

MARYLAND STATE HIGHWAY ADMINISTRATION WORK ZONE SAFETY AND MOBILITY POLICY

September 7, 2006

POLICY STATEMENT:

The Maryland State Highway Administration (SHA) is committed to maintaining optimum worker safety while having traffic traveling smoothly and safely through and around work areas at all times. Careful consideration of work zone impacts should begin during planning and continue through design, construction, and post-construction review.

Compliance with this policy will benefit the traveling public by minimizing delays, reducing crashes, and providing greater safety for all project stakeholders. This policy outlines the procedures to be followed and identifies responsibilities to achieve the desired end result – safer work zones with minimal impact on the traveling public.

SCOPE:

This policy applies to all work performed on SHA maintained roads.

FUNDAMENTAL PRINCIPLES:

Improving highway safety and mobility are two key goals in SHA's Business Plan. Consideration of the following principles will enhance the performance of work zones:

Provide a safe work zone for all workers and road users.

- Provide safe work zone design by using positive protection measures where possible and practical.
- Provide safe work zone design by using the same basic safety principles used to design permanent roadways when designing work zones.
- Utilize work zone intelligent transportation systems (WZ-ITS) and enforcement strategies to enhance safety.
- Employ incident management strategies in design and construction.
- Conduct investigations on major work zone accidents and implement improvements where appropriate.
- Adhere to the Temporary Traffic Barrier Policy and follow guidelines for speed limit reductions in work zone.
- Provide a continuous, safe working environment by monitoring and maintaining work zone devices during construction.

Consider mobility and access.

- Pursue innovative technologies, including WZ-ITS, for advancement of mobility in work zones.
- Minimize motorist delays and reduce congestion by adhering to the requirements set forth in the Work Zone Lane Closure Analysis Guidelines.
- Provide for bicycle, pedestrian and ADA access through and around work zones.

Plan, design, and construct projects for an economical and timely delivery.

- Consider work zone impacts during project planning by identifying significant projects, conducting Maintenance of Traffic Alternative Analyses, and budgeting for work zone impact management strategies.
- Consider work zone impacts during design by developing transportation management plans (TMPs).
- Use innovative technologies and techniques to accelerate project construction.
- Explore innovative contracting methods to improve efficiency in project delivery.
- Schedule and coordinate work zone operations at the corridor, District and State level.

Communicate project information to stakeholders.

- Continue to provide and disseminate useful and essential information to keep all stakeholders informed of work zone activities.
- Coordinate operations with those who have jurisdiction over any impacted operations, including other roads, railroads, transit facilities, emergency operations, school bus operations, etc.
- Build relationships and provide customer support on work zone related issues to internal and external customers.
- Use ITS outlets such as Advance Traveler Information Systems (ATIS) to provide real-time travel information.

Continuously assess and improve work zone strategies, practices, and procedures.

- Assess, document, and implement successes via work zone inspections, crash data, and performance monitoring of work zone impact management strategies.
- Provide and disseminate essential temporary traffic control design and operations information to traffic control professionals.
- Provide persons whose actions affect the work zone with training commensurate to their level of responsibility.
- Obtain crash reports in a timely manner.

COMPLIANCE PROCESS:

Significant Projects

All construction, maintenance and permit projects should be evaluated to determine if they are significant projects. A significant project is one that alone or in combination with other concurrent projects nearby is anticipated to cause sustained work zone impacts that are greater than what is considered tolerable based on SHA policy and/or engineering judgment. Work zone impacts refer to work zone induced deviations from the normal range of transportation system safety and mobility. The Federal Highway Administration (FHWA) defines significant projects as all Interstate system projects within the boundaries of a designated Transportation Management Area (TMA) that occupy a location for more than three days with either intermittent or continuous lane closures. SHA's definition of significant projects separates OPPE, OBD, and OHD projects from District and other minor projects and can be found in Appendix A.

