



FDM 11-2-1 Alternative Contracting

May 17, 2021

1.1 Introduction

Most of the improvement projects will continue to be designed and constructed using the traditional design-bid-build method, where cost determines the winning bid. Some alternative contracting techniques (flexible notice to proceed, lane rental that does not unduly delay traffic) might be useful in conjunction with many of the traditional projects. However, for a limited number of projects, due to their adverse impact on traffic, other alternative contracting methods may be appropriate. The alternative contracting methods discussed below are techniques to allow the department to stay in compliance with the Work Zone Policy Statement ([FDM 11-50-1](#)). As background on determining traffic impacts, see [FDM 11-50-30](#) - Statewide Freeway and Expressway Lane Closure and Delay Guidelines.

The Moving Ahead for Progress in the 21st Century Act (MAP-21), was signed into law in July 2012. Among other items, MAP-21 provides an array of provisions designed to increase innovation and improve efficiency, effectiveness, and accountability in the planning, design, engineering, construction and financing of transportation projects. Building on FHWA's "Every Day Counts" initiative, MAP-21 changes will speed up the project delivery process, saving time and money for individuals and businesses, and yielding broad benefits nationwide. (See <http://www.fhwa.dot.gov/map21/> for more information.) The alternative contracting methods discussed in this section are an integral part of MAP-21.

Current department practice, in the case of construction projects that exceed the contract time, liquidated damages are applied per [standard spec 108.11](#). These liquidated damages are only expected to recoup the added administrative costs (staff time) due to the construction work extending beyond the time stated in the contract. The department already uses some other alternative contracting methods (sometimes allowing the free use of lanes during "off peak" hours - a basic form of lane rental - and sometimes using interim liquidated damages and incentive/disincentive provisions to assure timely completion of some or all of the work). Similarly, the new concept of enhanced liquidated damages (recovering road user costs at the conclusion of a project in addition to administrative costs) is another possibility for alternative contracting.

FHWA evaluated a number of methods for improving the efficiency of delivering transportation improvement projects under the Special Experimental Project 14 Program. Four formerly experimental techniques are now operational;

- cost-plus-time bidding
- lane rental
- design/build contracting
- and warranty clauses.

The department has a lot of experience with lane rentals and warranties and has used cost-plus-time bidding on a limited basis in the past. Variations of cost plus time bidding (cost plus lane rentals and accelerated bridge construction) are relatively new to the department.

Road User Costs:

Road user costs (see [FDM 11-50-32](#)) play an important role in computing the lane rental fee assessments for the failure to open a lane (or shoulder) in;

- Lane Rental specifications ([FDM 11-2-1.5](#))
- "Enhanced" Liquidated Damages ([FDM 11-2-1.6](#))
- Interim Liquidated Damages ([FDM 11-2-1.7](#))
- Incentives/Disincentives ([FDM 11-2-1.8](#))
- cost per unit of time specified in Cost-Plus-Time bidding ([FDM 11-2-1.9](#)).

The monies specified are based on a portion of the calculated road user costs. Contact your Region Traffic Unit Supervisor or the Supervisor of the Traffic Design Unit in the Bureau of Traffic Operations for the current information on computing road user costs.

Other Work Zone Effects:

Other work zone effects that impact businesses and the community at-large are generally hard to quantify and therefore should be considered as non-monetary or qualitative factors in the decision-making process. Work zones can affect accessibility to local business premises, thus adversely impacting local commerce. Many business owners are concerned about the potential negative impacts on their businesses. Local communities have similar concerns, such as issues related to resident access, decrease in property and land values, noise, and air pollution. There is some variance in the process to calculate road user costs and the calculation generally results in a range of possible costs. If the businesses and the community at-large concerns are judged to be sufficiently severe, the monies specified may be placed at a slightly higher portion of the calculated road user cost range.

The potential use of alternative contracting methods should be considered in the early stages of project planning, as part of the scoping process (see [FDM 3-1-10](#)). This will allow any potential additional monies due the contractor for meeting or exceeding contract deadlines to be included in the project estimate. Unless noted otherwise, projects contemplated for alternative contracting methods should be free of third party conflicts and design uncertainties.

Sample special provisions for most of the alternative contracting methods discussed below are available in [FDM 19-15-2](#).

There are other alternative contracting techniques that are presently considered experimental by the FHWA. To be approved for use of federal funds, the department or local public agency would have to submit a SEP-14 work plan through the local FHWA Division Office.

1.2 Process for Selecting an Alternative Contracting Method

The alternative contracting decision flowchart is shown in [Attachment 1.1](#). The Overview (page 1) shows the process in general terms with more detail included in pages 2 through 8. The questions asked in the diamond boxes on the flowchart are addressed in discussions below.

Most of the techniques discussed below are based on assuming a normal design engineering process, then relying on either a normal or an accelerated construction process. In some rare cases, when the design time is extremely limited or construction of a project needs to be started quickly, a possible alternative contracting technique is "low bid" design/build. The "low bid" design/build concept could be constructed with normal or accelerated construction projection rates. See the discussion below in [FDM 11-2-1.3](#).

Another type of alternative contracting is the use of Flexible Notice-to-Proceed specifications. It is useful when there are not any constraints on when the project needs to start and there is more than enough time available in the construction season than is needed for the project. The flexible notice-to-proceed concept is intended for a project that is expected to be constructed using normal construction production rates. See the discussion in [FDM 11-2-1.4](#).

1.2.1 Alternative Contracting Methods for Projects Constructed with Normal Production Rates

The discussions below are not intended to apply to "low bid" design/build contracts, contracts with flexible notice-to-proceed special provisions, or lane rentals (long term or off-peak) when traffic is not delayed.

In order to consider the use of the alternative contracting methods discussed below, the proposed project must be relatively free of third party conflicts and design uncertainties, if not, normal contracting methods should be used (see page 4 of [Attachment 1.1](#)). The project must demonstrate a need to minimize traffic inconvenience. The project should also be able to be completed using normal construction production rates ([FDM 19-10-30](#)).

Utility conflicts, design uncertainties, or right-of-way issues which may impact the bid letting date or the project schedule complicate construction administration. The completion dates in the contract must accurately reflect the impacts of utility relocations, design uncertainties, and right-of-way constraints that may restrict construction operations. To consider alternative contracting methods, the project should not have significant conflicts or design uncertainties.

