30%) and final plans.

Mn/DOT currently uses the following types of innovative contracting processes:

- A+B Bidding** A+B bidding reduces contract time on projects. Contractors bid the time to complete the project and a dollar amount for work items. The contract is awarded to the lowest combination of time and cost.
- Lane-Rental** Lane-rental reduces impacts to the traveling public by minimizing the time lanes are closed. Contractors are charged a fee for closing lanes and shoulders due to construction activities. The concept focuses on the time that the public is affected, NOT the overall contract time.
- Incentives/Disincentives** The contractor is paid for early completion of a project as provided for in the contract. If the contractor completes the project later than the time allowed, disincentive money is subtracted from payments due.
- Constructability Reviews** The industry provides valuable feedback into key areas that the Agency may not be able to quantify during the project development process. Feedback on preliminary plans has the potential to significantly reduce project costs and construction timelines.
- Locked Incentive Date** A locked incentive date provides an incentive if the contractor completes the work done early. Contractors are not allowed any extensions in the completion date, regardless if extensions are owner caused or not.
- Design-Build** Design and construction phases overlap, allowing faster overall project delivery.
- Pay-for-Performance** Pay-for-performance specifications rely on final outcomes 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.
- 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 of time. The contractor is required to correct deficiencies that occur during the warranty period.
- Critical Path Method (CPM Schedules).** Critical Path Method (CPM) schedules are excellent tools for both the contractor and Mn/DOT to monitor contract time during a construction project.

## A+B Projects

### Description

Cost-plus-time bidding, more commonly referred to as the A+B factors time plus cost to determine the low bid. 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 furnished by the owner and added to the 'A' component to obtain the total bid.

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

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

### Benefits

- Improved coordination between prime and sub-contractors
- Reduced construction time minimizes impacts to users.
- Contractors are required to put together a well conceived schedule.

### Drawbacks

- Contract changes are magnified; too many changes nullify the advantages of A+B.
- Acceleration techniques may require more resources for contract administration.
- More hours and over-time budget required from district staff.
- Negotiations for additional work are more intense since time being a bigger issue.

### Project Selection

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**

- Mill and Overlay
- Un-bonded concrete overlays
- Detour projects
- New construction and reconstruction (grading and structures)
- Bridge painting
- Intersection upgrades
- Bridge rehabilitation (if confident with quantities)

#### **Poor Candidates**

- Traffic Management System (TMC)  
(Mn/DOT-provided items can cause delay)
- Steel fabrication  
(minimal benefit to public)
- Concrete rehabilitation  
(due to high probability of overruns)
- Signal systems  
(Mn/DOT provided items can cause delay)
- Landscaping  
(minimal disruption to traffic)
- Signing Projects



## IMPLEMENTING A+B PROJECTS

Follow these steps to implement A+B bidding:

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

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	<b>RIGHT OF WAY</b>
<input type="checkbox"/>	<input type="checkbox"/>	Will all right-of-way be secured prior to letting date?
<input type="checkbox"/>	<input type="checkbox"/>	If not, do the staging plans allow the contractor to sequence work around the conflicts and is a right-of-way time determination schedule in the special provisions?
<input type="checkbox"/>	<input type="checkbox"/>	<b>PLANS</b>
<input type="checkbox"/>	<input type="checkbox"/>	Is there high confidence in the design?
<input type="checkbox"/>	<input type="checkbox"/>	Has a thorough field review been conducted?
<input type="checkbox"/>	<input type="checkbox"/>	Has design coordinated with construction at various stages (e.g. 30%, 90%)?
<input type="checkbox"/>	<input type="checkbox"/>	Has a constructability and bid-ability review been conducted by design and construction?
<input type="checkbox"/>	<input type="checkbox"/>	<b>UTILITIES</b>
<input type="checkbox"/>	<input type="checkbox"/>	There is <b>little or no chance</b> that utilities will significantly delay the contractor.
<input type="checkbox"/>	<input type="checkbox"/>	Are utility conflicts clearly identified in the plan and special provisions?
<input type="checkbox"/>	<input type="checkbox"/>	<b>THIRD-PARTY AGREEMENTS</b>
<input type="checkbox"/>	<input type="checkbox"/>	Will all permits be secured by the letting date?
<input type="checkbox"/>	<input type="checkbox"/>	Will all municipal agreements be secured by the letting date?
<input type="checkbox"/>	<input type="checkbox"/>	<b>PROGRAM IMPACTS</b>
<input type="checkbox"/>	<input type="checkbox"/>	Have you considered the district wide impacts of using an accelerated schedule? Have you considered the potential cost and delivery to other projects?
<input type="checkbox"/>	<input type="checkbox"/>	<b>SOIL CONDITIONS</b>
<input type="checkbox"/>	<input type="checkbox"/>	There is <b>little</b> risk of contaminated or poor soils adding significant extra work.