Maintenance of Traffic Alternative Analysis (MOTAA)

Developing and evaluating the best combination of construction phasing/staging, project design options, temporary traffic control, transportation operations strategies and public information and outreach strategies hand-in-hand with each other may help reduce work zone impacts. A Maintenance of Traffic Alternative Analysis (MOTAA) will compare work zone options, including staging/phasing options as well as temporary traffic control options, for each project design alternate and document maintenance of traffic constraints for each option. The MOTAA will be performed for all significant projects during the planning or preliminary investigation phase of a project. SHA's Guidance on Maintenance of Traffic Alternative Analysis can be found in Appendix B.

Transportation Management Plans (TMPs)

Work zone impacts and issues vary; therefore, it is important to develop project specific transportation management plans (TMPs) that best serve the mobility and safety needs of the road users, highway workers, businesses and the community. A TMP lays out a set of strategies and describes how these strategies will be implemented to manage the work zone impacts of a project. The scope, content, and level of detail of a TMP may vary based on the anticipated work zone impacts. A TMP may also cover a corridor that is identified as having several significant projects.

For all significant projects, a TMP must consist of the Traffic Control Plan (TCP), as well as Transportation Operations (TO) and Public Information and Outreach (PI&O) Strategies. The extent to which TO and PI&O strategies are used should be comparable to the level of work zone impacts. If the project is not significant, the TMP may consist solely of the TCP; however, it is recommended that TO and PI&O strategies are considered where applicable. SHA's guidance on the development, implementation and evaluation of TMPs can be found in Appendix C.

Lane Closure Analysis Guidelines

To minimize the severity and duration of mobility impacts on the traveling public resulting from the work zone, all roadwork projects shall be adequately evaluated and analyzed in accordance with the Work Zone Lane Closure Analysis Guidelines (refer to Appendix D).

General Public Information and Outreach (PI&O)

In addition to work zone specific PI&O activities, SHA will provide general work zone information to the public through various outlets. These include, among other things, publication of the Road Ready brochure and Work Zone Safety brochure, posting of proposed and active lane closures and project information on the internet, promotion of Work Zone Safety Awareness Week, and advertisement of work zone safety-related messages through media outlets as well as ITS where appropriate. Through these efforts, SHA positively influences work zone safety and mobility as motorists gain access to information they need to plan their trips and become more work zone conscious.

Training

All SHA personnel, contractors, consultants and permittees involved in the development, design, implementation, operation, inspection and enforcement of work zone related transportation management and traffic control will be trained commensurate with their level of responsibility. Individuals may gain this training through SHA provided courses or outside sources.

Process Review

The inspection of work zones conducted on a daily basis by the Construction Inspection Division (CID) and other District staff covers specific items pertaining to the placement and usage of traffic control devices for work zones, traffic flow through and around work zones, and work zone operations. The rating of these items will be routinely reviewed by the OOTS Traffic Development and Support Division (TDSD) at minimum on an annual basis to determine where SHA is properly managing work zones and where improvement is needed. A sample inspection form can be found in Appendix E.

OOTS will prepare an annual report on Work Zone Traffic Control (WZTC) inspections and ratings every year to identify problems or deficiencies in the WZTC setups and monitor the improvement and progress in this area. Refer to Appendix F for a sample of this annual report.

The Temporary Traffic Control (TTC) Inspectors group will participate in bi-monthly meetings and semi-annual group inspections to review and communicate inspection issues and experiences to other TTC inspectors for the purpose of developing and encouraging statewide uniformity in the TTC inspection ratings.

OOTS will prepare an annual report on Maryland Work Zone Accidents that examines work zone accident trends and severity, compares work zone accidents to statewide accidents by type (rear end, angle, fixed object, etc.) and crash characteristics (month, time of day, location, etc.), and looks at Maryland work zone crash statistics in relation to U.S. work zone statistics. The report will evaluate work zone safety by drawing conclusions regarding work zone crash characteristics and providing recommendations.

SHA will perform field evaluations of 15 randomly selected work zones to monitor mobility and conformance to the Work Zone Lane Closure Analysis Guidelines.

