

VIRGINIA DEPARTMENT OF TRANSPORTATION

***TRAFFIC ENGINEERING DIVISION***  
**INSTRUCTIONAL & INFORMATIONAL MEMORANDUM**

<b>GENERAL SUBJECT:</b> Work Zone Safety		<b>NUMBER:</b> IIM-TE-345.1
<b>SPECIFIC SUBJECT:</b> Work Zone Traffic Control Training Procedures		<b>DATE:</b> January 23, 2017
<b>DIRECTED TO:</b> District Administrators Division Administrators		<b>SUPERSEDES:</b> TE-345
		<b>APPROVAL:</b>  /original signed by/ Raymond J. Khoury, P.E. State Traffic Engineer Richmond, VA January 23, 2017

FHWA regulations provided in 23 CFR 630 Subpart J states that, “States shall require that personnel involved in the development, design, implementation, operation, inspection, and enforcement of work zone related transportation management and traffic control be trained, appropriate to the job decisions each individual is required to make.”

To ensure compliance with this requirement of the Work Zone Safety and Mobility final rule, a multi-disciplined Work Zone Safety Training Committee (WZSTC) was established. Through their efforts, the attached Work Zone Traffic Control Training procedures were developed. The changes to the original document are highlighted.

Enclosure:

- Cc: Deputy Chief Engineer  
Human Resources Division Administrator  
Regional Operations Directors  
Regional Traffic Engineers  
Residency Engineers/Administrators  
District HR Managers  
FHWA

# WORK ZONE TRAFFIC CONTROL TRAINING PROCEDURES

## PURPOSE:

The following procedures provide direction for training requirements for personnel involved in the planning, designing, supervising, implementation, inspection and maintenance of work zone traffic control. These procedures include 1) identifying responsibilities of the Department, the Training Instructor and the Training Sponsor Provider; 2) providing a method for submittal, review, and evaluation of training courses for qualification as an approved work zone traffic control training course and a process for periodic reevaluation of each course for continued approval or removal from the approved course list; 3) providing description of the different categories of training, the content requirements for each category course, and the category of training necessary for different responsibility duties; and 4) providing training instructor qualifications.

## AUTHORITY:

Federal Regulations, 23 CFR Parts 630J and 655F.

## SCOPE:

Training courses approved in accordance with this procedure shall be the only training accepted as meeting the standards for qualifying persons to plan, design, implement, inspect, and/or supervise the selection, placement, or maintenance of work zone traffic control plans and devices in work zones on streets and highways within the Commonwealth of Virginia State Highway System right of way. Persons possessing current valid and verifiable wallet cards and documented in the VDOT or their Designee's Work Zone Traffic Control Database shall be the only personnel approved to plan, design, or oversee work on the maintenance of traffic activities for which they have been trained.

## REFERENCES:

- The Virginia Work Area Protection Manual;
- Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD);
- VDOT Road and Bridge Standards;
- VDOT Road and Bridge Specifications;
- ATSSA Quality Standards for Temporary Traffic Control Devices.
- VDOT Material Division Instructions

## BACKGROUND:

Work zone traffic control is an important function necessary in providing a safe environment in those areas where workers and transportation modes may compete for common or adjacent space. Every reasonable effort should be made to reduce the risk of injury to both the worker and the transportation system user in these areas of potential conflicting interests. In order to achieve this goal, proper training of personnel involved in the planning, designing, supervising, implementations, inspections, enforcement and maintenance of work zone traffic control is necessary. These

responsibilities generally fall into one of the four distinct training areas in relationship to the design and operation of a roadway: 1) the Roadway Design area; 2) the Roadway Construction area; 3) the Roadway Operations (Maintenance) area; and 4) Law Enforcement during construction and roadway operations.

The State Traffic Engineer is responsible for implementing these program requirements. To that end, the State Traffic Engineer established a **Work Zone Safety Training Committee (WZSTC)**, consisting of representatives appointed by the State Traffic Engineer from the Department's Learning Center, Location and Design, Construction, Local Assistance, Maintenance, and Traffic Engineering Divisions, and from the Virginia State Police (VSP), Federal Highway Administration (FHWA), the Virginia Transportation Construction Alliance (VTCA) and others approved by the State Traffic Engineer. The committee is chaired by the Work Zone Safety Program Manager. This committee's functions includes making recommendations on procedures, standards, and specifications involving work zone traffic control training issues, the review of training courses for approval that are submitted in compliance with this procedure, and the review and approval of Work Zone Safety Training instructor qualifications.

#### **DEFINITIONS:**

**ATSSA** – The American Traffic Safety Services Association.

**Closed Course** – An approved course whose registration and attendance is restricted by the training sponsor or training instructor.

**Department** - The Commonwealth of Virginia Department of Transportation.

**District** - Any of the Department's administrative subdivisions that are headed by a District Engineer/Administrator.

**Engineer** – The Engineer or their designee that has the authority to oversee the work being performed.

**Flagger Certification** – The Department will include a 4-year flagger certification as part of the Basic or Intermediate WZTC verification card when the participant successfully completes the exam and the Training Instructor determines the participant can communicate effectively with the traveling public in English. The 2-year flagger certification card is not part of the work zone traffic control training program.

**Form 7A** – The Department's Education and Training Attendance Record to be used by the Training Instructor to submit class attendance of trainee names and exam scores.

**May** - This is a permissive condition. It is used to identify allowable alternatives.

**Open Course** – An approved course open for anyone to register and attend.

**OutsideVDOT**– The Department's Business Partner Extranet is a secure platform for collaboration between our External Business Partners and Internal VDOT Users that houses the WZTC training material for instructors.

**Region** – Any of the Department’s administrative subdivisions that are headed by a Regional Operations Director.

**Shall** - This is a mandatory condition or requirement.

**Should** - This is an advisory condition. This refers to the recommended or preferred process to be followed.

**Temporary DOT Training** – Another State’s Department of Transportation recognizable work zone safety training course which may be used as a substitute for a VDOT approved course up to a period of one year.

**Traffic Control Design Specialist Certification** – A Certification issued by the ATSSA after completing the ATSSA Virginia Advance Traffic Control Design Specialists or ATSSA Traffic Control Design Specialists course and being approved by the ATSSA certification board. Instructors shall be certified in either the ATSSA Virginia Advance Traffic Control Design Specialists, ATSSA Traffic Control Design Specialists, ATSSA Virginia Intermediate Traffic Control Supervisor or the ATSSA Traffic Control Supervisor course in order to teach the Advance Work Zone Traffic Control Training

**Traffic Control Supervisor Certification** – A Certification issued by the ATSSA after completing the ATSSA Virginia Intermediate Traffic Control Supervisor or the ATSSA Traffic Control Supervisor course and being approved by the ATSSA certification board. Instructors shall be certified in order to teach the Intermediate or Advance Work Zone Traffic Control Training.