<input type="checkbox"/>	<input type="checkbox"/>	<p><b>TRAFFIC CONDITIONS</b>                  Do construction traffic impacts relate to any of the following conditions?</p> <ul style="list-style-type: none"> <li>• Lengthy detours</li> <li>• Significant delays to motorists</li> <li>• Significant impacts to businesses, schools, or emergency services</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<p><b>STAFFING CONSIDERATIONS</b>                  Do you have the staff available if the contractor has an aggressive schedule?</p>
<input type="checkbox"/>	<input type="checkbox"/>	<p>Do you have the budget for any additional overtime?</p>

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 give careful consideration to the 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. Determine how you can best use A+B on your project.

- Entire contract length
- Intermediate dates
  - o Detour duration
  - o Interchange closure period
  - o Lane closure timeframe
  - o Stages
- Multiple timeframes (A+B+C)
- Any other project aspect

**Step 3: Determine Road User Costs**

- Obtain Road-User Costs (RUC) from Mn/DOT's Office of Investment Management (OIM). The contact is Ed Idzorek (651) 205-4391.
- Project engineer/supervisor needs to weigh how the RUC may affect the bid to determine the appropriate balance between the 'A' and 'B' portions of the bid. Adjust the RUC if necessary.

**Example:** RUC calculated by OIM = \$75,000 per day

Bidder #1: \$1,000,000 at 50 Days (A+B = \$4,750,000)  
 Bidder #2: \$1,500,000 at 40 Days (A+B = \$4,500,000) – Awarded Contract

**Question:** Are you willing to spend an extra 50 percent to complete the project 10 days early? Adjusting the RUC may minimize this effect.

#### Step 4: Determine Contract Time

- Perform a constructability review on the plan set.
- Assess the time, manpower and equipment impacts to other projects in the area.
- Determine the Contract Type
  - Working Days (recommended for projects <100 working days)
  - Calendar Days (recommended on multi-year projects)
  - If using a CPM schedule, use Calendar Days.
- Determine the amount of contract time and any intermediate dates. Use this as the maximum amount of time Mn/DOT would allow.
- Consider adding a minimum number of days. This will likely be required if the RUC is not equal to the disincentive.

**Note:** 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 \$ portion.

#### Step 5: Determine Incentives and Disincentives

##### Incentives (Optional)

- Do I want to include an incentive? Check with management.
- Determine incentive amount
  - Often equal or less than RUC
  - Incentive should be capped by the days and/or dollar amount)
  - Total incentive < 5 percent of the engineers estimate

##### Disincentives

- Should be considered
- Should not be used in lieu of liquidated damages.
- Determine disincentive amount
  - No limit is recommended
  - Should ALWAYS equal RUC.

#### Step 6: Draft Special Provisions

- Use standard template on the Innovative Contracting Website:  
<http://www.dot.state.mn.us/const/tools/innovativecontract.html>
- Inform the design squad so that contract time can be added as a bid item.
- Special Provisions 1806 & 1807 must be clear and concise.

**Note:** It is recommended that a liquidated damage (LD) be used on all projects. A disincentive may also be used in combination with a LD. Make sure your specs are clear and identify each separately.

## Step 7: Construction Considerations

- Consider using a CPM Schedule to help administer contract time.
- Prepare staff for aggressive contractor schedules.
- Obtain frequent schedules updates if needed.
- Resolve issues proactively to reduce owner delayed time.
- Minor work orders, supplemental agreements and change orders need to be processed in a timely manner.
- Minor work orders, supplemental agreements and change orders need to be address contract time extensions/reductions.
- Work with the contractor to revise the schedule if plan additions occur
- Consider safety impacts to the roadway user, contractor personnel and Mn/DOT staff during construction. Consider impact to clear zones during construction, drop-off requirements, and lane-closure requirements.

## Lane Rental

### Description

Lane rentals encourage contractors to minimize road-user impacts. Contractors pay a rental fee for closing lanes and shoulders to do construction work. 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 rental period. The fee is assessed for the time that the contractor occupies or obstructs part of the roadway, and is deducted from the monthly progress payments.

