

**WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DESIGN DIRECTIVE**

DD-710
ROAD USER DELAY REDUCTION METHODS
August 1, 2004

Attached are guidelines to aid the Project Manager in developing contract documents which minimize road user delays in high traffic volume areas.

These guidelines include methods that may be incorporated into the contract documents utilizing conventional bidding. There is also guidance on utilizing “Innovative Contracting” methods to provide Contractor incentives and thus reduce road user delays. Most of these methods are intended for use in the high traffic volume areas and will require the preparation of special provisions for the contract.

Attachment

ROAD USER DELAY REDUCTION METHODS

10 - GENERAL:

The West Virginia Division of Highways routinely performs projects on its existing highway system. These projects involve activities which impact the existing movement of traffic. These impacts, no matter how small in nature, can cause delays to the road user. Projects on highways with large daily traffic volumes or highways which provide the only means of access to large facilities may cause road user delays resulting in significant costs to the public.

The Division of Highways is committed to evaluating the road user delay impacts on projects during contract plan development, and determining if special measures are warranted due to the existing traffic volumes or existing access issues. This directive provides guidance to designers on various methods to reduce road user delays on projects where existing traffic conditions warrant special considerations.

The methods to be considered are divided into two broad categories. The first category includes methods which can be incorporated into the contract documents or conducted during contract document development. The second category involves contracting method other than conventional bidding and award which may encourage a minimization of disruption to existing traffic movement.

20 – CONVENTIONAL CONTRACTING:

The road user delay reduction methods described in this section pertain to contracts awarded to the lowest responsible bidder based on the total of the normal bid items. These methods are primarily tools used during contract development to plan and coordinate the work and contract provisions that will enhance traffic movement during construction.

20.1 – Contract Document Development Phase: Described below are methods that have been successfully utilized on projects to minimize the impacts to the road user. These methods involve steps the Project Manager may take during contract development that will facilitate the project execution during construction.

1. Consideration should be given to other Division of Highways projects in the same corridor. These may be projects that are under development or are already under construction. They may be central office or district projects.
2. Consideration should be given to combining projects to minimize the number of times the road users are affected.
3. Consideration of special events in an area which may result in a large temporary increase in traffic volumes.

4. Projects conducted by parties outside the Division of Highways which may have an additional impact on traffic movement. These may include highway projects by municipalities, construction by commercial or industrial developers, or large utility contracts.
5. Consideration should be given to corridor management traffic plans on high volume corridors where two or more projects are in close proximity to each other to allow the projects to be combined or bid within the same time frame to reduce the impact to motorists and even reduce the amount of traffic control that is required.

The Project Manager should consider all of the above items when developing both the schedule and the traffic control methods on projects in high traffic volume areas. Efforts should be made to coordinate with district and central office personnel concerning any known planned activities. The district utility supervisor should be consulted to determine if any utility permitting activities are underway in the area.

20.1.1 – Local Coordination: Many traffic control delays can be minimized through coordination with local officials. This may involve meeting with local governmental officials, but may also involve coordinating with school administrators. Projects where peak traffic volumes are affected by large commercial or industrial installations may require coordination with private company administrators and adjusting daily project work schedules to accommodate large peak traffic volumes.

20.1.2 – Public Information Activities: Projects involving high traffic volumes may require the Project Manager to hold public informational meetings to acclimate the general public to the potential delays. These advance meetings may also serve to allow some of the road users to adjust their driving routes thus effectively reducing the traffic volume during construction. Public informational activities also allow entities such as delivery companies and emergency entities to plan alternate routes thus reducing road user impacts.

20.2 – Contract Provision Considerations: Projects in high traffic volume areas may be facilitated by the inclusion of certain requirements in the contract documents. These contract provision methods serve in various ways to minimize the overall affect of the project activities on the road user.

20.2.1 – Night Time Construction: One of the most effective means of reducing road user delays is to require project activities to be conducted by the Contractor during low traffic volume hours. These low volume hours will typically be during the night. Many projects such as HMA paving work are especially suited to this type of contract provision. Some projects may be aided by requiring night construction only during certain phases of the work. It is recommended that night time construction be used whenever possible on four lane highways with traffic volumes in excess of 25,000 ADT and on two-lane highways when traffic volumes are in

excess of 15,000 ADT. When this type of construction is used the designer should consider the need for the use of Incentive/Disincentive contract provisions.