**Training Instructor** - One who assumes the responsibility of providing the training materials and training for Department approved Work Zone Traffic Control Training course(s).

**Training Sponsor and Provider** – An organization or an instructor who is compensated for administering the Department’s approved Work Zone Traffic Control Training course(s) to class trainees.

**TOC** – Traffic Operation Center

**Work Zone Traffic Control Verification** – A WZTC verification card issued by the Department that identifies an individual who has successfully completed the Basic, Intermediate, and Advanced Work Zone Traffic Control Training courses developed or approved by the Department.

**WZSTC** - The Department’s Work Zone Safety Training Committee was established by TE Memorandum 345.0.

**WZTC** – This is the acronym for Work Zone Traffic Control.

## 1. RESPONSIBILITIES

### (A) Department:

The WZSTC shall:

- (1) Have direct responsibility for maintaining VDOT's external Website which contains the **Work Zone Traffic Control Training Requirements** and its subsidiary components noted in this document.

<http://www.virginiadot.org/business/trafficeng-WZS.asp>

- (2) Have direct responsibility for:
  - Approving qualified Training Instructors;
  - Processing, evaluation and approval of work zone traffic control training course material submitted by Training Sponsors and Providers in accordance with this procedure;
  - Maintaining the WZTC Training Sponsors and Providers, WZTC Training Instructors, and WZTC-Trained Personnel approved lists on VDOT's external Website.
- (3) Prescribe work zone traffic control training requirements for Department employees and any other persons performing work within the State Highway System right of way.
- (4) Review and provide recommendations for approval of plans for implementation and resourcing.
- (5) Provide Training Sponsors and Providers or Training Instructors access to WZTC training material in OutsideVDOT as well as maintain and update WZTC training material in OutsideVDOT.
- (6) Document all trainees' course training in the VDOT Work Zone Traffic Control Database by: trainee name, course category, course date, verification number, expiration date, pass/fail status, providers' name, instructors' name, and provide all trainees with a wallet size laminated card after successful completion of the course and maintain the WZTC Trained Personnel on VDOT's external Website. List available WZTC Courses for VDOT employees in the VDOT Virtual Campus and document employee's training records by entering trainee name, course category, course date, providers' name, instructors' name and pass/fail status.
- (7) Ensure the implementation of approved training courses by monitoring classes as needed and perform periodic reviews of course evaluations and perform an annual evaluation of the program.
- (8) Review and approve or reject specific courses and/or instructors not meeting the above minimum requirements. If the WZSTC determines the course/instructor provides valid, qualified training, the WZSTC may waive this training requirement. This waiver will require a two-thirds vote by the full WZSTC membership.

**(B) Training Instructor:**

The Training Instructor shall:

(1) Meet the minimum qualifications to instruct training course(s):

**(a) Basic (Installer) Course –**

- Successfully complete the VDOT Intermediate Work Zone Traffic Control Training course or American Traffic Safety Services Association (ATSSA) Virginia Intermediate Traffic Control Supervisor (TCS) course or ATSSA TCS Course;
- Successfully complete the VDOT flagger certification or ATSSA (classroom only) flagger certification;
- Provide two years of documented experience in conducting training courses or VDOT internal instructors shall complete the VDOT's Basic Instructors Course(BIC);
- Provide two years of documented practical experience in Highway Design; Construction; Maintenance; or Traffic Operations; and
- Provide two resource references who can verify their experience.

**(b) Intermediate (Supervisory/Inspection) Course –**

- Successfully complete ATSSA's Virginia Intermediate/TCS or ATSSA's national TCS course;
- Process ATSSA Virginia Intermediate/TCS Certification or ATSSA national TCS Certification;
- Provide ATSSA Virginia Intermediate/TCS or ATSSA TCS certification number;
- Possess VDOT flagger certification or ATSSA (classroom only) flagger certification;
- Provide two years of documented experience in conducting training courses or VDOT internal instructors shall complete the VDOT's BIC;
- Provide two years of documented practical experience in Highway Design; Construction; Maintenance; Utilities or Traffic Operations; and
- Provide two resource references who can verify their experience.

**(c) Advanced (Designer) Course –**

- Successfully complete ATSSA's Virginia Advanced Traffic Control Design Specialist (TCDS) course or ATSSA TCS and VDOT Advanced WZTC Training;

- Possess ATSSA's certification for either ATSSA Virginia Advanced TCDS or ATSSA Virginia Intermediate/TCS or ATSSA TCS Certification;
  - Provide either ATSSA TCDS or Virginia Intermediate/TCS or ATSSA TCS certification number;
  - Provide two years of documented experience in conducting training courses or VDOT internal instructors shall complete the VDOT's BIC;
  - Provide documented knowledge, skills, and abilities detailing the involvement in using the following State of Virginia documents: Design Standards, Plans Preparation, current edition of the Virginia Work Area Protection Manual, and VDOT Standard Specifications for work zone applications;
  - Provide two years of practical experience in Highway Design; Construction; Maintenance; or Traffic Engineering; and
  - Provide two resource references who can verify their experience.
- (2) Email the WZTC Training Instructor Application [http://www.virginiadot.org/business/resources/wztc/wztc\\_inst\\_app\\_for\\_m.pdf](http://www.virginiadot.org/business/resources/wztc/wztc_inst_app_for_m.pdf) to the WZS Program Manager, [TEWorkZoneSafety@vdot.virginia.gov](mailto:TEWorkZoneSafety@vdot.virginia.gov), and once approved submit ITD-35E and ITD-36E forms to gain access to OutsideVDOT. If your password expires you must resubmit the ITD forms to reset your password.
- (3) Email updated information to the WZS Program Manager, [TEWorkZoneSafety@vdot.virginia.gov](mailto:TEWorkZoneSafety@vdot.virginia.gov), regarding the instructor application; legal name, company name, telephone, e-mail address, training categories, verification or certification numbers, ATSSA certifications and training qualifications.
- (4) Provide training in the appropriate category.
- (5) Monitor and update WZTC training material from OutsideVDOT.
- (6) Provide at least the minimum training that is required by this procedure for category approved.
- (7) Submit a class schedule listing date, time, address, location, and category of training four weeks prior for a closed class, and eight weeks prior for an open class to the WZSTC chairman. Alterations to these submittal time frames must be made in writing and approved by the WZSTC chairman.

