

- Feed-Back on the Process –
Improving the Process for Providing Mobility and Safety in Work Zones
2008 Summary Report

Introduction

Mn/DOT conducted a review of our “Process for Providing Mobility and Safety in Work Zones”. The review meetings provided an opportunity for districts to feed back issues to a Team which was there to discuss the various processes the districts utilize to deliver an efficient ground transportation system through the pre-design (scoping), design, construction and maintenance operations.

Minnesota has always been on the cutting edge and leading the way in the nation to provide the safest work zones for the traveling public and the workers on the project. We have always strived to maintain traffic flow through the project and provide access to the local businesses and residents using the safest and yet practical methods available. As part of Mn/DOT’s Policy on Mobility and Safety in Work Zones (MS-WZ), which can be found in Technical Memorandum No. 07-16-T-05, dated October 10, 2007, and found online at: <http://www.dot.state.mn.us/design/tech-memos/active/tm07/16t05.pdf> , Mn/DOT has documented its “Process for Providing Mobility and Safety in Work Zones” through its statewide level of commitment to the following processes and procedures:

- The usage of various active committees to continuously monitor issues within the state’s roadway construction industry, design standards, and maintenance operations to improve on our standards, practices and procedures. These committees include:
 - Statewide Work Zone Safety (WZS) Committee
 - Traffic Engineering Organization (TEO) WZS Committee
 - Special Provisions Review Committee
 - Resident Engineers WZS Advisory Committee
 - Maintenance WZS Committee
- Continuous monitoring of statewide crash data for various trends, patterns and issues that may be mitigated through changes in standards or practices and we implement the safety initiatives.
- Field review of active projects to maintain quality standards and adherence to TTC standards in both construction and maintenance operations.
- Developing and conducting TTC training programs for public and private workers in design standards and proper field deployment of the standards.

The policy states that the process includes the Districts providing the analysis on individual projects to mitigate mobility issues and safety conflicts. To provide additional guidance to the districts for reviewing projects early in the scoping process and providing for mitigation measures early in the planning and budgeting process, the policy included checklists of typical issues and mitigation measures. The districts are responsible for following the established standards and documenting when exceptions must be made to the standards. The level of anticipated detail was summarized based upon the impact of the work zone on traffic mobility and safety.

Upon the adoption of the policy, Mn/DOT created a review of our “Process for Providing Mobility and Safety in Work Zones”. The Feedback Discussions within the districts are a major part of the process review. A Team was formed of representatives from the Offices of Traffic, Safety and Technology, Maintenance, and Construction, and from the FHWA. The team visited half of the districts during the first year of the policy, and proposes to visit the other four districts during 2009.

This report is a summary of the work zone mobility and/or safety issues and best practices discovered during the Feedback Discussions held in four districts during the summer of 2008. The four districts visited were Rochester, Duluth, Baxter and Detroit Lakes. Within the districts, staff from nearly every section attended a portion of the 2 day meeting. District staff represented Maintenance, Bridge Maintenance, Construction, Traffic, Pre-Design, Design, Permits, Public Relations, and members of the State Patrol. A complete set of notes for each district has been distributed to them for their use and documentation of their meeting with the Feedback Discussion Team.

The Feedback Discussion Team has referred the “Issues Discovered” to the various committees listed above for their review, discussion, recommendation and action. The following report itemizes the common issues found in more than one district and the current status and/or recommendations for further actions. Several issues (as noted) are beyond the influence of these committees and will be passed to the appropriate groups for their action. Beyond issues, the report documents several “Best Practices” which the Team felt should be highlighted such that other districts may give consideration to incorporating them into their operations or may spur thoughts for additional improvements.

Commonly Discovered Issues:

- Temporary Traffic Control (TTC) for permits operations needs improvements.
Action Taken: Discussions have begun within the department and other agencies (such as LTAP) on possible online introductory course(s) that may be developed to promote the use of the minimum basic safety practices and devices to permit applicants. The course could become a mandatory requirement before a permit is issued.
- Working with businesses is becoming more critical – improved business signing policy is needed.
Action Taken: The TEO WZS Committee has revised language in the Traffic Engineering Manual (TEM) to provide guidance in allowable temporary business signing practices. Districts are now developing their own guidelines on detours and handling issues with businesses and residents. The TEO WZS Committee will coordinate with the Small Business Impact Study group to ensure compatibility.
- Lane closure policy and/or guidance is needed at the District level.
Recommendation: The MS-WZ Policy refers to a Lane Closure Manual when determining whether a project requires a higher level of review. Since volume

thresholds could be used to eliminate many roads from restrictions, a full lane closure manual is not mandatory to cover all roads, but other factors should be considered and documented for uniform practice in the district. These factors may include time-of-day and day-of-week patterns, seasonal patterns, and other special local events which should be considered whenever traffic control will be changed.

