

- Feed-Back on the Process -
Improving the Process for Providing Mobility and Safety in Work Zones
2012 Summary Report

Introduction

MnDOT 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 MnDOT’s Policy on Mobility and Safety in Work Zones (MS-WZ), which can be found in Technical Memorandum No. 12-03-T-02, dated February 6, 2012, and found online at :

<http://dotapp7.dot.state.mn.us/edms/download?docId=1156501> , MnDOT 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 Temporary Traffic Control (TEO TTC) 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, MnDOT 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, Construction and Innovative Contracting, and from the FHWA. The team visited four of the districts this year, proposes to visit another three districts during 2013, and conduct a thorough review of the Metro District in 2014.

Since this is the second rotational set of District WZ Process Feedback meetings, the FHWA recommended that certain areas of concern be focused upon. As such, the specific topics that were discussed among all functional areas are: TMP’s, WZ field reviews, Training, and crash reporting. All other topics of concern to the participants were encouraged and are included in this report.

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 September & October of 2012. The four districts visited were Rochester, Duluth, Baxter, and Detroit Lakes. Within the districts, staff from nearly every section attended a portion of each 1 or 2 day meeting. District staff represented Maintenance, Bridge Maintenance, Construction, Traffic, Pre-Design, Design, Permits, Public Relations, in addition to members of the State Patrol.

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.

Issues Discovered

TMP’s

In each district we saw an increased awareness of the benefits of Transportation Management Plans (TMP’s) in the project development process. One district used the modeling data that showed very large backups to restage a project, initiate some preliminary work earlier, and compress the work time to avoid peak summer travel times. Another has maintenance crews selecting a standard layout sheet for typical operations and filling in the specifics of the day’s work including any traffic control changes. There are some very dynamic, talented, and resourceful persons working in

Public Affairs to further the Public Information aspect of the TMP. Some specific discussion of the District's TMP process follows:

Baxter (D3) Traffic recently did a full TMP for next year's project on TH 94. Quick Zone showed significant back-ups when 1400 to 1500 Vehicles per hour capacity was used. The models indicated it might be a bituminous paving project but it was decided to use concrete pavement with strict time limitations and some IWZ solutions. This was a very successful TMP and it was driven by management's interest in the public's satisfaction. They would like more guidance on lane capacity and other analysis tools. Capacity on higher volume roads with signals is not known. Delay parameters were discussed and 15 minutes is thought to be significant, but what if a detour adds 15 minutes to a trip? They do have some time restrictions for District crews to avoid working on some routes. Design was involved in the TH 94 TMP. It was quite complex and involved the concrete office, analyzing mix designs, and also the construction industry. This resulted in shifting prep work to this year to speed up next year's portion.

Duluth (D1) has completed TMP's for some significant projects. The Mega-project on TH 35 going down the hill into Duluth is a notable example. Planning for 11 foot lanes to slow traffic, a tow truck bid item to clear incidents, and State Patrol Extra ordinary enforcement all contributed to the project's success. Public information helped as motorists were aware and informed of what was happening. Public outreach began 6-9 months ahead of the project and included emergency services. Extra enforcement has been used on several projects in both the presence mode and for active enforcement. The travel time system on TH 35 is thought to be very successful as evidenced by the public's comments. However, the accuracy of the displayed time was not always within specs. There is concern that the TMP process is not used in the alternate bid process. Yet, the work type, traffic control strategies, and detours, can significantly affect project staging and cost to MnDOT and the public.

Rochester (D6) Construction reports that they have a recurring problem with backups, skid marks, and crashes on TH 35 when they work on one side with traffic crossed over to 2L2W on the other side. All they really have been able to do at that stage is add more signs to the point of possible sign clutter and distraction. This is an opportunity for a TMP to predict congestion early in the project management process and evaluate some mitigation possibilities. Design understands the value of TMP's. An important benefit is that they will guide how much mitigation is needed for a particular project. They do have problems identifying thresholds for a project and as the design is underway, it tends to grow and is difficult to analyze as the original TMP only covers the original planned work. They plan to work closely with Traffic and Construction in preparing a TMP for next seasons TH 35 project.

An example from Detroit Lakes (D4) shows where a TMP with modeling might have forecast some summer travel backups that proved to be troublesome. Nearly all functional groups involved in the Work Zone Process mentioned a particular project on TH 94 that gave them a lot of trouble and complaints. Not far east of Moorhead was a bridge deck rehab project over the Buffalo river that resulted in both directions of traffic being reduced to a single lane and crossed over to the alternate side for a good portion

of the construction season. It was typical of the many interstate reconstruction projects that occur state wide. Traffic flowed well all week except for a few hours on Friday and Sundays. There is a tremendous amount of vacation traffic from the Fargo/Moorhead metro area to the Detroit Lakes resort area. The resulting backups went beyond the advance warning signs and everyone was surprised at the volume spikes during a few hours on the weekends. Traffic would like ideas on how to handle these highly variable queues. The review team noted that this was similar to those experienced by D1 and D6 on TH 35. Some strategies other districts are using include an IWZ stopped traffic ahead system and attempting to anticipate weekend backups in the TMP process. If weekend traffic counts are available, a traffic impact analysis program like Quick Zone could probably identify the weekend backup potential.