VDOT must submit a class schedule listing date, time, address, location, and category of training a minimum of ninety days for VDOT personnel only.

**Any training courses may be monitored by WZSTC members or their representatives.**

- (8) Furnish course material for each trainee. The course material shall become the property of the trainee except for the exam or make-up exam including the Work Zone Safety Guidelines for Temporary Traffic Control for the Basic WZTC or the Virginia Work Area Protection Manual for the Intermediate and Advance WZTC.
- (9) Administer only the Basic WZTC exam orally to a trainee who informs the Training Instructor they have trouble reading or interpreting the exam. The exam can be administered the same day after all exams are complete or on another date.
- (10) E-mail a completed Form 7A for the course category and instructor evaluation forms to [TEWorkZoneSafety@vdot.virginia.gov](mailto:TEWorkZoneSafety@vdot.virginia.gov) within 30 days of completion of the course. Trainees shall provide their legal name on Form 7A; no nicknames shall be used. If the trainees names are not typed on Form 7A it must be accompanied by a typed list of trainees as they appear on Form 7A. Training Instructors who provide training for VDOT employees shall adhere to Section 6.8.2.
- (11) Distribute work zone traffic control training verification cards and replacement cards to each class trainee by mailing to the trainees' home address or mail the cards to the company's human resource, training or safety manager.
- (12) Email a request for a replacement work zone traffic control verification card to [TEWorkZoneSafety@vdot.virginia.gov](mailto:TEWorkZoneSafety@vdot.virginia.gov). The Training Instructor shall provide the trainee's name, class category, original class date and the Department's verification number which can be found on the WZTC-Trained Personnel list online, [http://www.virginiadot.org/business/resources/wztc/WZTCT\\_Certification\\_List.pdf](http://www.virginiadot.org/business/resources/wztc/WZTCT_Certification_List.pdf).
- (13) Maintain/Renew their Instructor Training Status every four years by attending and successfully passing an approved and qualifying WZTC training course(s) in order to maintain/renew their current WZTC training category status.

### **(C) TRAINING SPONSOR AND PROVIDER**

- (1) Shall use the Department's Basic, Intermediate, or Advanced work zone traffic control training courses or use an approved self-developed WZTC training course.



- (2) Shall submit for review and approval self-developed WZTC training courses to the Work Zone Training Committee (WZSTC). Self-developed WZTC training course shall meet all training course requirements contained in this procedure. The self-developed WZTC training course shall not be used until approval is granted in writing by the Work Zone Safety Program Manager.
- (3) Shall use an approved WZTC Training Instructor to administer the Department's WZTC training course(s) or their approved WZTC training course(s).

## **2. COURSES REVIEW AND EVALUATION**

- 2.1 The Training Sponsor and Provider shall submit one hard copy of the WZTC training material and a disc copy of the WZTC training material that is searchable in Microsoft Word and/or PowerPoint format. The WZTC training shall include a lesson plan, agenda, workshop exercises, evaluation sheet, exam and the exam answer key to:

**VDOT  
WZS Program Manager  
Room 208  
1401 E. Broad Street  
Richmond, VA 23219**

Upon receipt of the training course the WZSTC or a review subcommittee chosen by the WZSTC shall review the course content, method of instruction, and conformance to Department standards and determine the appropriate category of the training course and determine its approval or disapproval. This review should be completed within 30 calendar days of receipt of the information.

- 2.2 The WZSTC shall forward to the course Training Sponsor and Provider all general comments regarding the approval or disapproval of the pending training course. The course shall be approved by the WZSTC before the Training Sponsor and Providers may schedule and implement any training of personnel that work within the State Highway System right of way.
- 2.3 Review and approval of course updates or revisions shall follow the same evaluation schedule.

## **3. APPROVED COURSES**

- 3.1 The State Traffic Engineer's Office shall maintain lists of approved WZTC Training Instructors and WZTC Sponsors and Providers.

The WZTC Training Instructor list provides the Company's name and address; contract person and their telephone number and a list of approved categories they can teach.

The WZTC Training Sponsors and Providers list shall include the Company's name and address; contact person and their telephone number and email address; and a list of approved categories they can teach.

A listing of approved WZTC Instructors [http://www.virginiadot.org/business/resources/wztc/Approved\\_WZTC\\_Instructors.pdf](http://www.virginiadot.org/business/resources/wztc/Approved_WZTC_Instructors.pdf) and a listing of approved WZTC Training Sponsors and Providers [http://www.virginiadot.org/business/resources/wztc/wztc\\_training\\_sponsors.pdf](http://www.virginiadot.org/business/resources/wztc/wztc_training_sponsors.pdf) are provided on the VDOT's external Website.

- 3.2 A minimum of one current copy of each approved course's materials and accompanying documentation shall be maintained by the chairperson of the WZSTC (or his/her designee) including approval dates for the original course and all subsequent revisions.
- 3.3 The Training Sponsor and Provider is responsible for submitting and monitoring courses to assure that course updates are performed every two years or as determined by the WZSTC. Failure to keep a course current and updated may result in the course Training Sponsor and Provider having their course removed from the approved course list.
- 3.4 When courses are identified by the WZSTC as needing updating, the chairperson shall advise the Training Sponsor and Provider in writing of the pending removal of its course from the approved course list if the course is not made current. If the Training Sponsor and Provider does not update the course to meet the training requirements of this procedure and submit the update for review by the WZSTC within two months, the chairperson shall advise the State Traffic Engineer that the course shall be removed from the approved course list or to hold such action pending an ongoing review of a course revision.
- 3.5 Records and course materials for those courses removed from the approved course list shall be maintained by the WZSTC for a period of four years. Personnel trained utilizing such courses while they were in approved status shall be considered as having met the training requirements of this procedure.

## 4. TRAINING REQUIREMENTS

- 4.1 The objective of these training courses is to provide persons involved with Work Zone Traffic Control responsibilities with constant and consistent education based on their job function to ensure that Department standards are followed in planning, designing, supervising, implementing, evaluating, enforcing and maintaining work zone traffic control.
- 4.2 Work zone traffic control plans, Maintenance of Traffic, Sequence of Construction and/or temporary traffic control devices shall not be designed, implemented or

installed in the field unless performed by or under the direct supervision of a person who has satisfactorily completed the training requirements prescribed herein.