- Maintenance issues include:
 - Lack of people to accomplish tasks which sometimes results in reduced traffic controls.
 - Lack of resources to replace TTC equipment such as Flashing Arrow Panels, Portable Changeable Message Signs (PCMS), and Truck Mounted Attenuators (TMA).
 - Mobile operations at interchanges are causing concerns.
 - Flagger and worker safety needs additional emphasis in TTC layout design and field practice.
 - Guidance and procedures for safely setting cones is needed.
 - Quality of roll-up signs and stands is falling and needs improvement.

Actions Taken: The lack of resources and manpower to accomplish tasks without compromising TTC standards or equipment quality standards must be addressed by each district. OMS, OCIC and OTST are currently working with the districts to identify equipment that no longer meets current standards and will be assisting them in developing a workable replacement plan. The Maintenance WZS Committee is studying work space intrusion warning systems and other safety features designed to improve safety for the workers. The TEO WZS Committee will be working on guidance for work zones within interchanges. OTST and the State Sign Shop have worked together to improve the standards and procurement process for roll-up signs.

- Changing role of Portable Changeable Message Sign (PCMS) – smaller and used for advanced warning, but Districts are unclear on what is allowable.

Action Taken: The MnMUTCD Committee approved the use of a smaller size PCMS board (B size) which permits the use of 2 lines of 14 inch characters. OTST has worked with the Maintenance WZS Committee to develop standardized messages to use on these boards.
- Special provisions and application of TTC Supervisor needs review and improvement.

Action Taken: The Special Provisions Committee worked on clarifying when and how a TTC Supervisor should be included on a project. Since the specification was being improperly used, the boilerplate will be revised and districts should discuss their needs for a supervisor with OCIC to develop a proper description of the duties.
- Patrol has road rage problems with early -vs- late merge and would prefer late merge during backups (lane closure signs too far out).

Action Taken: The TEO WZS Committee will discuss the issue and review the current TTC layouts and will develop guidance on the advance warning sign

placement which will attempt to account for traffic queues. The committee is developing strategies to rearrange or re-space sign messages to promote the proper merge strategy for the anticipated conditions. To-date, a simple formula was developed based upon ADT for determining where to locate a message sign prior to a traffic queue. The message would guide motorists on the late merge strategy when they encounter slow traffic. The formula and the message will be tested and refined during the 2009 season.

- Guidance is needed for Two Lane Two Way (Head-to-Head) Operation on normally divided highways regarding speed, volume, use of median barrier, etc. Guidance has been requested for recommended staging practices, closure limits, ramp operations and signing to ensure an uniform statewide standard practice.
Recommendation: The Statewide WZS Committee recommended that the issue be given to the DTEs through TEO to develop statewide recommendations which could be presented to the Design Advisory Committee and Project Managers for approval and adoption.
- Speed management in work zones is becoming a greater problem.
Action Taken: The Intelligent Work Zone (IWZ) Seed Funds program is providing Dynamic Speed Display signs (commonly called “Your Speed Is” signs) to several districts for use within construction and maintenance work zones. It has been shown through studies around the state, that these devices, when properly deployed, can reduce traffic speed much more effectively than using reduced speed limit signs alone. It has been conclusively shown in construction work zones that the presence of law enforcement has a dramatic effect on speed, however funding does not exist for extra enforcement in maintenance work zones. One solution was suggested by State Patrol during a feedback meeting, which simply recommended that maintenance provide the Patrol Dispatch with their daily work locations and the Patrol may be able to utilize the work area to park while preparing daily paperwork/reports. Their presence would benefit the maintenance work zone without any expense to the district. This concept is also listed later in the Best Practices part of this report.
- More public education for work zones is needed and the Speaker’s Bureau needs to be reinstated. Dollars are needed to promote work zone traffic safety and mobility to public.
Recommendation: The Statewide WZS Committee is exploring the revitalization of the Speaker’s Bureau and promoting employee participation in the program. The Public Affairs section(s) require funding to develop media campaigns and other traffic safety promotional materials. It is recommended that partnerships with organizations such as AAA, State Patrol, or Local agencies may result in additional resources for public education.
- Timely news releases for work zones are difficult. It was reported in the Duluth District that the system for news release approval hindered quick project updates.
Recommendation: The Statewide WZS Committee recommended that the

Communications Office and District PACs study any problems they regarding news release process and determine where the process may be streamlined.