The project would in most cases be classified as a transportation management plan (TMP) Type 3 or Type 4 (see [FDM 11-50-5](#)) and should also meet at least some of the following criteria to demonstrate a need to minimize traffic inconvenience:

- Completion time constraint; this could include weather limitations or a potential interference with major public events
- Safety Considerations
 - School zone in or adjacent to project
 - Impairment of emergency vehicle response (hospital, police or fire)

- Basic need for project is to alleviate accidents
- Heavy pedestrian/bike usage; or
- High worker exposure.
- Projects on OSOW routes (see [FDM 11-25-1](#))
- Projects which have multiple activities occurring which do not necessarily have to be done sequentially.

Once the need to minimize traffic inconvenience is determined and third-party conflicts have been assessed, the following alternative contracting methods can be considered:

- [FDM 11-2-1.5](#) Lane Rental (Long Term or Off-Peak), when traffic is delayed on remaining lane(s)
- [FDM 11-2-1.6](#) Enhanced Liquidated Damages, with normal construction production rates
- [FDM 11-2-1.7](#) Interim Liquidated Damages, with normal construction production rates

1.2.2 Alternative Contracting Methods for Projects Constructed with Accelerated Production Rates

In order to be a candidate for the alternative contracting methods discussed below, the project must demonstrate a need to be constructed with accelerated production rates; it must be relatively free of third party conflicts; and the agency responsible must have necessary resources to accommodate an accelerated construction schedule.

As above, the project would in most cases be classified as a TMP Type 3 or Type 4 (see [FDM 11-50-5](#)). In addition to meeting some of the criteria discussed above under projects constructed with normal production rates ([FDM 11-2-1.2.1](#)) the project should also meet at least some of the following criteria to demonstrate a need for accelerated construction:

- Current level of service below "C"
- Major bridge or roadway out of service due to a natural calamity, such as earthquake or flood
- Projects where access to retail business will be restricted or inconvenienced because of reconstruction and as a result significant business loss can be expected to occur
- Motorists' delay time waiting in line is 15 minutes above normal recurring traffic delays between major city nodes and within each major city
- Road User Costs (RUC) related to detours or due to delays caused by congestion/capacity problems exceed 20% of the project construction cost, but are a minimum of \$100,000
- The calculated RUC exceeds \$40,000 per day. Traffic restrictions, lane closures, or detours result in high RUC. Some causes of high road user-costs are:
 - lengthy detours
 - high traffic volumes
 - major reconstruction or rehabilitation on an existing urban facility.
- Highly sensitive project (political issues, significant public interest and benefit, completion of a gap in a significant highway system)
- Traffic control phasing can be structured to maximize a contractor's ability to reduce the duration of construction and the department seeks contractors' expertise to facilitate an earlier completion.

Similar to projects to be constructed with normal production rates, utility conflicts, design uncertainties, or right-of-way issues which may impact the bid letting date or interfere with the critical path schedule complicate contract administration on projects to be constructed with accelerated production rates. As above, the completion dates in the contract must accurately reflect the impacts of utility relocations, design uncertainties, and right-of-way constraints that may occur during the duration of the project.

Although the number of administrative staff-hours for a project using accelerated construction production rates is generally less or about the same as the same project bid conventionally, the responsible agency needs to be aware that the contractor will likely work longer hours. This will require an increase in staff-hours per day; overtime, weekend work, multi-shifts should be expected.

Once the need for accelerated construction is determined, the third-party conflicts and construction administration staffing issues have been assessed, the following alternative contracting methods can be considered:

- [FDM 11-2-1.6](#) Enhanced Liquidated Damages, with accelerated construction production rates
- [FDM 11-2-1.7](#) Interim Liquidated Damages, with accelerated construction production rates

- [FDM 11-2-1.8](#) Incentives/Disincentives
- [FDM 11-2-1.9](#) Cost Plus Time Bidding
 - A + B (and A + B1 + B2 + B3) bidding
 - A + Lane Rental (Long Term) bidding or A + Lane Rental (Off-Peak and Peak Hour) bidding
 - Accelerated Bridge Construction

Warranties ([FDM 11-2-1.10](#)) are an alternative contracting method which can be used to increase project quality by protecting the department's investment.

1.3 "Low Bid" Design Build

The "Low Bid" Design-Build method is shown schematically in page 2 of [Attachment 1.1](#).

The department has used a "low bid" design-build method one time on a bridge project (to rehabilitate the Wisconsin Avenue and Juneau Avenue bridges in the City of Milwaukee). Federal law provides that federally funded design-build projects may be procured using "any process permitted by applicable State and local law." The department is normally awards construction contracts through a competitive bidding process but is not subject to any requirement to use a particular method to procure engineering services contracts. It is therefore possible to bundle design and construction services into a single contract awarded to the "lowest competent and responsible bidder."

Although the design engineering process timeline is compressed with the "low bid" design/build concept, the construction work may or may not need to be accelerated to complete the entire project in the available time.

This contracting method should not solely be used to obligate funds nor to compensate for inadequate agency resources.

"Low Bid" Design/Build Advantages:

"Low bid" design/build allows the department to tap into the primary advantage of a design/build contract, allowing the construction to begin before the final design is complete, thus reducing the overall project time.

"Low Bid" Design/Build Disadvantages:

Use of this technique might limit the number of firms available to do both the design and construction work or might require firms to form partnerships to qualify for consideration.

"Low Bid" Design/Build Criteria for Selection:

The primary reason to consider a "low bid" design/build contract is a lack of time available to use the normal design process. Construction could be accomplished with normal or accelerated construction production rates.

1.4 Flexible Notice-to-Proceed

The Flexible Notice-To-Proceed method is shown schematically in page 3 of [Attachment 1.1](#).

One type of alternative contracting is the use of Flexible Notice-to-Proceed specifications. It is useful when there are not any constraints on when the project needs to start and there is more than enough time available in the construction season than is needed for the project. However, once started, the project would be required to be completed in a certain amount of time or by a specified date. In those cases, it is possible to allow the contractor to pick the start date, within certain parameters such as the soonest and the latest it can start.