Work Zone Reviews

A couple Districts have assigned a Work Zone Safety Coordinator who has responsibility to inspect construction and maintenance work zones. All Districts mentioned annual review visits by Craig Mittelstadt as being important in complying with statewide standards and practices. Some highlights from the districts:

Rochester (D6) has a process common to all districts. Construction project personnel review each project daily, other construction supervisors periodically, and district wide annually when Craig does his WZ review visit. Contractors fill out daily TC inspection forms.

In Baxter (D3) Tim Jansky is the District's Work Zone Safety Coordinator for construction projects and does all their reviews. They have a form for inspections that was based on metro Districts. The District Safety Officer does Maintenance WZ reviews. Permit's does minimum inspections usually on a respond to complaint basis.

In Duluth (D1) all MnDOT personnel are expected to stop, ask to see the permit, and discuss unacceptable traffic control. Maintenance supervisors in the subareas are informed of permits.

Detroit Lakes (D4) Maintenance was found to be doing the "Gold Standard" of reviews. They will comprise a team of traffic, construction, and maintenance to drive thru and evaluate projects. They will review, discuss, have a corrective action discussion, and a whole team debrief. They have not specifically documented intrusions until informed of the review teams interest in this.

Training

Training is expected to be of ever increasing importance as our aging workforce retires and is replaced by new graduates. Some comments and concerns from the districts:

Baxter (D3) Traffic sees a need for flagging and field manual training for new employees. The State Patrol has annual training for 3 days at Camp Ripley and that would be an opportunity to get our WZ concerns across. Online training also has an advantage as that can be done anytime. Construction sees some poor TC particularly on fast moving projects. They feel some contractors could use more and better training.

Detroit Lakes (D4) just retired a fellow who did annual training for Construction, Maintenance, and Permits. Kathy Shafer recently trained district personnel in 3 locations on updates to the latest version of the Field Manual. They feel the online training the review team mentioned might be of use to them.

Duluth (D1) Construction asked about training for intrusion reporting and other WZ issues. OCIC could include in their TC overview and TC supervisor classes.

Rochester's (D6) procedure for training District personnel is considered adequate. New hires get Flagging, Field Manual, and MN MUTCD training. Supervisors are responsible for employees training. Permit's estimates that 90% of their work is done by consulting engineer firms and professional Traffic Control Contractor's. They have experienced that training is adequate at these types of firms. There is for the most part good compliance with standards and only a few operators that do not comply. There is concern that some small outfits may not be trained well enough and an online training course recommended by the review team may help. Traffic is concerned about safety on CRP projects. Workers sometimes intrude into the open lane when saw cutting and finishing concrete. They feel there should be more contractor training as sometimes the contractors seem not to notice or care about motorists. Public affair's gets complaints from contractors about high speeds and from the public about the length of time roads and lanes are closed.

Crash Reporting

The Safety & Mobility policy requires that we monitor, document, and analyze crashes in Work Zones. This has been difficult to accomplish on a systematic, statewide basis. These four districts deserve recognition for using their close personal and professional relationships with the State Patrol to develop an informal process of compiling crash information and using that knowledge to improve WZ's. MnDOT and the SP offices often share the same building and the inspectors and troopers know each other through community activities. Some examples from the districts:

In Rochester (D6) the State Patrol continues to have a mutually beneficial relationship with Traffic and Construction. Fatalities and serious injury crashes are reported to Traffic and they communicate with construction to determine if TC changes are necessary. Extra Ordinary enforcement is utilized on some projects and they communicate with construction to develop an enforcement strategy.

In Duluth (D1) the State Patrol does flag crashes and notifies MnDOT of serious incidents. There is very good communication and each agency reacts to concerns of the other. Intrusions are not documented by SP, but the traffic office has their own report form.

In Baxter (D3) the State Patrol and MnDOT share a building so they communicate with each other very well. Significant crashes are reported to Traffic informally. SP thought there might be an opportunity to tap the existing data stream to report all WZ crashes to MnDOT. Construction says that local police sometimes respond to WZ crashes so it is difficult to get all crash information. They are very busy now and not interested in filling out intrusion forms.

The Detroit Lakes (D4) Traffic Office agrees there is a need for more complete crash/incident/intrusion reporting. They communicate directly with the State Patrol about WZ crashes and traffic control in challenging areas. From Construction: State Patrol usually handles and reports to traffic any crash clusters. Construction feels they will hear about any situation that is not normal. They thought intrusions are documented on the Traffic Control Supervisors report form. Most crashes seem to be rear end incidents and may indicate a need for more signing or a stopped traffic ahead system.

Best Practices

Following are a few of the best practices we discovered in the four districts we visited:

MnDOT and the State Patrol have combined meetings to keep each other informed of traffic issues, to coordinate winter maintenance work, and road closures.

Construction is concerned with motorists disregarding detours and driving thru closed roads. They think some road closure enhancements such as "Bridge Out" signs may help.

The district owns several DSD signs. They rotate them around according to requests. They do not usually use a work zone speed limit but will consider it on future projects with higher speed traffic.

Construction uses conspicuity tape on magnetic strips on their pickups for night work. These are kept in the field office and checked out as needed. They use the work zone speed limit and plan for intensive enforcement at the beginning of the project.

In the future the District foresees more work performed under traffic since the public is less accepting of detours. Flagging operations with typical delays of 10-15 minutes are often used by maintenance.

On the construction project information webpages, Public Affairs has used pictures to better illustrate the work and progress that is happening. The review team thought this

could help convince the motorists that a road is truly closed by showing a bridge or culvert demolished and reduce the number of drivers who enter a closed road hoping to get through.

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 MnDOT'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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