- 4.3** All designated Department employees, contractors, consultants, permit, utility, or any other appropriate person responsible for work zone traffic control planning, design, implementation, inspection, and/or for supervising the selection, placement, or maintenance of traffic control schemes and devices in work zones on the State Highway System right of way shall satisfactorily complete the training requirements of this procedure in the appropriate category of involvement in accordance with the authority identified in the Authority section and Traffic Engineering Division memorandum TE-345.

However, regardless of whether an individual's job description is mentioned specifically, for each work site within the highway ROW in Virginia, the entity performing the work shall provide at least one trained person so that during work activities impacting traffic there is someone at each site who has received at least the Basic training class.

Unless specified in the contract, an Intermediate trained person will not be required to be on site during the installation of work zone traffic control as shown in the typical layouts of the Virginia Work Area Protection Manual, but shall be available to be on site within 60 minutes of notification when the Traffic Control Plan or typical application of the Virginia WAPM needs to be modified and the Intermediate trained person must be present when the modifications are implemented.

The Intermediate level course may substitute for the Basic level course. The Advanced level course cannot substitute for the Basic or Intermediate level course requirements since it is based mainly on TTC design principles rather than in field implementation of TTC devices.

- 4.4** This procedure does not apply to Law Enforcement Officers providing services on construction/maintenance projects. Specific work zone safety training requirements for law enforcement personnel are covered in Section 7 of these procedures.

**4.5 WZTC Training Exemptions:**

Workers who perform permitted operations such as residential cable installation, Miss Utility marking and utility pole inspection whose activities do not involve the installation, maintenance and removal of work zone traffic control devices as determined by the Engineer or their designee, are exempt from the Basic WZTC training requirement. If traffic control devices are installed for these types of activities, then someone on site must have either the Basic or Intermediate WZTC training.

Workers from other states are exempt from these training requirements when working in the Commonwealth while under a State of Emergency issued by the Governor for a period of two weeks after the State of Emergency is rescinded.

## 5. TRAINING CATEGORIES

5.1 To satisfy the Department's training requirements, the WZSTC identified four training categories for Work Zone Traffic Control training courses. Listed below for each of these categories are the job descriptions that would necessitate training.

### (A) Basic (Installer) Work Zone Safety Training

This one day course is required for all persons with duties that include any of the following **Maintenance** (Short-term stationary, Intermediate-term stationary, short duration or mobile operations type) activities:

- (a) Direct responsibility for placement and removal of work zone traffic control devices;
- (b) Direct responsibility for field maintenance of work zone traffic control devices;
- (c) All VDOT Maintenance field personnel including hourly, contract personnel or temporary/staffing agency personnel;
- (d) Traffic Operations Center Operators

### (B) Intermediate (Supervisor/Inspector) Work Zone Safety Training

This two day course is required for all persons with duties that include and of the following **Supervision or Inspection of Construction/Maintenance** (Long-term stationary, Short-term stationary, Intermediate-term, short duration or mobile operations) activities:

- (a) Inspection of the placement or operational function of work zone traffic control devices;
- (b) Supervisory/Inspection responsibilities;
- (c) Work Zone Traffic Control Coordinators on construction projects;
- (d) State/Regional Traffic Engineering Work Zone Safety Coordinators;
- (e) State/District Safety Engineers;
- (f) Traffic Control Supervisors;
- (g) Land Use Development Personnel;
- (h) Personnel with the responsibility for the development of contracts;
- (i) VDOT Maintenance Managers, Superintendents and Supervisors;
- (j) Personnel with responsibility for the development of work zone safety policies and procedures; and

(k) Traffic Operations Center Supervisors

**(C) Advanced (Designer) Work Zone Safety Training**

This two day course is required for personnel with responsibility or authority for the **Design and/or Review** of work zone traffic control requirements to be implemented. These positions include the following:

- (a) The roadway design or bridge engineer responsible for the work zone traffic control plan development;
- (b) The drafting or electronic generation of work zone traffic control plans;
- (c) Residency permits personnel charged with reviewing and approving work zone traffic control.

**(D) Work Zone Training for Law Enforcement Officers**

This online course is required for Law Enforcement Officers with responsibilities of providing Police Patrol in temporary traffic control areas or others who direct or oversee Law Enforcement personnel on project sites.

- (a) Virginia State Police;
- (b) Local Police Officers;
- (c) Inspection personnel with oversight of the placement or operational function of temporary traffic control devices;
- (d) Construction Supervisory responsibilities;
- (e) Work Zone Traffic Control Coordinators on construction projects;
- (f) Regional Traffic Engineering Work Zone Safety Coordinators;
- (g) District Safety Engineers;
- (h) Traffic Control Supervisors;
- (i) Land Use Development Personnel; and
- (j) VDOT Maintenance Managers, Superintendents & Supervisors

**5.2** With ongoing regulatory, compliance and temporary traffic control industry safety changes, VDOT requires WZTC training every four (4) years to ensure that individuals stay up-to-date with the latest standards, policies and requirements necessary to effectively perform their job duties and ensure both public and worker safety. (See Table 5.1, WZ Traffic Control Training Requirements)

Work Zone Training for Law Enforcement Officers is required prior to the first deployment in a construction/maintenance work zone, or whenever the online training course has been revised.

- 5.3** Within 30 days of the receipt of Form 7A by VDOT’s Traffic Engineering Work Zone Safety section, the Instructor shall receive a wallet size card for each individual that successfully completes a Basic, Intermediate, or Advanced WZTC training course. The wallet size card shall include the class level, trainee’s name; date class was completed, training verification number, and expiration date.

Upon successful completion of a Basic, Intermediate, and Advanced training course, a Temporary Approval Letter may be issued by the Training Instructor at the request of the Trainee or at the discretion of the Training Instructor. The letter shall be on the Instructor’s letter head and provide the course category; date of the course; instructor’s name; Trainee’s name, company and exam score; expiration date (within 45 days of the class) of the Temporary Approval Letter, and the instructor’s contract information. The Department will provide a templet for the Temporary Approval Letter which should be used by the Training Instructor.

Upon successful completion of the Work Zone Training for Law Enforcement Officers each individual will receive a Certificate of Compliance reflecting the trainee’s name and completion date at the end of the online training and assessment.

