Dated: July 13, 2005

MINNESOTA DEPARTMENT OF TRANSPORTATION

APPLICATION GUIDELINES, OPERATIONAL STRATEGY and IWZ CONFLICT WARNING SYSTEM SPECIFICATIONS

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

APPLICATION GUIDELINES and OPERATION STRATEGY:

A IWZ Conflict Warning System should be considered an operational TTC device for a project, since it provides direct real –time traffic control information. Multiple Conflict Warning Systems may be utilized within a construction zone, however, each Conflict Warning System will be defined for it's function separately and will operate freely of each other. Typical Conflict Warning Systems may include, but are not limited to the following:

- **Vehicle Warning (or Trucks Entering):** A PCMS is utilized to warn motorists of construction related vehicles merging from haul roads or crossing the traffic/pedestrian path.
- **Restricted Clearance Warning:** A PCMS is utilized to warn large-sized vehicles that unusual road restrictions prevent them from proceeding any farther. Immediate exiting or stopping is required by the over-sized vehicle, or extra care taken by allowable sized vehicles.
- **Excessive Speed:** A PCMS is utilized to warn a motorist that he/she is too quickly approaching stopped/slow traffic or unusual roadway conditions (curvature, width, weather, work crews, etc.).

Conflict Warning Systems are designed to be stand-alone systems that detect a potential hazardous condition and warn travelers of the condition in time for evasive action.

Deployment consideration should address the estimated traffic volumes, the type of vehicle conflicts anticipated, and project geometrics such as the merging, stopping and site distance for the travelers to the hazardous condition. The system shall be timed such that a Portable Changeable Message Sign (PCMS) message is viewable and understandable to travelers, and the traveler can perform appropriate evasive actions such as slowing down/stopping, changing lanes or changing travel routes. The PCMS should deactivate (be dark) when the hazardous condition is not detected.

CONFLICT WARNING SYSTEM SPECIFICATIONS:

A IWZ Conflict 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 device(s) and Non-intrusive Traffic Detectors (NITD). Through the monitoring of the NITD, the Equipment Control Unit (ECU) assesses traffic conditions and determines when to display a warning to the traveling public that a potential hazardous condition is eminent . 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 activated warning lights, and/or other similar systems.

Examples of appropriate Warning Messages may include:

For a Vehicle Warning System, the system would display a message to the traveler such as: "TRUCKS MERGING" – "1000 FEET". This message would be modified to fit the particular traffic conflict situation (such as merging, crossing, etc.). An appropriate PCMS distance should be utilized such that travelers have time to change lanes, or slow appropriately to allow the truck to merge. The distance should be changed appropriately on the message.

For a Restricted Clearance Warning System, the system would display a message to a potentially over-sized vehicle such as: "LOW CLEARANCE AHEAD" – "TRUCKS EXIT RIGHT". This message would be modified to fit the particular clearance situation (height, width, etc). An appropriate PCMS distance should be utilized such that all potentially over-sized vehicles are allowed to properly exit/detour around the restricted area.

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For Excessive Speed Warning Systems, the system would display a message to a vehicle traveling faster than a predetermined threshold limit which is considered hazardous for the condition such as: “SLOW DOWN” – “SHARP CURVE AHEAD”. This message would be modified to fit the particular condition where excessive speed is particularly hazardous (sharp curves, workers present, stopped traffic, roadway conditions, weather conditions, etc.). An appropriate PCMS distance should be utilized such that the traveler has sufficient time to slow down for the conditions.

The IWZ Conflict Warning System will consist of furnishing, installing, and placing into operation all the needed detection, equipment control, system calibration, 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.

Due to the ever-changing and improving technology, the specific types of detection, data computations or communication network are not specified for the IWZ Conflict 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 Conflict 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.