Based on all of the above, SHA will develop new or refine existing work zone guidelines, policies and standards, and provide recommendations on how to effectively implement them throughout planning, design and construction to produce the desired results.

ORGANIZATION AND RESPONSIBILITIES:

Office of Planning and Preliminary Engineering

The Office of Planning and Preliminary Engineering will ensure the proper consideration of work zone safety and mobility impacts during planning by providing the following:

- Preliminary identification of significant projects.

- Preliminary identification of work zone impacts and consideration of these impacts in choosing the preferred alternate for design.
- Potential work zone impact management strategies (through the Maintenance of Traffic Alternative Analysis).
- A project budget that reflects the expected efforts for developing and implementing the TMP.

Office of Highway Development and Office of Bridge Development

The Office of Highway Development and Office of Bridge Development will ensure the proper design and presentation of all aspects of the Transportation Management Plan. Responsibilities of the Design offices include:

- Identifying significant projects.
- Coordinating the development of the TMP, including organizing TMP team meetings, managing TMP documentation efforts, and ensuring compliance with SHA work zone policies and guidelines.
- Developing Temporary Traffic Control Plans.
- Developing a consultant scope of work (as needed) that reflects efforts to comply with this policy.
- Providing input to the TMP in areas of expertise, such as bridge or highway design related construction staging options.

Office of Construction/District Construction

The Office of Construction and District Construction will ensure that the project can be constructed according to the plans. Responsibilities of OOC and District Construction include:

- Playing an integral part in project development and on the TMP Team.
- Providing input and/or reviewing each project regarding time frame for completion of construction; sequence of construction; innovative, accelerated or unusual construction methods; and constructability.

Office of Communications

The Office of Communications will ensure the proper information is communicated to the appropriate individuals, emergency and public safety departments, businesses and organization by providing the following:

- Need for and type of public information campaigns.
- Process for the dissemination of work zone information.
- Need and types of public meetings to inform the public on various aspects of the construction project.
- Development, review and approval of the public information and outreach component of the TMP.

Office of Traffic and Safety

The Office of Traffic and Safety (OOTS), under the leadership of the Traffic Development and Support Division (TDSD), is responsible for setting work zone policies and guidelines, identifying and communicating issues related to the condition, design and usage of temporary traffic control devices, as well as the set-up, maintenance general appearance and functionality of work zones. Responsibilities of OOTS include:

- Evaluating work zone safety by tracking the number of fatalities and injuries in work zones annually and presenting these findings in an annual report.
- Tracking the number of work zone inspections performed quarterly.
- Maintaining a database of work zone inspection results and summarizing this information in an annual report.
- Continually pursuing improvement of work zone safety and mobility processes and procedures.
- Providing training, as needed, to ensure all SHA personnel (designers, inspectors, flaggers, traffic managers, law enforcement officers, etc.) are knowledgeable to the appropriate level for the job decisions each individual is required to make.
- Updating training periodically to reflect changing industry practices and SHA processes and procedures.
- Providing support and guidance for major projects, as requested.

District Traffic and ADE-T

Responsibilities of the Assistant District Engineer – Traffic (ADE-T) and District Traffic Engineers include:

- Providing input to SHA staff on work zone design and operation, including lane widths, number of required through and turning lanes, traffic volumes and truck percentages, available detour routes, time restrictions, temporary reduced speed limits, and access requirements.
- Providing traffic input/support/review/comment on all TMP Team Activities, including the Red Flag Summary, identification of significant projects, maintenance of traffic alternatives analysis, and development of the transportation management plan.
- Developing and approving the Transportation Operations (TO) strategies portion of the TMP.
- Providing input, review, comment and approval on Temporary Traffic Control Plans.
- Reviewing work zone safety and mobility performance in coordination with the FHWA, PE, OOTS, Contractor, design office and law enforcement.
- Reviewing and monitoring work zone safety through the review and analysis of crash reports (partnering with OOTS).
- Coordinating with Public Information Officers to provide necessary information for the public information and outreach efforts on a project.
- Ensuring that all proposed lane closures are compliant with the Work Zone Lane Closure Analysis Guidelines and entered into the CHART database correctly and in a timely fashion.
- Coordinating and monitoring all projects that may affect traffic flow on state roadways within the District or neighboring districts.
- Reviewing and getting approval of the District Engineer for any modifications to the TCP/TMP during construction.
- Ensuring that District staff implements work zone policies and guidelines as set forth in this document.