**Table 5.1, WZ Traffic Control Training Requirements**

Area of Responsibilities	Training Required	ATSSA Certification Required	Minimum Required
Maintenance	Basic	No	One per work site
VDOT Maintenance	Basic	No	All
Contractor (non-supervisory)	Basic	No	One per work site
Utilities	Basic	No	One per work site
TOC Operators	Basic	No	All
Inspection	Intermediate & LEO	No	At least one per project

**Table 5.1, WZ Traffic Control Training Requirements**

Area of Responsibilities	Training Required	ATSSA Certification Required	Minimum Required
Contractors (Supervisory)	Intermediate & LEO	No	At least one per project
State/Regional WZS Coordinator	Intermediate & LEO	Yes	All
State/District Safety Engineer	Intermediate	Yes	All

	& LEO		
Traffic Control Supervisor (Special Provision)	Intermediate & LEO	Yes	All
Contract Monitors	Intermediate & LEO	No	All
VDOT Land Development/Permit	Intermediate & LEO	No	One per Residency
Maintenance Mangers, Superintendents & Supervisors	Intermediate & LEO	No	All
TOC Supervisors	Intermediate	No	All
Traffic Control Plan/Traffic Management Plan Designers	Advanced	No	One per design team
Law Enforcement Officers	LEO	No	All

## 6. WORK ZONE TRAFFIC CONTROL TRAINING CRITERIA

**6.1.0 Course Content** – The minimum requirements for each course shall be as follows for both the Department and Trainer Sponsor and Provider:

**6.1.1 Basic WZTC Training** – Approximately eight (8) hours of classroom instruction on the Virginia Work Area Protection Manual and its supplement Work Zone Safety Guidelines for Temporary Traffic Control pocket guide and part 6 of the MUTCD and trainees participating in a workshop exercise selecting and setting up a sample work zone and exam. A written test shall consist of at least 10 questions on temporary traffic control devices and 30 questions on the minimum design standards for temporary traffic control on the State Highway System for maintenance(intermediate-term, short-term, short duration and mobile) type operations. The VDOT written test includes 10 additional questions on flagging operations. See Appendix A for a Basic WZTC Training Course outline.

**6.1.2 Intermediate WZTC Training** – Approximately sixteen (16) hours of classroom instruction conducted at a minimum over two days on the VA WAPM and Part 6 of the MUTCD and trainees participating in workshop exercises selecting and setting up two sample work zones and exam. Flagging operations shall be covered in enough detail that a person who successfully completes this course is capable of providing Basic training as described above. A written test shall consist of at least 15 questions on traffic control devices and 25 questions on the minimum design standards for traffic control on the State Highway System for construction (long-term, intermediate-term, short-term, short duration and mobile) type operations. The VDOT written test includes 10 additional questions on flagging operations. See Appendix A for an Intermediate WZTC Training Course outline.

**6.1.3 Advanced WZTC Training** – Approximately sixteen (16) hours of classroom instruction conducted at a minimum over two days on the *VA WAPM with references to the MUTCD*, and *Virginia's Road and Bridge Standard Specifications*. The minimum advanced training classroom and field MOT review areas to be covered shall be an in-depth and comprehensive review of the

**VA WAPM**, design exercises and problem solving of MOT on traffic control plans. Participating in design work samples of rural multilane, urban multi-lane, interstate, high volume multi-access urban multi-lane, and traffic control plan exercises that include the design of an MOT traffic plan (that requires special treatment not covered in the **MUTCD** or the **Design Standards**) and plan exercises that contain dysfunctional elements that require problem solving is required. A written test shall consist of at least 20 questions on traffic control devices, and 20 questions on the minimum design standards for traffic control on the State Highway System. See Appendix A for an Advanced **WZTC** Training Course outline.

**6.2** The Training Instructor, once all documentation is complete, shall be granted access to the work zone training material housed in OutsideVDOT (VDOT Highway Safety Info; Highway Safety Information Library; Work Zone Safety; WZS Approved Trainers). The Training Instructor shall only download the work zone training material which they are qualified to teach. The Training Instructor shall monitor the training material for updates before teaching each class.

**6.3.0** Training shall be offered in up to four categories: three (3) classroom categories: Basic, Intermediate, or Advanced and one (1) online category: Work Zone Training for Law Enforcement Officers.

**6.3.1** The Training Instructor shall follow the VDOT lesson plan or the approved self-developed lesson plan that was submitted to and approved by the WZSTC. Course exercises may be adjusted by the Training Instructor to address work zone training needs of the class trainees.

**6.3.2** The Training Instructor shall show the Department's or Trainer Sponsor and Provider PowerPoint material to the trainees and provide course materials to each trainee for the following courses:

Basic – The current edition of the Work Zone Safety Guidelines for Temporary Traffic Control pocket guide, a notebook containing a copy of the tentative agenda, Failure to Perform Satisfactory Work Zone Traffic Control Techniques by Trained Personnel, slides used in the PowerPoint presentation, written workshop exercises, a course/instructor evaluation sheet, and an examination.

Intermediate – The current edition of the Virginia Work Area Protection manual, a notebook containing a copy of the tentative agenda, Failure to Perform Satisfactory Work Zone Traffic Control Techniques by Trained Personnel, the slides used in the PowerPoint presentation, written workshop exercises, a course/instructor evaluation sheet, and an examination.

Advanced – The current edition of the Virginia Work Area Protection manual, a notebook containing a copy of the tentative agenda, Failure to Perform Satisfactory Work Zone Traffic Control Techniques by Trained Personnel, the slides used in the PowerPoint presentation, written workshop exercises and plan sheets, a course/instructor evaluation sheet, and an examination.



**6.4 Trainee Prerequisites** – Courses for training categories shall be standalone. The Basic Training requirements can be met by completing the Intermediate Training. The Advanced Training cannot be a substitute for the Basic or Intermediate Training.

(1) **Basic (Installer) Training**

Entry level worker with practical experience in Highway Design; Construction; Maintenance; or Traffic Engineering.

(2) **Intermediate (Supervisory/Inspection) Training**

Two years of practical experience in Highway Design; Construction; Maintenance; or Traffic Engineering or the completion of the Basic WZTC training. The Intermediate WZTC course may substitute for the Basic WZTC course.

(3) **Advanced (Designer) Training**

Hands on experience (preferably two years) in roadway or bridge plan development or traffic control plan development. The Advanced WZTC course cannot substitute for the Basic or Intermediate WZTC training;

**6.5 Training Instructor Due Diligence to Trainees** – In order to successfully complete Basic WZTC training, the Training Instructor shall ensure that the trainee becomes familiar with the current Work Zone Safety Guidelines for Temporary Traffic Control pocket guide and when required review the current Flagger Certification video and can demonstrate proper flagging techniques.