Lane Rental should **NOT** be used to reduce overall contract time but to focus on the time that roadways users are impacted by construction traffic.

### Benefits

- Better coordination of prime and sub-contractors
- Minimized impact to traveling public
- Better public perception due to fewer un-utilized lane closures

### Drawbacks

- Extra effort by staff to monitor lane rental
- Negotiating lane rental adjustments can be difficult with contract changes
- Potential added costs to the project

### 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.

District 1 included a plan sheet on a recent project to specify when lane closures would be allowed. The plan sheet eliminated confusion or disagreements with the contractors and preserved safety on the project.

### Assessing Lane Rentals (Incentives/Disincentives)

On a lane-rental project, the contractor bids a lump-sum amount for lane rental. Mn/DOT specifies lane rental rates and the contractor estimates the number of hours in each lane-rental category.

Lane-rental use is tracked by the 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.

## Project Selection

Lane rental should be used on projects with significant impacts to motorists. Here are general guidelines for using lane-rental.

### **Good Candidates**

- Bituminous mill and overlay (short duration only)
  - Two-lane roadways with flagging operations
  - Intersection impacts
- Grading projects with intermittent **TEMPORARY** lane closures
  - Temporary widening with lane closures
  - Traffic switches
  - Striping (permanent or temporary)
  - Lane closures for delivery of goods and equipment
- Guardrail projects
- Signing projects
- Striping applications
- Bridge painting
- Crack sealing
- Signal systems
- Traffic management projects (ITS)

### **Poor Candidates**

- Concrete rehabilitation (high probability of overruns)
- Detour projects (use A+B instead)
- Projects with long-term **PERMANENT** lane closures (use A+B instead)
- Bridge re-deck or overlays (Consider A+B)
- New construction projects (off alignment)
- Long-term projects that would be difficult for contractors to accurately bid the number of lane-rental hours.

## Including Lane Rental

Use the following procedure to incorporate lane rental in your project.

### Step 1: Is My Project Suitable for Lane Rental?

YES	No	
<input type="checkbox"/>	<input type="checkbox"/>	<b>CONTRACTOR BIDDING</b> Can the contractor accurately predict the duration of activities that will impact a lane?
<input type="checkbox"/>	<input type="checkbox"/>	<b>THIRD-PARTY AGREEMENTS</b> There are <i>little or no</i> utility or third-party impacts that can delay aspects of the project relative to lane-rental?
<input type="checkbox"/>	<input type="checkbox"/>	<b>TRAFFIC CONSIDERATIONS</b> Traffic restrictions or lane closures with no or limited alternate routes that result in a high user cost. or Opportunities exist to reduce closure times (e.g. staging or construction of temporary work that will impact traffic). or User fees are substantial enough to offset the potential cost increase.
<input type="checkbox"/>	<input type="checkbox"/>	<b>SAFETY</b> The plan and/or special provisions can accurately insure that the safety of the construction operations will not be jeopardized by using lane-rental.
<input type="checkbox"/>	<input type="checkbox"/>	<b>DESIGN UNCERTAINTIES</b> Confidence that plan additions and significant overruns that may impact lane closure times have been minimized

If the answer is **YES** to most of the above questions, the project may be suitable for lane rental. If you answered **NO** to some of the questions, your project may still be a good candidate for lane rental, but give careful consideration to the items with a **NO** response.

### Step 2: When and Where do I Use Lane Rental?

*Determine locations for lane-rental*

- Mainline
- Shoulders
- Ramps
- Turn lanes
- Signal systems impacted

*Determine time-frames for lane-rental*

- Peak hour (recommendation: do not allow lane rental during this time)
- Off-peak hour
- Weekends
- Nights

### Step 3: Determine Road User Costs

- Obtain Road-User Costs (RUC) from Mn/DOT's Office of Investment Management (OIM). The contact is Ed Idzorek (651) 234-7717.
- Hourly road-user costs should be applied to various times and locations.

**Example:** Mainline closure on an interstate highway

Peak hours	No Lane Closure Allowed*
7:00 to 9:00 PM	RUC = \$3,000/Hour
9:00 PM to 6:00 AM	RUC = \$1,000/Hour
Weekends	RUC = \$1,000/Hour
Shoulders	RUC = \$500/Hour

\* Lane rentals may be allowed in peak hours where traffic levels are low.

### Step 4: Estimate Contractor Bid Amount

- Estimate the hours that a typical contractor will bid. Provide this number to Mn/DOT's estimate unit for inclusion in the Engineer's Estimate.