TMP Team

The TMP Team (or project team if a TMP Team has not been developed) will develop the TMP (or review the TMP if it was developed by a consultant). Responsibilities of the TMP Team include:

- Conducting traffic analysis to identify work zone impacts to traffic flow and safety per the Work Zone Lane Closure Analysis Guidelines and Temporary Barrier Policy.
- Identifying strategies to minimize work zone impacts and maximize stakeholder awareness.
- Developing and reviewing the TMP, including the traffic control plan, transportation operations strategies and public information and outreach strategies.
- Ensuring plans, specs and estimates reflect the elements in the TMP.
- Using innovating contracting and bidding options, when feasible, to reduce project duration.
- Evaluating accelerated construction techniques and implementing schedules to reduce the number of working days needed to complete projects.

Office of CHART

The Office of CHART will ensure the proper information is communicated to the appropriate individuals and will assist in incident management. Responsibilities of CHART include:

- Providing real-time traffic information on the CHART website, highway message signs, and highway advisory radio.
- Providing proposed and active lane closures on the CHART website.
- Providing input and expertise on emergency response and incident management.
- Provide emergency motorist assistance via Emergency Traffic Patrols.
- Providing Emergency Response Units to set up traffic control at crash scenes.

SHA Project Engineer

SHA's Project Engineer (PE) will assess and manage projects during construction to ensure appropriate action is taken to reduce work zone impacts. Responsibilities of the PE include:

- Implementing the TMP and other safety and mobility aspects of the project.
- Verifying all contractor personnel are trained in traffic control to a level commensurate with their responsibilities.
- Working with the contractor to ensure lane closures are as planned.
- Ensuring work zones are neat, orderly and effective for the safety of highway workers and motorists.
- Performing quality control and assurance of work zone to promote consistence and ensure compliance with contract documents, policies and guidelines.
- Recommending and implementing traffic control improvements to address field conditions pertaining to traffic flow, visibility and worker and motorist safety.
- Providing the Office of Communications with updates on all major project changes (traffic shifts, closures, etc.).
- Investigating all fatal crashes and frequent injury crashes to provide recommendations on how to improve the work zone to avoid future crashes.

Contractor

Responsibilities of the contractor include:

- Designating a trained person at the project level (Traffic Manager) who has the primary responsibility, with sufficient authority, for implementing the TMP and other safety and mobility aspects of the project.
- Submitting lane closure requests and reporting active lane closures as required.
- Ensuring work zones are neat, orderly and effective for the safety of highway workers and motorists.
- Performing quality control of work zone to promote consistence and ensure compliance with contract documents, policies and guidelines.
- Recommending and implementing traffic control improvements to the project engineer to address field conditions pertaining to traffic flow, visibility and worker and motorist safety.

Law Enforcement

Responsibilities for law enforcement include:

- Providing active and passive enforcement of law, as requested and needed, to promote safety and mobility in the work zone.
- Being knowledgeable of work zone components and operations.
- Identifying unsafe conditions.
- Taking appropriate measures to clear work zone incidents as quickly as possible.
- Documenting work zone incidents.

TTC Inspectors

Responsibilities of the Temporary Traffic Control (TTC) Inspectors include:

- Inspection of designated work zones (either by random assessment or as determined by the District Engineer).
- Taking appropriate measures to identify and facilitate the correction of work zone deficiencies.
- Being knowledgeable of work zone standards, specifications, and policies.
- Coordinating inspections and follow up issues with appropriate SHA staff and contractors.
- Participating in bi-monthly meetings and semi-annual group inspections to review and communicate inspection issues and experiences to other inspectors, for the purpose of developing and encouraging statewide uniformity of inspection ratings.
- Compiling inspection results on a quarterly basis and submitting them to the OOTS for inclusion in SHA's Key Performance Area assessments.