VDOT will only allow the Basic WZTC to be taught in Spanish in lieu of English; however, in order to successfully complete the class, the trainee must demonstrate the ability to verbally communicate in English as noted below:

- The Training Instructor who administers the Basic WZTC training in Spanish shall evaluate each trainee to determine if the trainee can communicate in English and can communicate effectively with the traveling public while performing their job duties as a flagger at the flagger station.
- When the Training Instructor determines the trainee can communicate effectively in English with the traveling public the Training Instructor shall submit Form 7A titled SPANISH - 2015 Basic WZTC Training & Flagger Certification as well as a self-certified letter stating they evaluated the trainee(s) and determined the trainee (s) can communicate in English with the traveling public.
- If the Training Instructor determines the trainee cannot communicate in English the Training Instructor shall submit Form 7A titled SPANISH - 2015 Basic WZTC Training ONLY as well as a self-certified letter stating they evaluated the trainee(s) and determined the trainee(s) cannot communicate to the traveling public in English.

In order to successfully complete Intermediate WZTC training, the Training Instructor shall ensure that the trainee becomes familiar with the current Virginia Work Area Protection Manual, and when required review the current Flagger Certification video and can proficiently perform flagging operations.

In order to successfully complete the Advanced WZTC training, the Training Instructor shall determine that the trainee has demonstrated knowledge of the Design Standards, Plans Preparation, and use of the current edition of the Virginia Work Area Protection Manual, and VDOT Standard Specifications for work zone applications.

- 6.5.1** Successful completion of the Basic, Intermediate or Advanced training course by the trainee shall consist of classroom training, problem solving, and a written test with a score of 80% or greater.

A trainee failing to make a passing score on the test may take a makeup test within 48 hours. A second failure will require the trainee to attend the training course again prior to retesting.

## **6.6 Trainees' Training Documentation**

- 6.6.1** The Training Instructor or the Training Sponsor and Provider shall maintain a listing of all WZTC training by: trainee name, course category, course date, course location, provider's name, instructor's name, exam score, date and the Department's assigned verification number which can be found on the Participant's WZTC Training card or online in the WZTC-Trained Personnel list when training is required and be able to provide the documentation to the WZSTC upon request.

- 6.6.2** Documentation of all WZTC training for Basic, Intermediate, and Advanced courses shall be accomplished by the course instructor on Form 7A, and forwarded to the WZSTC chairman within 30 days after the date the course is taught for entry into the work zone traffic control training database. When the Training Sponsor and Provider trains VDOT employees, they shall submit Form 7A along with a typed list of trainees to the District Training Manager within 72 hours of completing the WZSTC training. The District Training Manager shall submit via email Form 7A along with a typed list of trainees to the WZSTC chairman as well as enter the trainee's information into VDOT University Virtual Campus. The District Training Manger may require the Training Sponsor and Provider or the Training Instructor to provide the Department's Temporary Approval Letter.

The Department will post online those trainees that have successfully completed the work zone training course within 30 days of receiving the Form 7A. The trainees last name, first name, verification number, expiration date, training level, class date and class hours can be found on the WZTC-Trained Personnel list, [http://www.virginia-dot.org/business/resources/wztc/WZTCT\\_Certification\\_List.pdf](http://www.virginia-dot.org/business/resources/wztc/WZTCT_Certification_List.pdf)

Within 60 days of successful completion of a training course, each individual shall receive from the Department or their designated provider, Training

Instructor or the Trainer Sponsor Provider a wallet sized card, which shows the trainee's name and verification number, the course category, the date the course was successfully completed, and the expiration date.

## **6.7 Periodic Evaluation and Course Update**

**6.7.1** The WZSTC may occasionally update the Department's training material and it is the responsibility of the Training Instructor to verify they are using the most current training material. The Training Instructor can identify updated material by Basic, Intermediate or Advanced WZTC folder date. Updates are typically based on major changes in the Department's policy, such as the issuance of new Design Standards or work zone safety revision/changes. Errors found in the training material will be updated and formatted such that the Training Instructor can easily update the WZTC material.

The WZSTC may require Training Sponsor and Provider to update their material when major changes are made in the Department's police, such as the issuance of new Design Standards or work zone safety revision/changes.

## **7. TRAINING**

**7.1** This entire procedure addresses availability of training for work zone traffic control for both Department and non-Department personnel and can be found on the VDOT's external Website.

**7.2** Law Enforcement Officers shall successfully complete the approved on-line work zone safety training course on the Learning Management System or VDOT's University Virtual Campus developed especially for the type of duties and responsibilities required by them prior to working within a highway construction or maintenance work zone.

**7.3** Training in an alternate language is available in the Basic WZTC training course only (Spanish). Only an approved course by the WZSTC may be taught.

A competent Superintendent with traffic control responsibilities must be capable of reading and understanding the Virginia Work Area Protection manual, Road and Bridge Specifications, and other VDOT documents, which are only available in English. Therefore, the Intermediate and Advanced WZTC training courses are only available in English.

The Superintendent trained in WZTC must either speak English or have an interpreter present on the project at all times and this provision does not preclude the requirements of Road and Bridge Specifications for 105.07 - Cooperation of the Contractor or 105.14(c) - Flagging Traffic.

## **8. FORMS**

**8.1** Form 7A is available in the Instructor's online material.

## **9. ACCEPTANCE OF ANOTHER STATE DOT'S WORK ZONE SAFETY TRAINING**

- 9.1 Temporary DOT Training** - The Department will review and approve other state DOT's work zone safety training and match it to one of VDOT's training courses (Basic, Intermediate or Advanced).

The Department or their representative will issue a temporary work zone traffic control wallet sized laminated card after receiving and verifying the completion of the other state DOT's work zone safety training and current approval status. The temporary work zone traffic control card will expire on the last day of the month one year from the issued date. Prior to the expiration of the temporary WZTC card, the requestor will need to complete a VDOT, ATSSA VA Specific, or other VDOT approved Work Zone Traffic Control training course.

The Department will maintain the WZTC-Trained Personnel on VDOT's external Website as well as provide and maintain an active online list of acceptable DOT work zone traffic control training programs.

## **10. Failure to Perform Proper Temporary Traffic Control Procedures**

- 10.1** The ultimate goal of these procedures is to provide adequately trained individuals who provide a safe and efficient work zone environment for workers and the traveling public. Consequently, these procedures are also designed to enable the Department to fairly and effectively take corrective action to improve performance and if necessary, to take possession of the work zone traffic control training card, which may include flagger certification, as well as suspend work operations if the Trained person's performance does not improve or where the unacceptable performance is of such a serious nature that a first offense warrants suspension of the work zone traffic control training card and possibly result in suspension of work operations.