The contractor is expected to complete the work using normal construction production rates.

Flexible Notice-to-Proceed Advantages:

Using this concept allows a contractor to have more flexibility in scheduling the use of their equipment and manpower. Contractors seem to like this flexibility as it allows them to use their resources better. The result may be lower bid prices and perhaps reduced contract time.

Flexible Notice-to-Proceed Disadvantages:

It is somewhat more difficult to communicate the start date and end date with local communities, businesses, and utilities.

Flexible Notice-to-Proceed Criteria for Selection:

In order to use this concept, the project start date and end date must be able to be "floated". If the estimated construction time for the project is appreciably less than the available construction window, this technique may be appropriate to use.

Refer to [FDM 19-15-2 Attachment 15.1](#) for a listing of standardized special provisions available for use to

specify flexible notice-to-proceed techniques.

1.5 Lane Rental

The Lane Rental methods are shown schematically in page 5 (for lane rental long term) and page 6 (for lane rental off peak) of [Attachment 1.1](#).

Even though the possibility of closing the road to through traffic (and using a detour) is always available, in many cases the proposed construction can be accomplished by restricting the traffic to portions of the existing or reconstructed roadway. Common examples of these traffic restrictions are reducing a four-lane facility to two lanes of counter-directional traffic (while reconstructing the other two lanes) or reducing two lanes in one direction on a four-lane facility to a single lane (for construction activities on the closed lane). While these restrictions are defined as lane rentals, there is not always a lane rental fee assessment for using the lane for construction. Lane rental fee assessments are associated with a lane rental which unduly causes a “delay” (see definition below) in traffic.

Undue traffic delays as a result of lane rentals are defined in [FDM 11-50-30](#): a “delay” occurs when the projected traffic volumes on the reduced lanes results in a traffic delay of more than 15-minutes above the normal travel time between city nodes and within each city node. If the 15-minute threshold is not exceeded, it would not be considered a delay warranting special specifications. The designer should coordinate with the region Traffic Section and State Traffic Operations Center (STOC) early in the project to identify impacts of lane closures and the hours such closures will be allowed.

The department defines two types of lane rentals - long term and off peak. Off peak lane rentals are defined as using a lane (or lanes) for a portion of a 24-hour period that has lower traffic volumes, then re-opening the lane (or lanes) when peak traffic volumes are present. Long term lane rentals are defined as using a lane (or lanes) for a defined number of consecutive 24-hour periods.

Off-Peak Lane Rentals:

In the simplest case, for a project that will temporarily reduce two lanes in one direction on a four-lane facility to a single lane, the existing traffic volume may be so low that the single remaining lane will handle the volume without delay at all times (peak and off-peak hours). This might occur for projects classified as TMP Type 2 (see [FDM 11-50-5](#)). Current WisDOT practice in this case is to allow lane (or shoulder) closures without charge. However, for higher traffic volumes, it may be that the peak hour traffic would be “delayed” while the off-peak would not. This might occur for projects classified as TMP Type 3 or Type 4 (see [FDM 11-50-5](#)). In this case, current WisDOT practice is to allow construction during off peak/night time hours without charge but restrict the use of the through traffic lanes during peak hours. For even higher traffic volumes, the off-peak traffic might be “delayed” and then the use of both the peak and off-peak use of a lane would be limited to the amounts shown in the special provisions.

When using off peak lane rentals, the designer shall make sure that the contractor will have a minimum of eight (8) hours of contract time per off-peak period, not including work zone setup and removal. If this is not considered, the letting may result in a no bidder scenario or extremely high unit prices.

As noted above, if traffic delays are expected, use of the lanes (during peak hour or off-peak) should be limited by specification. The specification should include a “failure to open” clause with associated costs if the lane is not re-opened when scheduled. Off peak and peak hour lane rentals could be daily, hourly or fractions of an hour. The lane rental fee assessments are dependent on the number and type of lanes closed and can vary for different hours of the day. For example: the rush hour periods (say 6:30 to 9:00 am and 3:00 to 6:00 pm) could have an hourly rental fee assessment of \$2000 for closing one lane while a lane could be closed at off-peak times for an hourly rental fee assessment of \$500. The fee assessments could begin to be charged when the lane is not open for a quarter hour. Assessments can be charged in AASHTOWare Project Construction™ using the administrative item Failing to Open Road to Traffic (see [CMM 2-38](#)). Lane rental fee assessments that are more than the amounts shown as Liquidated Damages in [standard spec 108.11](#) shall be approved by the Supervisor of the Traffic Design Unit in the Bureau of Traffic Operations and, if the project is on the National Highway System or subject to FHWA oversight, by the FHWA.

Projects that include restrictions on the use of lanes during peak hours typically push the contractor into nighttime operations. The designer will need to coordinate with local officials to determine if there is any conflict with these operations and local noise or light ordinances. Though it would be the responsibility of the contractor to coordinate with the locals on these ordinances, the designer needs to make sure that the proposed construction staging and timeframes are achievable.

For a few projects that have a demonstrated need to minimize traffic inconvenience and a need for accelerated construction production rates, off-peak and peak hour lane rental may be used as a variation of the “Cost Plus

Time Bidding” method. See the A + Lane Rental portion of [FDM 11-2-1.9](#) for further information.

Long Term Lane Rentals:

On a project that will reduce two lanes in one direction on a four-lane facility to a single lane for a number of consecutive days, the traffic volumes may be so low that the remaining lane will handle the volumes without delay at all times. This might occur for projects classified as TMP Type 2 (see [FDM 11-50-5](#)). Current WisDOT practice in this case is to allow lane (or shoulder) closures without charge. However, for larger traffic volumes, it may be that the traffic on the remaining lane would be “delayed”. This would usually occur for projects classified as TMP Type 3 or Type 4 (but maybe for TMP Type 2). In this case, current WisDOT practice is to limit by specification the maximum time of the long-term lane rental.

