

**Dated: July 13, 2005**

**MINNESOTA DEPARTMENT OF TRANSPORTATION  
APPLICATION GUIDELINES, OPERATIONAL STRATEGY and  
IWZ **ADVANCED CONGESTION WARNING** SYSTEM SPECIFICATIONS**

The Advanced Congestion Warning System is a type of Intelligent Work Zone System (IWZ) which is considered as a Stand-Alone system with minimal Mn/DOT support services or equipment required for full deployment and operation.

**APPLICATION GUIDELINES and OPERATION STRATEGY:**

The IWZ Advanced Congestion Warning System is designed to be a stand-alone system that is designed to detect congestion (or usually slowed traffic) in a work zone approach and alert travelers further upstream that the congestion is occurring. The advance warning to travelers that congestion starts approximately X miles ahead allows the travelers to prepare to slow/stop or to make decisions on taking alternate routes. In general, the system would display a message to the traveler that, from their current location, they will approach slowed traffic at a given location ahead of them. Such as: " STOPPED TRAFFIC" – "8 MILES AHEAD". Actual messages for individual project locations and message locations will vary based upon critical routes.

The advanced congestion warning system is extremely useful where construction will create large vehicle delays and congestion for extended periods of time. Although an Advanced Congestion Warning System is not directly an operational TTC device for a project, since it provides no direct traffic control, it should be considered for deployment as part of a District's public relations and traveler's information system. Advanced congestion warning information to travelers will prepare them to slow down or stop, reduce frustration and may persuade some travelers to use alternate routes.

Deployment consideration should address the estimated traffic volumes, duration of the delay due to the project, and the effects of congestion at the particular project location. The messaging system utilized would be dependent on the project location, but generally would be changeable message signs (either existing permanent CMS or portable CMS) in conjunction with static signs which informs the traveler of where the congestion problem originates (such as: "BRIDGE WORK AT EB I-94 AND CROW RIVER 10 MILES AHEAD". The static sign would be located within a short distance (approx. 800 feet) of the first CMS giving the "stopped traffic" message with a distance. The primary location of the messaging should be designed such that travelers have a chance to choose an alternate route based upon the displayed time for their planned route. Additional locations for messaging may be added to the system that would provide the traveler with additional "congestion ahead" information, if additional alternate routes are available.

**ADVANCE CONGESTION WARNING SYSTEM SPECIFICATIONS:**

A IWZ Advance Congestion Warning System should be an addition to the standard Temporary Traffic Control Plan (TTCP) for a construction or maintenance project, and consists of appropriately placed changeable message devices and Non-intrusive Traffic Detectors (NITD). Through the monitoring of the NITD, the Equipment Control Unit (ECU) assesses current traffic conditions and determines an appropriate distance value to be displayed for traveling public. The computation algorithm to be utilized by the system shall be approved by the engineer prior to deployment. The TTCP shall include the approximate locations of detectors, and type of message to be provided. The message format and means of delivery shall be determined by the TTCP, which may include Portable Changeable Message Signs (PCMS), existing permanent changeable message signs (CMS), static signs with changeable characters, and/or other systems such as real-time Highway Advisory Radio (HAR).

The IWZ Advance Congestion Warning System will consist of furnishing, installing, and placing into operation all the needed detection, equipment control, system calibration, travel time computations, communications networking and approved messaging system that are required for the project, the daily monitoring of the system and timely response to system problems. Mn/DOT will conduct field reviews and require event logs for performance measures.

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Due to the ever-changing and improving technology, the specific types of detection, data computations or communication network are not specified for the IWZ Advance Congestion Warning System. The vendor/ manufacturer shall supply equipment that is fully functional and quickly/easily repaired/replaced if damaged. The vendor/ manufacturer shall provide technical personnel for all system calibration, operation, maintenance and timely on-call support services. The vendor/ manufacturer shall certify that the system will perform to the Application Guideline and Operational Strategy above and details as specified in the TTCP. All of the project's special provisions will prevail. The IWZ Advance Congestion Warning System must be listed on the Mn/DOT OTSO Work Zone Qualified Product List as either approved or in provisional approval status. Systems provided by provisionally approved vendor/ manufacturers must also adhere to the provisional approval requirements as outlined in the IWZ Systems Qualification and Acceptance Process.