

(2) *Training.* All persons responsible for the development, design, implementation, operation, and inspection of work zone related transportation management and traffic control shall be adequately trained. States are encouraged to keep records of the training successfully completed by these personnel, and provide periodic training updates that reflect changing industry practices.

(3) *Process review and evaluation.* In order to assess the effectiveness of work zone safety and mobility procedures, States are encouraged to perform a periodic process review and evaluation, or review randomly selected projects throughout their jurisdictions. Appropriate State personnel who are representative of the project development stages and the different departments within the State are encouraged to participate in this review. States are encouraged to include an FHWA representative as a member of the review team, and to address the reviews in the stewardship agreements between each State and the FHWA.

(4) *Work zone performance data.* (i) Work zone crashes and crash data shall be analyzed and used to correct deficiencies which are found to exist on individual projects, and to continually improve work zone practices and policies. Other safety performance factors may be included in the analysis.

(ii) States are encouraged to collect and analyze work zone mobility performance data to correct deficiencies, which are found to exist on individual projects, and to continually improve work zone practices and policies.

(b) *Project impact analysis and management procedures.*—(1) *Work Zone Impacts Analysis.* The State shall analyze the work zone impacts of alternative project options and work zone design strategies, and develop appropriate measures to alleviate these impacts. The scope and level of detail of this impacts analysis will vary based on the State's policies, and their understanding of the anticipated severity of work zone impacts due to the project. If the State determines that a project is expected to have minimal sustained work zone impacts, they may exempt the project from the impacts analysis. The State is encouraged to start the impacts analysis early in the project development process and, depending upon the anticipated severity of work zone impacts due to the project, continue the analysis through project design, and traffic control and operations planning. The resultant project options and work zone design strategies and the mitigation measures recommended by the work zone impacts

analysis shall be appropriately documented.

(i) The State is encouraged to establish a team that includes representatives of the project development stages to discuss, evaluate and document work zone issues, and take responsibility for the development of the project design and work zone mitigation strategies. Non-State personnel, including transit providers, freight movers, public safety and other affected parties, may be included in this team as appropriate.

(ii) The work zone impacts analysis is a systematic process that may require the use of appropriate analytical tools. It consists of the following activities:

(A) Understanding of the project and traffic and travel characteristics, and identification of the work zone impacts of the project (including impacts of multiple projects at the corridor and network levels, as appropriate).

(B) Development and evaluation of alternative project options including design, procurement, and construction strategies that minimize the work zone impacts of the project.

(C) Development of transportation management recommendations that mitigate the work zone impacts of the project, including traffic control, transportation operations and safety, and public information and outreach strategies.

(2) *Transportation Management Plan (TMP).* A Transportation Management Plan (TMP) documents the mitigation strategies identified during the work zone impacts analysis. A TMP has three coordinated components: Traffic Control Plan (TCP), Transportation Operations Plan (TOP), and Public Information and Outreach Plan (PIOP). The content and degree of detail of the TMP components will depend on the severity of work zone impacts due to the project. Based upon the State's policy requirements and the recommendations from the work zone impacts analysis, the State shall develop a TMP for the project. The requirements for the TMP components are as follows:

(i) *Traffic Control Plan (TCP).* (A) The TMP shall include a TCP or provisions for the development of a State-approved TCP prior to start of work. A TCP is a plan for safely and efficiently handling traffic through a specific highway or street work zone or project. These plans may range in scope from a very detailed TCP designed solely for a specific project, a reference to a specific section of the MUTCD, or reference to approved standard plans or State transportation department manual.

(B) For projects that have minimal work zone impacts, the TCP may be the only component of the TMP.

(C) The scope of the TCP is determined by the anticipated work staging and scheduling, and the traffic safety and control requirements identified in the work zone impacts analysis.

(D) The plans, specifications, and estimates (P.S.&E.s) shall include either a State-prepared TCP; or provisions for contractors to develop a TCP, approved by the State, prior to start of the work.

(E) The TCP shall be consistent with the MUTCD provisions for Temporary Traffic Control Zones and Temporary Traffic Control Plans.

(ii) *Transportation Operations Plan (TOP).* (A) If recommended by the results of the work zone impacts analysis, the TMP shall include a TOP. A TOP includes considerations that address the safety and mobility of the transportation system by adopting strategies for the sustained operations and management of the work zone impact area.

(B) The TOP consists of strategies that address transportation systems management; corridor management; and traffic management operations and safety (*i.e.*, Intelligent Transportation Systems (ITS) based traffic control and traveler information, speed management and enforcement, incident and emergency management, safety reviews and audits). Development and sustained coordination of the TOP in partnership with stakeholders (*i.e.*, other transportation agencies, transit providers, freight movers, utility suppliers, police, fire, emergency medical services, and regional transportation management centers) is encouraged.

(C) The scope of the TOP is determined by the transportation operations and safety requirements identified in the work zone impacts analysis.

(D) The TOP may be included in the P.S.&E.s. Alternatively, provisions may be made in the P.S.&E.s for contractors to develop a TOP, approved by the State, prior to the start of work.

(iii) *Public Information and Outreach Plan (PIOP).* (A) If recommended by the results of the work zone impacts analysis, the TMP shall include a PIOP. A PIOP consists of project level communications that ensure that affected road users, the general public, residences and businesses, and the appropriate public entities are informed about the project, the expected work zone impacts, and the changing work conditions on the project.