If traffic delays are expected, use of the lane should be limited by specification and include a “failure to open” clause with associated costs if the lane is not re-opened when scheduled. Lane rental fee assessments could be daily or fractions of a day. A long-term lane rental could have a lane rental fee assessment of \$10,000 per day or more if the lane is not reopened. The lane rental fee assessments are based on a portion of the calculated road user costs (see [FDM 11-50-32](#)). The costs could begin to be charged when the lane is not open for a quarter day. Lane rental fee assessments can be charged in AASHTOWare Project Construction™. Lane rental fee assessments that are more than the amounts shown as Liquidated Damages in [standard spec 108.11](#) shall be approved by the Supervisor of the Traffic Design Unit in the Bureau of Traffic Operations and, if the project is on the National Highway System or subject to FHWA oversight, by the FHWA.

In some limited cases when the project has a demonstrated need to minimize traffic inconvenience and a need for accelerated construction production rates, long term lane rental may be used as a variation of the “Cost Plus Time Bidding” method. See the A + Lane Rental portion of [FDM 11-2-1.9](#) for further information.

When provisions for lane rental fee assessments are added to the contract, it is a method of transferring a portion of the road user cost (RUC) to the contractor. The lane rental fee assessment is usually a portion of the estimated cost of delay or inconvenience to the road users 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 progress payments. See [FDM 11-50-32](#) for a discussion of road user costs. Road user costs that are more than the amounts shown as Liquidated Damages in [standard spec 108.11](#) shall be approved by the Supervisor of the Traffic Design Unit in the Bureau of Traffic Operations and, if the project is on the National Highway System or subject to FHWA oversight, by the FHWA.

Lane Rental Advantages:

The intent of lane rental is to encourage contractors to schedule their work to keep traffic restrictions to a minimum, both in terms of duration and number of lane closures. The lane rental concept has merit for use on projects that significantly impact the traveling public. Projects on major urban commuter routes are prime candidates for this approach.

Lane Rental Disadvantages:

Lane rental can increase the cost of a project, as contractors may need to apply more resources to or work more quickly on lane rental jobs and require additional bond coverage.

Lane Rental Criteria for Selection:

Lane Rental is particularly applicable to projects where the contractor can adjust or design the traffic control plan to reduce lane closure durations, or take lanes out of service during periods of the day or night when impacts to traffic are minimal.

Refer to [FDM 19-15-2 Attachment 2.1](#) for a listing of standardized special provisions available for use to specify lane rentals.

1.6 Enhanced Liquidated Damages

If the contractor does not complete all contract work within the contract time, or within the extra time allowed under engineer-granted time extensions, the department will assess final liquidated damages. Final liquidated damages recover department costs to provide additional engineering and supervision to keep the project open longer. The department will deduct a specified sum from payments due the contractor for every calendar day on calendar day contracts and completion date contracts, or for every working day on working day contracts, that the work remains incomplete. See [standard spec 108.11](#) of the standard specifications for daily liquidated damages that reflect only the cost of engineering and supervision.

On projects that meet some of the criteria in [FDM 11-2-1.2.1](#), it may be appropriate to amend the definition of final liquidated damages (from [standard spec 108.11](#)) to recover not only the cost of engineering and

supervision but also a portion of the calculated road user costs (see [FDM 11-50-32](#)). The department has chosen to call the amended definition enhanced liquidated damages. This concept would be useful for projects that need to be substantially complete before the road user impacts are gone.

Enhanced liquidated damages are used to motivate the contractor to complete the project early to discontinue the use of a detour and reopen the highway to through traffic. The designer must decide how much flexibility the department can give the contractor to complete the project and the level to which the contract time must be controlled. Generally, if the contractor has flexibility in determining the contract's timeframe, bid prices will be lower.

As noted in [FDM 11-2-1.2.1](#), the use of enhanced liquidated damages is typically intended for projects expected to be constructed with normal construction production rates. It could, however, be used on projects expected to be constructed with accelerated construction production rates. Enhanced liquidated damages could be considered for projects classified as TMP Type 3 or Type 4 (see [FDM 11-50-5](#)).

Enhanced Liquidated Damages Advantages:

Using enhanced liquidated damages allows the department to recoup some of the road user costs. Also, the contractor may be more inclined to finish the project on time to avoid the higher assessments.

Enhanced Liquidated Damages Disadvantages:

It is possible that all the contractors bidding on a project may decide to bid some of the contract items slightly higher as a hedge against the higher enhanced liquidated damages.

Enhanced Liquidated Damages Criteria for Selection:

This technique is useful for projects that have a demonstrated need to minimize traffic inconveniences.

Refer to [FDM 19-15-2 Attachment 15.1](#) for a listing of standardized special provisions available for use to specify enhanced liquidated damages.

1.7 Interim Liquidated Damages

As noted in [FDM 11-2-1.2.1](#), the use of interim liquidated damages is intended for projects expected to be constructed with normal production rates. As discussed below, interim liquidated damages could sometimes be used on project expected to be constructed with accelerated production rates when no Incentive is included. Interim liquidated damages could be considered for projects classified as TMP Type 3 or Type 4 (see [FDM 11-50-5](#)) or any project with multiple stages or projects containing interim completion dates or interim stages.

Interim liquidated damages are not considered a penalty, but are fixed and agreed-to damages that the contractor owes the state for not completing the work within the time specified in the contract. Not completing contract work within the specified time may result in:

- Public inconvenience due to detours and delays caused by increased traffic or lower highway speeds
- Excessively high vehicle operating costs if traffic is routed over a long detour
- Additional project costs due to maintaining the detour and using traffic control items for a longer period of time than anticipated
- Delay to remaining stages of the project.

Interim liquidated damages are used to motivate the contractor to complete a portion of the construction early in order to discontinue the use of a detour and reopen a section of highway to through traffic or ensure that the remainder of the project stays on track.

When using an interim liquidated damage provision in a contract, the preferred contract type is either a completion date or calendar day contract. Do not mix calendar day or completion date provisions with working day contracts.

The designer must decide how much flexibility the department can give the contractor to complete the project and the level to which the contract time must be controlled. Generally, if the contractor has flexibility in determining the contract's timeframe, bid prices will be lower. Interim deadlines specified in the contract must be realistic and not be subject to third-party delays that are beyond his control. Unrealistic timeframes increase risks and costs to both the department and contractors, and add significant tension to contract administration.