20.2.2 – Motorist Services: On projects involving long lane closures in high traffic volume area the plans should include areas for motorists to pull-off without disrupting the remaining open lanes. This will minimize the affect of a disabled vehicle or accident in the work zone. The designer should consider the need for a Traffic Director per TED-604 and for a Roadside Assistance Service to be present during construction to aid in the resumption of traffic flow when an emergency situation occurs.

20.2.3 – Incentive/Disincentive (I/D) Provisions: Many project schedules may be accelerated by the insertion of an I/D clause in the contract documents. The use of an I/D provision tends to motivate the Contractor and provides a means to compensate for the extra cost involved in accelerating the contract. This provision is many times used in combination with the other methods described in this design directive. The designer should refer to DD-708 for specific information on developing I/D payment amounts and provisions.

20.2.4 – Public Information Activities: This activity differs from public information during design in that the focus of this contract provision is to provide up to date status information to the public concerning actual construction activities and progress. The Contractor may be required to provide advance warning of traffic pattern changes and to keep all local agencies informed concerning the project's schedule.

20.2.5 – Partnering: Some projects that not only involve high traffic volumes but also involve coordination with a number of stakeholders, may warrant the use of a formal "Partnering" agreement in the contract provisions. This method provides a formal avenue for concerns and problems to be addressed by all parties. It may be particularly useful in urban areas where traffic patterns are being substantially altered by the project activities. A special provision for this process is available from the State Specification Engineer for inclusion in the contract documents. The Project Manager must obtain approval from the Deputy State Highway Engineer Development for all projects and FHWA for non-exempt or concurrence projects prior to utilizing "Partnering" in the contract provisions.

20.2.6 – Lane Restrictions: Some projects which involve high volumes of traffic on holidays, sporting events or other times when a high peak of traffic is likely to occur lane restrictions may be warranted. The designer may require that the contractor to open multiple lanes to traffic during these times in order minimize the disruption to traffic.

20.2.7 – Blasting Restrictions: Projects that have blasting in close proximity to the traffic may require lane restriction. In order to not interrupt traffic during peak traffic

time it is recommended that the blasting not be performed during peak traffic periods. It is also recommended that the designer require that the practical velocity of the blasting be reduced in the vicinity of the traffic in order not to cover the roadway with debris.

20.2.8 – Interim Completion Dates: On projects where a high volume of traffic is involved and only part of the project affects the traffic the use of Interim Completion Dates may be warranted. When Interim Completion dates are used the amount used as the Liquidated Damages is the dollar amount calculated as the Road User Delay Cost. A special provision for this process is available from the State Specification Engineer for inclusion in the contract documents. The Project Manager must obtain approval from the Deputy State Highway Engineer-Development for all projects and FHWA for non-exempt or concurrence projects prior to utilizing “Partnering” in the contract provisions.

30 – INNOVATIVE CONTRACTING:

30.1 – Introduction: As described in Section 10 above, there are two broad categories of road user delay reduction methods. Section 20 describes methods incorporated into projects that utilize conventional bidding techniques. This section describes alternative contracting methods which may be utilized by the Project Manager to encourage the Contractor to be innovative and expeditious on projects in high traffic volume areas.

Conventional bidding referred to in this directive is the process used normally by the WVDOH to award contracts. This process involves all prospective Contractors submitting unit prices for each item of work. The contract is then awarded to the lowest responsible bidder for the total of all items of work. The “Innovative Contracting” methods described in this section involves the Contractors submitting unit prices for the conventional items of work plus prices for a second component that involves time. The contract is then awarded to the lowest responsible bidder determined by the sum of the two components. “WV Code § 17-4-19 paragraph (e)” requires that the commissioner award all construction contracts to the lowest responsible bidder. Therefore, any contract which utilizes an innovative contracting technique must reduce each component of the bid to a unit bid price and must require the awarding of the contract to the lowest responsible total bid. Therefore, the time component of the bid must be set-up in the contract documents in a manner that allows the Contractor to submit time units. These time units are then multiplied by unit costs of time to establish the low bidder as the sum of the total time cost plus total conventional bid item cost.

30.2 – Innovative Contracting Techniques: There are a number of innovative contracting techniques which may be utilized by the WVDOH to award a contract and encourage the completion of work in an expeditious manner. The currently accepted methods are described in this section; however the Project Manager must obtain approval per Section 30.3 of this directive prior to utilizing these techniques. Additional information concerning these techniques may be acquired from the Federal Highway Administration Contract

Administration Core Curriculum Manual Section V.A. Non-traditional Contracting Practices for discussion on A+B bidding and Lane Rental.