Corrective actions, whether informal or formal, depend upon the nature, consequence(s), or potential consequence(s) of the trained person's performance and the surrounding circumstances and mitigating factors. The Engineer should apply corrective actions consistently, while taking into consideration the specific circumstances of each incident.

It is the intent to encourage trained person to apply their work zone traffic control training to their fullest ability and provide safe and efficient work zones at all times. When a trained person fails to meet the expectation of the Department, there must be a fair and reliable form of documentation to counsel, suspend or remove the trained person who is unwilling to improve their performance.

These procedures do not apply to the employees of the Commonwealth, however the Standards of Conduct (Policy 1.60) of the Human Resources Policy will be used to take corrective and Disciplinary Actions for a Commonwealth employee who fails to comply with their temporary traffic control duties.

## 10.2 Corrective Actions

### a. Verbal Counseling

Verbal Counseling should consist of private discussions between the worker and the Engineer or their representative regarding the desired course of action to improve the worker's performance, the Engineer's or their representative's expectations for improvement, and what may occur if the performance is not corrected. The Engineer should explain that a summary of the conversation will be notated and placed in the Engineer's file(s).

Examples of when verbal counseling may be needed include the following actions:

- Improper installation or removal of temporary traffic control devices (signs, arrow boards, channelizing devices, TMA's, flaggers, etc.)
- Using improper flagger techniques and/or procedures
- Failing to wear the proper High Visibility safety apparel
- Performing actions which may place road users in harm's way

### b. Written Counseling

A written letter which provides documentation of substandard actions should be issued to emphasize the significance of unacceptable performance when facts and discussions with the worker demonstrate that verbal counseling has not corrected the problem. It may also be issued as the initial means to address first instances of unsatisfactory performance especially when the action endangers road users, workers or self. Documentation should remain in the Engineer's files.

Examples of when written counseling may be needed include the following actions:

- Continued failure to comply with WZTC training requirements & Road and Bridge Specifications
- Placing self or others in harm's way
- Failure to implement verbal counseling
- Refusing to correct Work Zone Checklist issues marked as Urgent in a timely manner

When conducting a formal counseling session in which a written letter will be issued, the Engineer and their representative should meet privately with the worker and their supervisor to discuss the conduct or performance issues and the desired course of action for improvement, including the Engineer's expectations and what may occur if the performance or conduct is not corrected.

## 10.3 The Engineer's Authority

The Engineer or the representative has the authority under Road and Bridge Specifications Section 105.03 - Authorities of Project Personnel,

Communication and Decision Making and 105.05 - Character of Workers, Work Methods, and Equipment of the Road and Bridge Specifications to take possession of the work zone traffic control verification card when the trainee or their representative's actions immediately endanger the safety of road users, workers or self as well as actions noted through written counseling. For VDOT employees, seek advice from your local HR Office on using progressive discipline when implementing Corrective Actions.

The Engineer or their representative must immediately notify the WZS Program Manager who in turn will remove the suspended individual's name from the Work Zone Traffic Control (WZTC) Trained Personnel list.

#### **10.4 Training Requirement to Reclaim a Suspended WZTC Training Card**

The suspended individual must notify the WZS Program Manager in writing requesting to attend an equivalent WZTC training course specifying the course name, instructor and date(s) of the class. Once approved, the suspended individual must pass the WZTC training course with a score of 85% or greater to receive a new WZTC training card. The expiration date of the new card would be based on the date of the training course attended.

# WORK ZONE TRAFFIC CONTROL TRAINING

## Appendix A

### Work Zone Traffic Control: Basic (Installer) Course Outline

#### Introduction – Module 1

Reference: VDOT WZ Statistics, Virginia Work Area Protection Manual (VWAPM), Introduction

- Course Overview/Agenda
- Work Zone Statistics
- Manuals related to Work Zone
- WAPM Definitions
  - Standard
  - Guidance
  - Option
  - Support
  - Engineering judgment
  - Documentation

#### Liability and Risk – Module 2

Reference: Course Notebook; Work Zone Safety Guidelines for Temporary Traffic Control (Pocket Guide)

- Four elements of tort liability
- Tort Liability Awards
- Ten steps to minimize liability

#### Work Zones – Module 3

Reference: VWAPM Chapter 6G and Chapter 6H; Pocket Guide

- Determining work zone types
- Five categories of work duration
- Pocket Guide Use
- Five component parts of a work zone
  - Spacing of Advance Warning Signs
  - Spacing of Channelizing Device
  - Types of Tapers
  - Buffer Space Length Chart

#### Traffic Control Devices – Module 4

Reference: VWAPM Chapter 6F; Pocket Guide

- Signs & their supports
- Channelizing devices
- Arrow board
- Portable changeable message signs
- Shadow vehicles
  - Vehicle Warning Lights
  - Vehicle Mounted Signs

## Traffic Control Devices – Module 4 (Continued)

- Barrier
- Floodlights

## Worker Safety and Flagging Operations – Module 5

Reference: VWAPM - Chapters 6D, 6E, 6F, 6G & 6H; Pocket Guide

- Personal protection for workers and flaggers
- High visibility apparel for workers and flaggers
- Flagger Operation, Procedures, Requirements, Placement
- Work in the vicinity of a Highway-Rail Crossing
- Automated Flagger Assistance Device, VDOT Flagger Certification Video

## Building Work Zone Skills - Module 6

Reference: VWAPM - Chapters 6G & 6H; Pocket Guide

- Installing and Remove TTC Devices
  - Two-Lane Roadway
  - Multi-Lane Roadway
- Mobile Operations

## Making Adjustment to Temporary Traffic Control and Documentation - Module 7

Reference: VWAPM – Chapter 6F; Pocket Guide

- Geometric Conditions
- Channelizing Devices – Delineation
- Night work zones
- Law Enforcement Officers
- Urban areas
- Pedestrians and Bicyclists
- Inclement weather
- Documentation

## New Typical Application Diagrams, Final Exercise & Exam - Module 8

Reference: VWAPM – Chapter 6H; Pocket Guide

- Pocket Guide new typical application diagrams
- Group Exercise

Course Exam (90 Minutes)



## First Day

### Introduction – Module 1

Reference: Course Notebook

- Introductions
- Course Overview/Agenda

### Liability and Risk – Module 2

Reference: Course Notebook; Virginia Work Area Protection Manual (VWAPM)

- Four elements of tort liability
- Tort Liability Awards
- Eleven steps to minimize liability
- Documentation

### Human Factors – Module 3

Reference: Course Notebook

- Work Zone Statics
- Driver Expectations
- Driver Behavior

### Manuals and References – Module 4

Reference: Course Notebook

- Manual of Uniform Traffic Control Devices
- Federal and State Highway Sign Manuals
- VWAPM and its VDOT Pocket Guide
- Overview of the VWAPM