- Temporary traffic control by locals on state highways does not always meet MN MUTCD and TEM standards and guidelines.
Action Taken: The Statewide WZS Committee has asked SALT and OTST to develop a policy statement regarding this issue which may include a tech memo.
- Over-width / size permits in work zones are causing problems.
Recommendation: The Statewide WZS Committee recommended that the Statewide Permit Committee be given the issue to study and develop improvements in the permit system to eliminate the over-width / size permitted loads entering a work zone. The road restrictions within a work zone need to be identified when permits are issued.
- Mn/DOT should hold an annual statewide Traffic Technician conference with video conf updates as needed.
Action Taken: The suggestion was brought to the TEO Executive Committee and they have directed the various TEO subcommittees to start work on workshop or conference concepts and topics to be addressed. Although this suggestion was seeded through a need for work zone standardization statewide, TEO wishes to expand the concept to include many more traffic engineering related topics, such as signing, signals, pavement markings, Intelligent Work Zones, approved products, and traffic safety issues and programs.
- Guidelines for the application of flagger – Automated Flagging Devices – portable signals are needed.
Action Taken: The TEO WZS Committee has made a drafted guideline for [“Lane Control Selection in Work Zones”](#) available online.
- Policy on use of Truck/Trailer Mounted Attenuators (TMA) for maintenance and construction is needed.
Action Taken: The Special Provisions Review Committee has added boilerplate language for requiring TMAs for specific situations.
- Training for soils and survey crews has been overlooked.
Recommendation: Districts will be encouraged to include the soils and survey crews in their routine Field Manual review courses. It is also recommended that members of soil or survey crews be considered to attend a full introductory TTC training course to learn the basics of TTC.
- On-line TTC training is needed.
Action Taken: See the issue regarding permit operations above. OCIC and District Safety Coordinators have developed an online quick instruction for people visiting “the field” for the first-time. This new 15 minute course informs the viewer

of basic topics including personal protection devices such as vests, safety issues on a construction site, and traffic issues when conducting a roadside visit.

Best Practices Discovered

- District Work Zone Safety Coordinator is essential. All of the Districts visited have a work zone traffic control and safety expert and all of the groups endorsed and supported having this expert available as a key ingredient to their work zone mobility and safety success. Having a person within the district who has experience with temporary traffic control design and operations is essential to uniform compliance to standards and practices. This person keeps the district current on standards and statewide practices, technologies and other innovations through their time involvement on committees and training. This continuity is reflected in the district's practices and respect to our standards by other agencies and contractors.
- Maintenance crews have daily meetings to discuss safety and traffic control which improves operations and safety. Respect and understanding of the policies and standards promotes a safety conscious worker.
- Communication to Patrol dispatch on maintenance operation activities offers opportunity for increased Patrol presence in maintenance work zones. Although methods may vary between districts, a daily listing to officers via Patrol's computer aided dispatch (CAD) will be attempted in each of the districts visited in 2008.
- Modify scoping process and checklists to include mobility of traffic. Districts have started to customize the scoping checklists to include more details regarding project staging, traffic control, detours, temporary business access, public awareness campaigns and other mitigation measures to provide increased mobility and safety in the project plan early in the planning process.
- Project Manager and Project Engineer are the same person. Detroit Lakes District utilizes the same person for both job assignments. This gives continuity to the project from concept through construction and an ownership of the project's mobility and safety issues and their mitigation measures may be fully developed and deployed.
- DSD signs on projects have positive impact on speed management. As mention previous in this report, Mn/DOT has already started to provide more of these devices to the districts for temporary deployment in construction and maintenance work zones.
- Direct contact with adjacent property owners and businesses by Project Engineer puts a face on Mn/DOT and improves communications and issue resolution.

- Developing plans to purchase Temporary Traffic Control devices for maintenance. Districts have begun to develop long-range budget plans to purchase replacement work zone devices where existing devices have fallen into disrepair or no longer comply with current standards.
- Coordinate outreach and communications between districts. Duluth and St. Cloud have each coordinated with Metro on public awareness campaigns regarding projects which will affect motorist coming from the Metro area. Projects on major routes should be publicized where the traffic originates which allows the motorist to make an informed decision to travel through the work zone. Coordination between districts can provide the public with useful travel information.
- Have District Website with weekly project up dates for all projects. Providing current information to the public fosters partnerships, cooperation, and awareness of mobility and safety issues. We are in this together and information is part of the mitigation strategies that can not be overlooked.

The members of the Feedback Discussion Team wish to thank everyone that participated in the discussions for their valuable insight into the issues related to mobility and safety in work zones, as well as their willingness to share best practices and ideas with the team members and look forward to future discussions to guide Mn/DOT's work zone traffic control and mobility efforts.

This report was prepared by the Office of Traffic, Safety & Technology and reviewed by the Feedback Discussion Team. Copies have been distributed to Division Directors, District Engineers, and Directors of Offices and/or Chairs of Committees mentioned within the document.

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