30.2.1 – A+B Bidding: This method involves the combining of traditional cost (A) plus time cost (B) to determine the low bidder for purposes of awarding the contract. Under the A+B method each bid has two components.

- The “A” component is the total bid for all traditional bid items on the project.
- The “B” component is the total number of calendar days required to complete the project, as estimated by the bidder, multiplied by the road user cost per day, as established by the Project Manager in the contract documents.

The award of the contract is based on the lowest of the following formula:

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

The Project Manager shall consider the following requirements when utilizing the A+B method:

- Road User Cost/Day shall be determined by Traffic Engineering Division and approved by the Deputy State Highway Engineer Development prior to inclusion in contract documents.
- A maximum allowable number of calendar days required to complete the project must be established by the Project Manager in the contract documents. This will set the maximum number of days that the contractor may bid but does not restrict the contractor from bidding a lower number of days.
- The formula for awarding the contract is not used to determine payment to the contractor. Payment is based on unit prices established in the “A” component of the bid.
- The contract completion date is established based on the number of calendar days in the “B” component of the bid as supplied by the successful bidder.
- The scope of work and conditions encountered in the field on the project must be well defined by the contract documents.
- A disincentive equal to the Road User Cost/Day is used to ensure the contractor meets the “B” component of the bid.

30.2.2 – Lane Rental: The lane rental method, like A+B bidding, involves the combining of traditional cost (A) plus time cost (B) to determine the low bidder for purposes of awarding the contract. The time portion of the bid consists of the total units of lane closure multiplied by the lane closure cost per unit, called lane rental

cost. The units for the lane rental may be established based on the project requirements (i.e. minutes, hours, days, etc.). Different lane rental cost may be established in the lanes based on varying times of the day. For example, a lane may have one cost per hour between 6:00 am to 6:00 pm and a lower cost per hour between 6:00 pm to 6:00 am.

The lane rental cost for each lane and the maximum number of allowable lane rental units for each lane is established in the special provisions by the Project Manager. The Contractor then prepares the bid by combining the total unit cost for conventional bid items and the time component of each lane rental unit. The contract is awarded on the lowest bid from the following formula:

$$A + (B \times \text{LRC})$$

A = Total cost for conventional bid items

B = Number of Lane Rental Units

LRC = Lane Rental Cost / Unit

The following shall be considered by the Project Manager when Lane Rental is utilized on a project:

- Lane Rental Cost/Unit shall be determined by Traffic Engineering Division and approved by the Deputy State Highway Engineer Development prior to inclusion in contract documents.
- The number of allowable lane rental units for each lane shall be established based on the “B” component of the bid as supplied by the successful bidder.
- The formula for awarding the contract is not used to determine payment to the Contractor. Payment is based on unit prices established in the “A” component of the bid.
- Lane rental units utilized by the Contractor greater than those established in the bid shall be deducted from pay estimates at the lane rental cost per unit in the contract provisions.
- The Project Manager may choose to include provisions in the contract document that provide payments at the lane rental cost per unit rate, for lane rental units not utilized by the Contractor based on the bid number of units.
- The scope of work and field conditions of the project must be well defined by the contract documents.

30.2.3 – Warranties: This method of contracting requires the bidder to submit a conventional bid price which includes the cost of a warranty for the work for a specific period of time. The required period of the warranty shall be established by

the Project Manager in the contract documents. The warranty shall be only for items which the Contractor has full control and not for long-term maintenance.

30.2.4 – Incentive/Disincentive (I/D)’s: I/D’s are a contracting method used to motivate the Contractor to complete the project ahead of a schedule. DD-708 provides the WVDOT’s guidelines for I/D clauses in contracts. I/D’s are used frequently in conjunction with the other contracting methods described in this directive.

30.3 – Approval of Innovative Contracting Techniques: All contracting techniques described in Section 30 of this directive require approval from the Deputy State Highway Engineer Development prior to being considered on projects. Non-exempt and concurrence projects require approval by FHWA.

A special provision must be prepared for any proposed “Innovative Contracting” method with all bidding parameters defined and reduced to a bid item. The special provision must include a Contractor’s proposal which provides time unit costs established by the WVDOT. The Contractor then submits a bid of time for each appropriate bid item. The low bid is then established as the sum of the total conventional bid item cost plus the total cost of the time bid items. As stated in Section 30.1 above the proposal must clearly establish the means to determine the “lowest responsible bidder” as the lowest total cost bid that is complete and regular. The special provision must be reviewed and approved by Legal Division, Contract Administration Division, Technical Section of Engineering Division, Deputy State Highway Engineer Development and Federal Highway Administration.