When specifying interim liquidated damages, the designer may eliminate all excusable delays or restrict the number of weather delays, in addition to the conditions specified in section 108 of the standard specifications. Eliminating all excusable delays should be taken seriously, as it may not always be appropriate to do so. For example, do not eliminate all excusable delays if there is a strong likelihood of utility or other third-party delays that are beyond the control of the contractor. By increasing the number of adverse weather days allowed during

the road closure period when interim liquidated damages are specified in a contract, the likelihood of granting the contractor a weather delay for the road closure period is reduced, since time extensions are granted when the number of adverse weather days actually occurring exceeds the number of adverse weather days listed in the contract. More guidance on how to complete a special provision for interim liquidated damages that restricts the number of weather delays is provided in the Technical Notes of the STSP Index spreadsheet located at:

<https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/tools/stsp.aspx>

Interim liquidated damages are useful for projects that do not need to be substantially complete before the road user impacts are gone. Avoid using a deadline for interim liquidated damages that is the same as the deadline for completing all contract work. For example, suppose it is critical to open a roadway in front of a high school before the 2013 school year begins on September 3, 2013, and, because all major project work must be completed within the summer time period that school is not in session, the project has a short construction timeframe. Instead of specifying that interim liquidated damages will be assessed if all contract work is not completed by September 3, 2013, consider assessing interim liquidated damages if the roadway is not paved and open to through traffic on September 3, 2013, and then provide the contractor another week or two to complete work, such as landscaping, that can be completed with the highway open to traffic.

Interim Liquidated Damages by the Hour:

Interim liquidated damages assessed by the hour can be entered in AASHTOWare Project Construction™ using the administrative item Failing to Open Road to Traffic (see [CMM 2-38](#)). Very few projects need interim liquidated damages assessed by the hour.

Interim Liquidated Damages Advantages:

Using interim liquidated damages allows the department to recoup some of the road user costs. Also, the contractor may be more inclined to finish the project on time to avoid the higher assessments.

Interim Liquidated Damages Disadvantages:

Utility conflicts, design uncertainties, or right-of-way issues complicate contract administration on projects to be constructed with accelerated production rates. Special care must be used to assure that the completion dates in the contract accurately reflect the impacts of utility relocations, design uncertainties, and right-of-way constraints that may occur during the duration of the project.

Accelerated construction production rates generally require an increase in construction administration staff-hours per day; overtime, weekend work, multi-shifts should be expected.

1.7.1 Interim Liquidated Damages Criteria for Selection

The degree to which contract time is critical varies from project to project, and may vary between different construction stages or roadway sections of the same contract. In most contracts, it isn't necessary to add interim liquidated damages; standard spec 108 will suffice. Use interim liquidated damages with care and only when necessary. The "damages" in interim liquidated damages are developed from considering road user costs of delay occurring in subsequent stages, and do not necessarily match [standard spec 108.11](#).

1.7.2 Interim Liquidated Damages - Multiple Project Contract

Sometimes several small projects are combined into one contract, such as small bridge and approach projects, to obtain more competitive bids. In these contracts, it may be necessary to complete one or more of these projects at a specified date or within a specified time period within the overall contract time.

When this is necessary, use an interim liquidated damage provision for each project that has to be completed by a specified date or within a specified time period. If not completed within the time frame, assess the contractor interim liquidated damages.

This provision may be necessary to:

- Reduce public inconvenience
- Shorten the detour time
- Reduce disruption to traffic
- Reduce effects on businesses, tourism, etc.
- Reduce road user costs

Use the STSP template by selecting the most appropriate contract work type, and modifying the interim completion language as needed. The STSP provisions to specify interim liquidated damages on a multiple-project contract is provided as part of the STSP template located at:

<https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/tools/stsp.aspx>

After opening the general template, select the tab Completion Date, and use the button Eliminate Excusable Delays Multiple Projects.

It is important to make a clear distinction between the intent of I/D provisions and interim liquidated damages. Although they have some common elements and similar mechanisms, the purpose or function of each provision is different.

Common features of both I/D and interim liquidated damages provisions are:

1. Both provide a specified contract date for the critical work to be completed to open the highway to traffic.
2. Both are used to recover some or all road user costs of detours and delays if the roadway is not opened on the specified date.
3. Both should be used with care and only when necessary.
4. Both can be used to keep subsequent stages on track.

Unique elements of Interim Liquidated Damages:

1. Is typically used when the work necessary to open highway can be completed with reasonably normal production rates.
2. Are used more frequently than I/D on projects where it is necessary to open a highway stage to traffic on a specific date, or within a prescribed time frame.
3. Could be used on projects with accelerated construction production rates when no Incentive is provided.

Unique elements of I/D Provisions:

1. This provision is used when the work necessary to open highway to traffic cannot be completed with normal production rates.
2. Provides significant financial motivation to complete critical work on a highly accelerated schedule.
3. Should be used very judiciously.

Refer to [FDM 19-15-2 Attachment 15.1](#) for a listing of standardized special provisions available for use when using interim liquidated damages provisions.

1.8 Incentives / Disincentives

As noted in [FDM 11-2-1.2.2](#), the use of incentives/disincentives is intended for projects expected to be constructed with accelerated production rates. Incentives/disincentives could be considered for projects classified as TMP Type 3 or Type 4 (see [FDM 11-50-5](#)).

Incentives/Disincentives Criteria for Selection:

See the criteria in [FDM 11-2-1.2.2](#).

- The Incentive/Disincentive (I/D) provision is intended to motivate the contractor to complete the work faster than normal.
- The provision should be limited to projects where construction will severely disrupt highway traffic, significantly increase road users' costs.
- I/D provisions should be used judiciously and only on critical projects. Excessive use of the provision is detrimental to both WisDOT and contractors.
- When using the I/D provision in a contract, the preferred contract type is a completion date contract although a calendar day contract may be used.
- Federal funds can be used as part of the incentive provisions. FHWA policy recommends a cap of 5% of the total contract amount for the maximum incentive payment and no cap for the disincentive amount. In the past, WisDOT has not exceeded 2.5% on the contract amount for disincentives.

It is important to make a clear distinction between the intent of I/D provisions and interim liquidated damages. Although they have some common elements and similar mechanisms, the purpose or function of each provision is different.

Common features of both I/D and interim liquidated damages provisions are:

1. Both provide a specified contract date or time duration for the critical work to be completed to open the highway to traffic.