Work Zone Safety and Mobility Council

The Work Zone Safety and Mobility Council consists of representatives from all SHA central offices, District traffic and construction engineers, FHWA MD Division, Maryland State Police, consultants, contractors, product vendors, and the University of Maryland. The Council will meet semi-annually to review and provide input on current and proposed processes, policies and guidelines regarding work zone planning, design, implementation, management and operation.

Federal Highway Administration

As partners with the Maryland State Highway Administration, the Federal Highway Administration (FHWA) Maryland Division Office is committed to providing guidance, training and technology transfer that will facilitate timely compliance with emerging work zone regulations, specifically the provisions of the Final Rule on Work Zone Safety and Mobility (23 CFR 630 Subpart J). FHWA Maryland Division is responsible for reviewing and reassessing SHA's conformance with applicable work zone regulations. The Division is responsible for evaluating requests from SHA for exceptions to the "significant projects" classification criteria. FHWA will also participate in the semi-annual work zone review performed by the Temporary Traffic Control Inspectors group. FHWA will initiate an annual work zone self assessment with appropriate work zone personnel and share the results as soon as they become available.

SUPPORTING DOCUMENTS:

<u>Author/Agency</u>	<u>Title</u>
MdSHA	Guidance on Identifying Significant Projects
MdSHA	Guidance on Maintenance of Traffic Alternative Analysis (MOTAA)
MdSHA	Transportation Management Plan Guidelines, including <ul style="list-style-type: none">• Public Information and Outreach Plans guidance• Communications Plan Template
MdSHA	Work Zone Lane Closure Analysis Guidelines
MdSHA	Maintenance of Traffic Red Flag Summary
MdSHA	Work Zone Design Checklist
MdSHA	Temporary Traffic Barrier Policy (Dated January 6, 2006)
MdSHA	Reduced Speed Limit Guidelines
MdSHA	Memorandum on Bicycle and Pedestrian Access through Work Zones (dated June 2002)
MdSHA	Maryland Manual on Uniform Traffic Control Devices (Maryland MUTCD)
MdSHA	Interagency Work Zone Service Agreement between SHA and Maryland State Police, including <ul style="list-style-type: none">• Maryland State Police Criteria for Use in Work Zones• Standard Operating Procedures for Requesting Maryland State Police in Work Zones
MdSHA	Work Zone Safety Toolbox
MdSHA	Guidelines for the Deployment of the Late Lane Merge Concept (Dated March 8, 2006)
MdSHA	High Visibility Apparel Policy
MdSHA	Functional Guidelines for Portable Changeable Message Signs
MdSHA	Flagger Policy at Signalized Intersections
MdSHA	Traffic Development and Support Division's (TDSD) Candidate Safety Improvement Locations (CSIL) List
MdSHA	Book of Standards for Highways and Incidental Structures
MdSHA	Standard Sign Book
MdSHA	Standard Specifications for Construction and Materials
MdSHA	Highway Construction Cost Estimating Manual
MdSHA	Highway Location Reference
AASHTO	Roadside Design Guide
AASHTO	A Policy on Geometric Design of Highways and Streets
ADA	American's with Disabilities Act Accessibility Guidelines

APPENDICES:

- Appendix A Guidance on Identifying Significant Projects
- Appendix B Guidance on Maintenance of Traffic Alternative Analysis (MOTAA)
- Appendix C Transportation Management Plan Guidelines
- Appendix D Work Zone Lane Closure Analysis Guidelines
- Appendix E Sample TTC Inspection Form
- Appendix F Sample Work Zone Traffic Control Annual Inspection Report
- Appendix G Maryland Work Zone Accidents Comparison Report