### Work Zones – Module 5

Reference: VWAPM Chapter 6G & Chapter 6H

- Determining work zone types
- Five categories of work duration
- Five component parts of a work zone & VWAPM Use
  - Spacing of Advance Warning Signs
  - Spacing of Channelizing Device
  - Types of Tapers
  - Buffer Space Length Chart

### Traffic Control Devices – Module 6

Reference: VWAPM Chapter 6F

- Portable changeable message signs procedures
- Classification of Signs

### Traffic Control Devices – Module 6 (Continued)

- Design of Signs
- Sign Installation

- Arrow board procedures
- Channelizing devices
- Shadow vehicles
  - Vehicle Warning Lights
  - Vehicle Mounted Signs
- Flood Lights
- Traffic Barrier Service
  - Barrier Transition Flare Rate Exercise
- Pavement Markings, Markers and Eradication
- ATSSA Quality Guidelines for Temporary Traffic Control Devices

#### Worker Safety and Flagging Operations – Module 7

Reference: **VWAPM** - Chapters 6D, 6E, 6F, 6G & 6H; Pocket Guide

- Personal protection for workers and flaggers
- High visibility apparel for workers and flaggers
- Flagger Operation, Procedures, Requirements, Placement
- Automated Flagger Assistance Device
- Work in the vicinity of a Highway-Rail Crossing
- VDOT Flagger Certification Video
- Pedestrian Safety

### **Second Day**

#### Building Work Zone Skills - Module 8

Reference: **VWAPM** - Chapters 6G & 6H; Pocket Guide

- Installing and Remove TTC Devices
  - Exercise 1 – Laying out a work zone on two-lane roadway
  - Exercise 2 – Laying out a work zone on multi-lane roadway
  - Two-Lane Roadway
  - Multi-Lane Roadway
  - Work Zone Drive Through
- Mobile Operations

#### Making Adjustment to Temporary Traffic Control and Documentation – Module 9

Reference: **VWAPM** - Chapters 6F; Pocket Guide

- Geometric Conditions
- Channelizing Devices – Delineation
- Night work zones
- Urban areas
- Pedestrians and Bicyclists
- Inclement weather
- Incident Management
- Documentation

#### Types of Temporary Traffic Control Activities – Module 10

Reference: **VWAPM** - Chapters 6H & Appendix C

- Law Enforcement in Work Zones

- New Temporary Traffic Control Figures
- Documentation

Review of TTC Typical Applications – Module 11

Reference: Course Notebook, VWAPM - Chapters 6G & 6H

- Final Group Exercises
- Closing Remarks
- Review

Course Exam (90 Minutes)

**Work Zone Traffic Control: Advanced (Designer) Course Outline**

**First Day**

## Introduction – Module 1

Reference: Course Notebook

- Introduction
- Course Overview/Agenda
- Transportation Management Plan

## Manuals and References – Module 2

Reference: Course Notebook

- Manual of Uniform Traffic Control Devices
- Virginia Work Area Protection Manual VWAPM
- Instructional and Informational & Traffic Engineering Memorandums
- Road & Bridge Specifications & Standards
- Work Zone Safety for Temporary TTC
- NCHRP Report 350 or Manual for Assessing Safety Hardware
- Definitions
  - Standard
  - Guidance
  - Option
  - Support

## Fundamental Principles – Module 3

Reference: VWAPM - Chapters 6B & 6D

- 7 Principles
  - Safety and Accessibility
  - Mobility
  - Guidance
  - Inspection
  - Maintenance
  - Training
  - Public Relations

## Human Factors – Module 4

Reference: Course Notebook

- Designing for the Driver
- Work Zone Statics
- Perceptual Ability
- Driver Expectations
- Perception/Reaction Considerations
- Capacity & Congestion Factors

## Components Parts of Temporary Traffic Control – Module 5

Reference: VWAPM - Chapter 6C

- Work Zone Types
- Components Parts of Temporary Traffic Control
  - Advance Warning Area Spacing
  - Transition areas
    - Channelizing Device Spacing

- Taper types
- Buffer Area
  - Activity/Work/Traffic Area
  - Termination Area
- Termination Areas

### **TTC Exercise No. 1**

#### Types of Temporary Traffic Control Activities – Module 6

Reference: **VWAPM** - Chapter 6G & Chapter 6H

- Work Zone Applications
- Determining Temporary Traffic Control
- Work Zone Durations
- Locations of Work Activities
- Types of Work Zones

#### Design Considerations – Module 7

Reference: Course Notebook **VWAPM** Chapter 6G & Appendix C,

- Planning
- Designing
  - Issues
  - Special Needs
- Intelligent Transportation Systems
- Enforcement
  - Application
  - Procedures

### **Second Day**

#### Temporary Traffic Control Devices – Module 8

Reference: Course Notebook; **VWAPM** - Chapter 6F and Appendix A & D

- General Requirements
- Device Categories
- Signs
  - Regulatory
  - Warning
  - Guide
  - Placement
  - Portable

#### Temporary Traffic Control Devices – Module 8 (Continued)

- **Signs (Continued)**
  - Retroreflectivity
  - Spacing
- Channelizing Devices
  - Cones
  - Drums
  - Type III Barricades
  - Spacing

- Warning Lights
  - Types A, B and C
  - Vehicle
- Arrow Panels
  - Modes
  - Sizes
  - Placement
- Portable Changeable Message Signs
  - Application
  - Displays
  - Placement
- Truck Mounted Attenuators
  - Application
  - Placement
- Barriers
  - Application
  - Delineation
  - End Treatments

### ***Barrier Exercise***

Temporary Traffic Control Plans – Module 9

Reference: IIM-LD-241/TED-351

- TMP Requirements
- TTC Plan Requirements

### ***TTC Exercise No. 2***

Night-time Work Zones – Module 10

Reference: VWAPM - Chapters 6F, 6G & 6H; Course Notebook

- Night-time Temporary Traffic Control Considerations
- Illumination
  - Levels
  - Glare
- TTC Typicals

### ***TTC Exercise No. 3***

Urban and Other Considerations – Module 11

Reference: VWAPM - Chapters 6D, 6G & 6H; Course Notebook

- Urban Considerations
- Pedestrian/ADA/Bicycle Considerations
  - Urban and Other Considerations – Module 11 (Continued)
- Accommodating Motorcycles

## **Review of Course Material**

Course Exam (90 minutes)