2. Both are used to recover some or all road user costs of detours and delays if the roadway is not opened on the specified date.
3. Both should be used with care and only when necessary.

Unique elements of Interim Liquidated Damages:

1. Is typically used when the work necessary to open highway can be completed with reasonably normal production rates.
2. Are used more frequently than I/D on projects where it is necessary to open a highway to traffic on a specific date.
3. Could be used on projects with accelerated construction production rates when no Incentive is provided.

Unique elements of I/D Provisions:

1. This provision is used when the work necessary to open highway to traffic cannot be completed with normal production rates.
2. Provides significant financial motivation to complete critical work on a highly accelerated schedule.
3. Should be used very judiciously.

Incentives/Disincentives Description

An incentive/disincentive (I/D) provision is part of a contract that compensates the contractor a certain amount of money for completing critical work on or ahead of schedule, and assesses a deduction for work not completed on time. This provision is intended for critical projects where traffic inconvenience and delay is to be kept to a minimum and access is to be restored as soon as possible.

I/D provisions are applicable to projects that require accelerated construction production rates.

I/D provisions may be used to assure completion of interim stages or completion of the entire project to the point where road user impacts are gone but some other contract work remains. I/D provisions are also useful for projects that need to be substantially complete before the road user impacts are gone. Although labeled "Incentive/Disincentive for Interim Completion of Work", the current incentive/disincentive special provision has been used for completion of the project as well for completion of interim stages. To resolve this inconsistency, the designer is encouraged to use a new special provision called Incentive/Disincentive for Final Completion of Work when the work under the contract needs to be substantially complete by a certain time.

On many projects, it is better to list the bid items or portion of bid items that may remain incomplete in order for the contractor to receive the incentive. This list would generally be much shorter than a list of items that must be completed.

Incentives/Disincentives Advantages

Using interim incentives/disincentives allows the department to recoup some of the road user costs. Also, the contractor may be more inclined to finish the project on time to avoid the higher assessments.

Incentives/Disincentives Disadvantages

Utility conflicts, design uncertainties, or right-of-way issues complicate contract administration on projects to be constructed with accelerated production rates. Special care must be used to assure that the completion dates in the contract accurately reflect the impacts of utility relocations, design uncertainties, and right-of-way constraints that may occur during the duration of the project.

Accelerated construction production rates generally require an increase in construction administration staff-hours per day; overtime, weekend work, multi-shifts should be expected.

1.8.1 Project Types Appropriate for Incentives/Disincentives

On projects where delays will occur, the current peak hourly volumes must be used to determine the number of lanes required to handle the traffic.

The project must then be analyzed by region Traffic Section and State Traffic Operations Center (STOC) staff to determine whether a shortening of the construction time can be accomplished on the project and whether the I/D provision will achieve the desired result.

Avoid selecting projects where contractor's production can be adversely affected due to the following conditions which are outside their control:

1. Utility conflicts/relocations
2. Hazardous materials coordination and clean up.
3. Major items of work with quantities that may vary considerably such as joint repairs and base patching in pavement rehabilitation work.

Project Development

The following information/steps will be helpful to designers at the project development stage:

1. It is important to define clearly the "work" which is subject to the I/D provision. See the sample Special Provision in [FDM 19-15-2](#). The following is a list of items which should be considered:
 - a. The number of driving lanes open to traffic. This may include some discussion of whether traffic flow must be completely unrestricted when reopened or if some defined minor temporary traffic restrictions may be allowed:
 - b. Opening the bridge to unrestricted four lane traffic.
 - c. The contractor will not be allowed to interrupt traffic once the bridge is re-opened except between 3:00 AM and 6:00 AM as approved by the engineer.
 - d. Completion of shoulder work.
 - e. Pavement markings completed. Specify whether permanent or temporary.
 - f. Installation of bridge rail.
 - g. Installation of beam guard.
 - h. Completion of signing (all or just critical signing.)
2. To avoid claims during construction, the designer should make an extra effort to ensure compatibility of design, plans, specifications, and schedule. This may require conduction of more thorough design field reviews, and collecting more field data rather than relying on as-built plans.
3. Consider pre-bid meetings to explain I/D provisions.
4. Make sure I/D dates are compatible with other contract dates, such as environmental dates, for migratory birds and fish spawning.
5. On staged projects with multiple contracts, coordinate I/D dates with other contract completion dates for compatibility.
6. When using I/D provisions on a single contract extending over more than one construction season, provide a clear explanation in the special provisions regarding the suspension of work time used as the basis for setting an I/D date in a future season. It is best to specify a firm suspension date.
7. Coordinate with locals on projects to determine their cost share for the I/D provision and to define the "work." Inform the locals of the implications of making the I/D provision too restrictive.
8. For projects that may experience a long delay between design completion and PS&E submittal, the I/D provisions should be reviewed for need and changed conditions prior to the letting.
9. Computations and justifications for I/D should be forwarded to the appropriate project design oversight engineer in the BPD, prior to the PS&E, who will ensure that the report is placed in the file for the project.
10. For steel bridge projects, be sure to account for lengthy fabrication time when determining the I/D date.

The I/D provision has a maximum dollar amount for the incentive payment but no maximum dollar amount for disincentive.

Local Participation

Generally, the department requests local participation in projects where local needs are served in addition to the needs of the through traveler. The goal of the cost sharing agreements is to reflect the reason for the project so those who benefit from the project also contribute to the cost of the project. Cost sharing of the I/D provision should have the same goal. Local governments should pay that portion of the I/D provision that corresponds to the benefit they will receive. Local participation in I/D provisions can vary widely. Some communities have paid 100% of the I/D provision on urban projects where early completion primarily benefited the local government. A municipality contributed 50% of the I/D provision on a rural interstate project because they felt it would benefit

their tourism industry.

Whenever a local government asks for an I/D provision, the department should begin by requesting 100% local contribution and require a minimum of 50% local contribution. The department should only contribute to the I/D provision in this situation if there is a "significant benefit" to through travelers for early completion.

Refer to [FDM 19-15-2 Attachment 15.1](#) for a listing of standardized special provisions available for use to specify incentives/disincentives.

1.9 Cost Plus Time Bidding

The Cost Plus Time Bidding methods are shown schematically in [Attachment 1.1](#), page 7 (for A + Lane Rental bidding) and page 8 (for A + B bidding and Accelerated Bridge Construction).