### Step 5: Draft Special Provisions

- Use standard templates on the Innovative Contracting Website:

<http://www.dot.state.mn.us/const/tools/innovativecontract.html>

### Step 6: Construction Considerations

- Consider using a Critical Path Method (CPM) Schedule to help administer contract time.
- Prepare staff for monitoring the lane-rental schedule.
- Review the requirements with the contractor at the pre-construction meeting.
- Work with the contractor to revise the schedule if plan additions occur.
- Consider safety impacts to the roadway user, contractor personnel and Mn/DOT staff during construction. Consider impact to clear zones during construction, drop-off requirements, and lane closure requirements.

## Incentive / Disincentive Projects

### Description

Incentive/Disincentive is a process where the contractor is paid an incentive for completing 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.

Incentive/Disincentives can be used in a wide variety of projects. It is best applied when Mn/DOT is willing to pay the contractor to expedite the work to reduce the contract time. It is similar to the A+B in that it works well with urban reconstruction and bridge-related projects

### Benefits

- Reduced construction time
- Potential for lower contract administration costs
- Improved public relations by information businesses/residents that you are committed to completing the project as quickly as possible.
- Better control of project acceleration compared to A+B

### Drawbacks

- May require additional funding
- Contract changes can lead to disputes regarding incentive payments

### Project Types

#### **Good Candidates**

- Projects with high road-user or business impacts
  - Urban reconstruction projects
  - Bridge replacement projects
  - Detour projects
  - Urban pavement rehabilitation projects (if confident with quantities)
  - Interstate (high volume) projects with major traffic impacts
- A+B projects
- Bridge rehabilitation projects
- Projects with commitments to open a roadway as quickly as possible.

#### **Poor Candidates**

- New construction projects with minimal impacts to road users
- Projects where right-of-way or utilities are not clearly identified
- Traffic Management System (TMC)
- Steel fabrication (minimal benefit to public)
- Landscaping (minimal disruption to traffic)

## 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.

**Escalating Example:** For each day that all work under this contract is completed before August 1, 2006, the contractor will obtain an incentive in accordance with the following schedule:

1-5 Days	\$0 per calendar day
6-10 Days	\$5,000 per calendar day (Maximum of \$25,000)
Over 10 Days	\$10,000 per calendar day (Maximum of \$100,000)

Incentives will not be paid cumulatively. For example, if a contractor completes the work 13 days early, the maximum amount of incentive is \$100,000. The contractor will not receive an additional incentive of \$25,000 for completing the project within the 6-to 10-day incentive period.

## Incentive / Disincentive Amounts

- Incentives should be based on items such as Road-User Costs (RUC). Contact Ed Ildzorek at OIM (651) 234-7717 for a RUC.
- Incentives must be sufficient to encourage contractor interest, stimulate innovative ideas, and increase profitability of meeting tight schedules. Recent experience indicates that daily incentives between \$5,000 and \$10,000 with caps in excess of \$50,000 are substantial amounts for contractors.
- If incentives are not sufficient to cover the contractor's cost for the extra effort, there is little motivation for the contractor to accelerate production.
- Maximum incentive should not exceed 5 percent of the total contract amount.
- Incentive should be equal to or less than the disincentive rate.
- A maximum incentive should be specified.

## Contract Administration Considerations

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

## Special Provisions

- Use standard templates on the Innovative Contracting Website:  
<http://www.dot.state.mn.us/const/tools/innovativecontract.html>

## Constructability Reviews

### Description

Industry representatives can provide valuable information into many key areas that Mn/DOT may not be able to quantify during the project development process. Feedback on preliminary plans has the potential to significantly reduce project costs and construction timelines.

### Benefits

There are many benefits to using constructability reviews during the plan development process.

#### Lower Construction Costs

- Contractors can identify cost savings situations or alternative designs
- Contractors can help Mn/DOT identify areas of potential risk
- Mn/DOT can provide detailed background into the project that can not be relayed on a set of plans, thereby reducing risk.

#### Construction Schedule

- Contractors can provide valuable input into construction timelines/production rates.

#### Industry wants to do this!

- At this point, industry is open to meeting with Mn/DOT at no cost
- *"If value is added we should continue with similar programs in the future.....there is nothing our members like more than interacting with the customer where both parties benefit"* Dave Semerad, Minnesota AGC, commenting on TH 36 Constructability Review

### Drawbacks

- Needs to be accomplished early in design process (approximately 50%)

### Project Types

#### **Good Candidates**

- Complex or large projects with staging concerns
- Project with tight construction timelines
- Projects with new methods being proposed
- Projects when contractors can add innovation

### Guidelines

- If you are considering utilizing a constructability review, contact the Project Development Engineer (Kevin Kosobud) at 218-828-5822.