Projects to be considered for cost plus time bidding should have a demonstrated need to minimize traffic inconvenience (see criteria in [FDM 11-2-1.2.1](#)) and a need for accelerated construction production rates (see criteria in [FDM 11-2-1.2.2](#)). The project should also be clear of third party conflicts and construction administration staffing issues assessed. Cost plus time bidding could be considered for projects classified as TMP Type 3 or Type 4 (see [FDM 11-50-5](#)).

Cost Plus Time Bidding Criteria for Selection

In some cases, additional emphasis on reducing traffic inconvenience is needed beyond including incentive/disincentive provisions in the contract. For critical projects that have very high road user delay impacts, the cost plus time bidding method can be an effective technique to significantly reduce these impacts. On projects that have used the cost plus time bidding method, contract times have been reduced, costs have been acceptable, and quality has been maintained.

It is appropriate to consider cost-plus-time bidding when the project has flexibility in the methods and means of construction. The following situations are appropriate to a project:

- Projects which allow alternate solutions where one solution may take significantly less time to construct, yet designers are hesitant to specify methods and means of construction or a proprietary solution.
- Projects in which innovative solutions from the contracting industry are sought (specialty work) which may be beyond the designer's expertise.

If it is determined that accelerated construction production rates are needed but there is no apparent flexibility in the methods and means of construction, an incentive provision could be included to reward the contractor if the work is completed and the roadway reopened earlier than the time specified in the contract.

The cost plus time method generally includes three types of bidding.

1. The basic type is A + B bidding, where the contractor bids both items (A) and contract time (B).
2. The second type is A + Lane Rental, where the time component is the number of lane closures.
3. A third type is Accelerate Bridge Construction, where the maximum time specified in the contract is so restrictive that pre-fabricated bridge elements and systems, state-of-the-art equipment, material technologies, and innovative contracting methods would be needed.

All types of cost plus time bidding include a maximum time that could be bid and the cost (or costs) per unit (or units) of time bid that will be used to evaluate the bids.

1.9.1 A + B Bidding

The A+B bidding method, involves time, with an associated cost, in the low bid determination. Under the A+B bidding 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 (Calendar days are used to avoid any potential for controversy which may arise if work days were used). The bidding documents would specify the maximum number of days a contractor can bid.

The total bid for award consideration is based on a combination of the bid for the contract items and the associated cost of the time, according to the formula:

$$(A) + (B \times \text{Road User Cost} / \text{Day})$$

The above formula is only used to determine the lowest bid for award and is not used to determine payment to

the contractor. A contract would be awarded for the bid amount for the bid items (A) with the time bid specified in the contract. See [Attachment 1.2](#) for a Cost + Time bidding example.

As noted above, the "B" component is generally a "bid" of the total number of calendar days required to complete the project. The "B" component could also be the time to do interim stages of a contract. B1 could be the time to complete the first stage of a project, B2 the second stage, B3 the third stage, etc. It is normal to have the same road user cost for each of the interim stages although different road user costs could be used. The combination of the bid for the contract items and the associated cost of the time would normally then be:

$$(A) + [(B1 + B2 + B3) \times (\text{Road User Cost} / \text{Day})]$$

Or, if there are different road user costs:

$$(A) + (B1 \times \text{RUC1} / \text{Day}) + (B2 \times \text{RUC2} / \text{Day}) + (B3 \times \text{RUC3} / \text{Day})$$

The above formula is only used to determine the lowest bid for award and is not used to determine payment to the contractor. A contract would be awarded for the bid amount for the bid items (A) with the interim times bid specified in the contract. See [Attachment 1.2](#) for a Cost + Time bidding example with interim stages.

The road user costs listed in the bidding proposal are some portion of the calculated road user costs. The listed costs are stated in dollars per day. The maximum number of days allowed to be bid is also written into the bidding proposal. Road user costs that are more than the amounts shown for Liquidated Damages in [standard spec 108.11](#) shall be approved by the Supervisor of the Traffic Design Unit in the Bureau of Traffic Operations and, if the project is on the National Highway System or subject to FHWA oversight, by the FHWA.

When the A+B bidding method is used, a liquidated damages provision (that assesses road user costs) is usually incorporated into the contract to discourage the contractor from overrunning the time "bid" for the project. Consider A+B bidding without an incentive provision if:

- The project is not required to finish ahead of a specific completion date.
- RUC is not severe but other factors warrant expediting the project.

In addition, an incentive provision can be included to reward the contractor if the work is completed earlier than the time bid. If a project is especially time-critical and it is cost-beneficial to use them, incentive provisions will motivate contractors to further shorten the construction duration. Consider using A+B bidding with an incentive provision if:

- The RUC is high, and the monetary benefit to the highway user equals or exceeds the contractor's costs to finish early and earn the maximum incentive.
- It is in the public interest to complete the project as soon as possible.

1.9.2 A + Lane Rental Bidding

As noted above (in [FDM 11-2-1.5](#)), if traffic delays are expected, temporary use of the lanes (during peak hour or off-peak) or a lane (during long term lane rental) would be limited by specification. Limited use should also include a "failure to open" clause with associated costs if the lane is not re-opened when scheduled. These limitations are applied assuming normal construction production rates.

However, if it is determined that accelerated construction production rates are needed and there is flexibility in how the lanes may be closed for construction, either type of lane rental could be used as part of the bid process similar to the "A + B" discussed above. Instead of the "time" portion being the total contract time, it could be the number of consecutive days (for long term lane rental) or the number of off-peak (or even peak hour) lane rentals multiplied by specified road user costs. See [Attachment 1.3](#) for Cost + Lane Rental bidding examples.

$$(A) + (LR \times \text{Road User Cost} / (\text{Day or Hour}))$$

Similar to A+B bidding, the contract would be signed for the sum of the quantities in the plan times the unit prices bid (the A portion of the bid) with the number of lane rental periods from the successful bid written into the contract.

Lane rental rates are stated in the bidding proposal in dollars per lane (or per shoulder) per time period. The maximum number of lane rentals allowed is written into the proposal.

Cost + Lane Rental bidding could be considered for projects classified as TMP Type 3 or Type 4 (see [FDM 11-50-5](#)).

Each of the two types of lane rental should include a "failure to open" clause with associated costs if the lane is not re-opened when scheduled (either at the end of the contract indicated period for long term lane rentals or at the start of the peak hour traffic period for off peak lane rentals) to discourage the contractor from overrunning the time "bid" for the lane rental. The associated costs are based on a portion of the calculated road user costs (see [FDM 11-50-32](#)). The costs could begin to be charged when the roadway is not open for a quarter day (at

the end of a long-term lane rental) or a quarter hour (for an off-peak lane rental). Costs can be charged by the day in AASHTOWare Project Construction Administration™ under an interim site time record. Costs by the hour (or portion thereof) can be entered using the administrative item Failing to Open Road to Traffic (see [CMM 2-38](#)).

If it is determined that accelerated construction production rates are needed but there is no apparent flexibility in how lanes may be closed for construction, an incentive provision could be included to reward the contractor if the work is completed and the lanes reopened earlier than the time specified in the contract. See the above discussion under A + B bidding for considerations of when or when not to use incentives.

1.9.3 Accelerated Bridge Construction Bidding

The normal (cast-in-place) reconstruction of some structures can create extreme hardship on the traveling public. A special type of cost plus time bidding which severely limits the time the bridge may be closed to traffic could be useful for those projects. If the bidding proposal provides an extremely tight timeframe, the result would be an accelerated bridge construction contract which would greatly minimize the contract time and impact on the public. Accelerated bridge construction emphasizes pre-fabricated bridge elements and systems, state-of-the-art equipment, material technologies, and innovative contracting methods, with a potential of using various construction materials. Sometimes precast bridge elements are moved using a self-propelled modular transporter (SPMT).

The accelerated bridge construction concept of providing an extremely short timeframe could also be used for projects (other than bridges) that would create extreme hardships. An example of this would be reconstruction of a high-volume intersection.

Cost Plus Time Bidding Advantages

The major benefit of the cost plus time bidding method is time savings, an important issue with the traveling public. The cost plus time bidding method is used to motivate the contractor to minimize the overall time on high priority and high usage projects.

It encourages potential contractors to analyze, develop and carefully plan operations that minimize contract time. Since the time bid by contractors is based on their capabilities to perform the work, the more efficient contractor can generally bid shorter times. This method allows the contractors to maximize efficiency in scheduling their work crews and equipment in order to meet the time bid. The method:

- Encourages contractors to work overtime, double shifts and at night to reduce construction time.
- Encourages contractors to develop or use existing innovative construction methods and procedures.
- Minimizes road user costs and inconvenience.
- Reduces the number of congestion related complaints from the road users and local communities.
- Reduces congestion related pollution and environmental impacts.

Cost Plus Time Bidding Disadvantages

Drain on Agency Human Resources

Since the project duration is shortened, cost plus time reduces the time that personnel are required on the project. However, the agency must be ready to work the construction schedule as determined by the contractor. Therefore, this method often extends the work schedules (hours/day and days/week).

Increased Construction Costs

The bid cost (A) on cost plus time contracts may be slightly higher than traditional contracts of similar scope and size. Also cost plus time projects with incentives tend to have a higher cost overrun than similar traditionally built projects. However, when the savings on road user costs is considered in the total cost of the project, the cost is almost always less than that of a traditional bid contract.

Unbalanced Bidding

Cost plus time bidding could lead to the contractor unbalancing the bid by increasing 'A' portion of the bid and take all the mobilization advances up front, use them, and return them at project's end as liquidated damages. Also, there is some documentation that many agencies tend to be lenient when assessing liquidated damages.

Refer to [FDM 19-15-2 Attachment 15.1](#) for a listing of standardized special provisions available for use to specify cost-plus-time bidding.

1.10 Warranty Clauses

Warranties have been successfully used, in other countries and by some States on non-Federal projects, to protect investments from early failure. The 1991 Highway Act, referred to as ISTEA, permitted a State to exempt

itself from FHWA oversight for Federal-aid projects located off the National Highway System. For projects under these conditions, warranty clauses may be used in accordance with State procedures.

On August 25, 1995, FHWA published an Interim Final Rule (IFR) for warranties for projects on the National Highway System. The IFR states that warranty provisions shall be for a specific construction product or feature. Routine maintenance items are not eligible. The IFR also prohibits warranties for items not within the control of contractors. The warranty Final Rule was published in the April 19, 1996 Federal Register and the interim final rule remains unchanged.

See [FDM 19-15-3](#) for further discussion of warranties.

Warranty Clauses Advantages

Warranties are intended to increase the quality of a product by giving the contractor responsibility for replacement or repair of deficiencies. Warranties have been successfully used to protect investments from early failure and to improve overall construction quality.

Warranty Clauses Disadvantages

Warranty clauses have a couple of disadvantages:

- They become an additional expense for the contractor and the extra cost is passed along to the responsible agency.
- Adding a warranty to a project will complicate and delay the final process.

Warranty Clauses Criteria for Selection

Warranty provisions shall be for a specific construction product or feature. A general warranty for the entire project is unacceptable since the contractor does not control the design process or make decisions during that phase.

Warranties may not cover items of maintenance not eligible for Federal participation. An example of this might be a warranty for guardrail construction where it would be inappropriate to warrant routine damage done to the guardrail by vehicle impacts.

Contractors are not to be required to warrant items over which they have no control.

Currently, the regulations do not restrict the duration of the warranty. However, practical experience has shown that 2 to 5-year warranties are common, and warranties beyond 5 years may not be as cost effective due to bonding or surety concerns. Warranty provisions have been used for bridge painting, traffic striping, and bridge expansion joints.

Prior approval by the FHWA Division Administrator of a warranty provision and its subsequent revisions are required for NHS projects. The clause must not require a contractor to warrant items over which they do not have control. Maintenance items ineligible for Federal-aid funding are not allowed to be warranted.

Use of warranty provisions for non-NHS projects will be governed by the individual State written procedures.

LIST OF ATTACHMENTS

Attachment 1.1	Alternative Contracting Decision Flowchart
Attachment 1.2	Cost Plus Bidding Examples
Attachment 1.3	Cost Plus Lane Rental Bidding Examples