## Locked Incentive Date (LID)

A Locked Incentive Date provides an incentive if the contractor completes a phase of a project on or before a date specified within the contract. With the LID spec, the contractors are not allowed any extensions in the date even if an owner caused delay occurs. Examples of owner caused delays are utility delays, plan overruns, and extra work.

Contractors have the option of either pursuing the incentive or not. If a contractor chooses not to pursue the incentive, the Contractor has the right to seek time extensions in accordance with Mn/DOT standard specifications. If the contractor chooses the incentive, he/she also agrees to waive all claims for work done to date on the project.

**A Locked Incentive Date should only be used on unique projects. If you are considering using a LID provision, contact the Project Development Engineer (Kevin Kosobud) at 218-828-5822.**

Locked Incentive Date

### Benefits

- Reduced construction time
- Increased contractor concern for the project schedule
- Eliminates claims
- Better coordination between the owner, contractor, and subcontractors, the use of more innovative techniques and the development of more realistic bids

### Drawbacks

- The dollar amount for the LID has to be substantial enough for contractors to pursue. The dollar amount will be substantially higher compared to a normal incentive contract. This can add costs to your project.
- Quality of work may suffer when a contractor rushes to meet a bonus date.
- No-excuse clauses can strain owner-contractor relations.
- Difficulty in negotiating owner-initiated change orders and supplemental agreements due to the fixed timeline

### Minnesota Law

- Minnesota law prevents public works contracts which include language “that waives, releases, or extinguishes the rights of a contractor to seek recovery for costs or damages, or seek an equitable adjust, for delays, disruption, or acceleration in performing the contract is void and unenforceable if the delay, disruption, or acceleration is caused by acts of the contracting public entity....”

## Design-Build

### Description

Design-build differs from traditional methods by overlapping design and construction, allowing construction to begin after only a portion of the design has been completed. Typically, design-build contracts are awarded after Mn/DOT has completed the layout (30% design), the environmental process is complete (or nearly complete) and right-of-way is in the process of being secured.

Design-build also has a different approach to risk management and project responsibilities. The contractor often has more responsibility for Quality Control (QC) and Quality Assurance (QA) of the project; Mn/DOT provides verification.

### Project Selection

Mn/DOT's design-build program is currently tailored to large construction projects, but can be modified for smaller projects.

For projects being considered for design-build, contact Mn/DOT's Design-build director as soon as possible. The district and the design-build director will need to coordinate efforts to define the scope of work and begin the design-build team selection process. The selection of the design-build team often requires an extensive Request for Qualifications (RFQ) and Request for Proposal (RFP).

### Benefits

- Shortened completion time by overlapping design and construction
- Construction can begin before all design details are final
- Greater innovation in selecting design, materials and construction methods
- Reduced claims due to design errors
- Accelerated response time and dispute resolution through a team effort
- Single contact point for quality, cost and schedule from design through construction
- Shortened project delivery time which can reduce user costs
- Use of best-value project award selection criteria which evaluates both technical and financial elements

### Drawbacks

- High learning curve because design-build changes stakeholders' roles
- Parties are familiar with traditional methods
- Bidding process more expensive for design-build teams
- Coordination is more challenging due to faster pace

### Project Types

#### **Good Candidates**

- Projects that need to be "fast-tracked" for public safety or political reasons
- Projects that allow for innovation in the design and construction efforts
- Projects with funding "sun-set" dates where traditional bid-build delivery may not be able to achieve these dates
- Projects where in-house staffing cannot meet the project demands
- Emergency projects with tight time constraints

### Want more Information?

Contact Mn/DOT Design-build director at 651-366-4210.

## 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.

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

### Benefits

- Eliminates blame 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

### Drawbacks

- Time is needed after project completion to ensure product performance
- Longer project close-out (completing finals)
- Product monitoring and inspection is time-consuming
- Contractor may be required to finance a portion of the work during the performance period.

#### ***Pay-for-Performance Example***

- Pavement markings (Used on I-494 Design-Build) – Measured reflectivity over time

### How to use a Pay-for-Performance Items

Contract the Project Development Engineer at (218) 828-5822. The Office of Construction and Innovative Contracting (OCIC) can provide guidance and possibly some example specifications.

## Warranties

### Description

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

### Benefits

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

### Drawbacks

- 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 contractor
- Requires additional staffing to monitor the warranty after construction

### Project Types

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

#### **Warranty Candidates**

- Bituminous
- Grading (settlement)
- Culvert (settlement)
- Route and seal
- Concrete pavement

### 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.
  - **Recommended warranty length is to 2-3 years.**
  - Maximum warranty length: 5 years.

### Warranty Enforcement

Monitoring the warranty is the responsibility of the district and not Mn/DOT's specialty offices such as the bituminous or concrete office. Specialty offices may assist with assessing the products during the warranty period, but the ultimate responsibility is with the district.

## Warranty Dates

- Establishing a clear date when the warranty begins is essential to enforcing the warranty.

**Recommendation: Warranty start date (Final Construction Acceptance [FCA]) should start when construction is complete and the roadway is open to the public without restrictions.**

- **Long Term (Multi-Stage Projects)**

Consider starting the warranty at the completion of various stages

**Example. A 3-year construction project has 2-year bituminous warranty.**

**Contractor completes concrete paving on eastbound in 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 un-restricted 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**

- 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 in order for the warranty to be enforceable. In addition, Mn/DOT may also want to indicate corrective actions required if the threshold limits are exceeded.

- Warranty criteria should be developed in conjunction with Mn/DOT’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 changes from project to project.

## Warranty Specifications

- Warranty specifications should be similar in format. Several examples are available on Mn/DOT’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.

### Contract Administration Considerations

- Establish a firm and clear date when the warranty period begins
- Notify the contractor of the date that the warranty period begins.
- Notify the OCIC Contract Administration Engineer prior to award to insure that the warranty bond is submitted.
- Notify Mn/DOT maintenance of the warranty. This will preclude maintenance from doing work that will void the warranty.
- Identify a district person to monitor the work during the warranty period. Mn/DOT specialty offices will **not** monitor the work during the warranty period.
- Review work periodically during the warranty period. Document deficiencies.
- Notify OCIC Contract Administration Engineer if you need to invoke the warranty bond during construction.

## CPM Schedules

### Description

Critical Path Method (CPM) schedules are excellent tools for both the contractor and Mn/DOT to monitor contract time during a construction project. Unlike a traditional bar chart schedule, CPM schedules use logic to link activities and define the critical path and project duration.

### Benefits

- Improved tool to monitor contract time
- Tool to assist with quantifying and mitigating project impacts
- Contractors are required to put together a well thought-out schedule.
- Provides an opportunity for owner “buy-in”
- Identifies sufficient weather and duration contingency

### Drawbacks

- Requires experienced personnel to oversee the contractor’s schedule.
- Requires experienced contractor personnel to develop a schedule
- Owner acceptance of the schedule may assume unnecessary liability
- Additional contract requirements to enforce

### Project Selection

CPM should be used on complex projects or projects with critical timelines. Due to the level of experience required for both the contractor and Mn/DOT, CPM schedules are not recommended on lower cost, simpler projects, at this time.

**If CPM is not used, the contract should never waive the schedule requirements of Mn/DOT 1803.1. The schedule should contain a level of detail as to communicate a well-thought-out plan that matches the complexity of the job.**

#### **Good Candidates**

- New construction and reconstruction projects (>\$5,000,000).
- Time-sensitive projects when commitments have been made.
- Phase or staged construction.
- Multi-year projects
- Projects with significant claim potential.
- A+B(+C) projects.
- Early completion incentive projects.

#### **Poor Candidates**

- Projects that do not require continual work effort.
- Projects that do not significantly impact the public
  - Traffic Management System (TMC)
  - Mill-and-Overlay Projects
  - Signal systems
  - Landscaping

## Draft Special Provisions

Contact Mn/DOT's Project Control Engineer (651) 366-4239 for the latest special provisions. The special provisions can be modified to meet your project type.

## Contract Administration Considerations

- Consider hiring a consultant to help with administering CPMs. This is highly recommended on large, complex projects that will require significant staffing.
- Mn/DOT staff should be properly trained in administering a CPM schedule. If not administered properly, a CPM schedule could significantly hurt Mn/DOT during a claim.
- Be consistent with administering the CPM special provision.
- Work with the contractor to revise the schedule if plan additions occur

**Updated changes to contact information can be found at:**  
<http://www.dot.state.mn.us/const/tools/iccontacts.html> .