

VIRGINIA DEPARTMENT OF TRANSPORTATION

TRAFFIC ENGINEERING DIVISION

MEMORANDUM

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| GENERAL SUBJECT: Work Zone Safety | | NUMBER: TE-345 |
| SPECIFIC SUBJECT: Work Zone Traffic Control Training Procedures | | DATE: Sept. 21, 2007 |
| LEARNING CENTER DIVISION APPROVAL: <i>Barbara Patterson</i> | | TRAFFIC ENGINEERING DIVISION APPROVAL: <i>R. J. Khoury.</i> |
| DIRECTED TO: District Administrators Division Administrators | | |

Revised 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.

To assist in the implementation of these procedures, Work Zone Traffic Control Training Champions have been identified in each district and affected division, and will be working with the Learning Center Division and the WZSTC to plan and accomplish the initial training of personnel no later than July 1, 2009.

Enclosure:

- Cc: Regional Operations Directors
 Regional Traffic Engineers
 Resident Administrators
 District HR Managers
 Ms. Constance S. Sorrell
 Mr. Greg Whirley
 Dr. Gary Allen
 Mr. Malcolm T. Kerley, P.E.
 Mr. Robert Fonseca
 Mr. E. D. Arnold

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 and Training Providers; 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-Aid Policy Guide 23 CFR Parts 630J and 655F (Federal Regulations).

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. Unless an earlier date is specified, persons possessing current valid and verifiable wallet cards and documented in the VDOT Virtual Campus from these approved courses on or after July 1, 2009 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 training areas of responsibilities: 1) the Roadway Design area; 2) the Roadway Construction area; 3) the Roadway Operations area; and Law Enforcement.

The State Traffic Engineer is responsible for implementing these program requirements. To that end, the State Traffic Engineer has 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, Contract and Scheduling, Local Assistance, Asset Management, and Traffic Engineering Division, and from the Federal Highway Administration (FHWA), the Virginia Transportation Construction Alliance (VTCA) and others approved by the State Traffic Engineer. This committee shall be chaired by the Work Zone Safety Program Manager. This committee's functions include 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:

Department - The Commonwealth of Virginia Department of Transportation.

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

Region – Any of the Department's administrative subdivisions that are headed by a Regional Operation Director.

WZSTC - The Department's Work Zone Safety Training Committee as established by TE Memorandum 345.

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

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.

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

Closed Course – An approved course whose registration and attendance is restricted by the training provider.

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

ATSSA – The American Traffic Safety Services Association

1. RESPONSIBILITIES

(A) Department:

The WZSTC shall:

- (1) Have direct responsibility for the processing, evaluation and approval of the work zone traffic control training course material and instructors in accordance with this procedure submitted by training providers.
- (2) Prescribe work zone traffic control training requirements for Department employees and any other persons performing work within the State Highway System right of way.
- (3) Furnish training course information and requirements to District and Division WZTC Training Champions to coordinate delivery of training.
- (4) Review and provide recommendations for approval of plans for implementation and resourcing.
- (5) Document all students' course training in the VDOT Virtual Campus by: student name, course category, course date, course location, providers' name, instructors' name, pass/fail status, date when training is required and provide all students with a wallet size card after successful completion of the course.
- (6) 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.

(B) Training Provider:

The Training Provider shall:

- (1) Submit self developed Training Courses to the WZSTC for review and approval or utilize an existing VDOT developed course.
- (2) Provide training in the appropriate category.
- (3) Update course when notified and resubmit for approval.
- (4) Provide documentation of instructor qualifications.

- (5) Furnish course material for each student.
- (6) Provide at least the minimum training that is required by this procedure for category approved.
- (7) Submit a course roster of completed training courses to the Chairman of the WZSTC within 30 days of completion of the course as well as the original student evaluation form of the course and the instructor and a **VDOT Training Form 7A**.
- (8) Submit a class schedule listing date, time, location, and category of training a minimum of ninety days for VDOT personnel only, or four weeks prior for a closed class, and eight weeks prior for an open class to the WZSTC chairman. Other than classes for VDOT personnel, alterations to these submittal time frames must be made in writing and approved by the WZSTC chairman. **Any training courses may be monitored by WZSTC members or their representatives.**

2. COURSES REVIEW AND EVALUATION

- 2.1 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 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 Provider 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 a list of approved courses and Training Providers. The official list of approved courses, category descriptions, and addresses of course Training Providers and approved instructors are provided on the Department's Web site at:

External customers: <http://www.vdot.virginia.gov/business/trafficeng-default.asp>

VDOT personnel: <http://www.vdot.virginia.gov/business/virtualcampus.asp>

- 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 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 Provider having its 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 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 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 and/or the Chief Engineer's Office 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.

- 4.4 The Department shall require documentation in VDOT's Virtual Campus of successful completion of a Work Zone Traffic Control training course. This requirement is included in such documents as construction, maintenance, design or inspection contracts, specifications, special provisions, and permits.
- 4.5 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 directions.

5. TRAINING CATEGORIES

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

(A) Basic Work Zone Safety Training

- (1) This one day course is required for all persons with duties that include any of the following **Maintenance** Type activities:
 - (a) Direct responsibility for placement of work zone traffic control devices;
 - (b) Direct responsibility for field maintenance of work zone traffic control devices;
 - (c) VDOT Maintenance Managers.

(B) Intermediate Work Zone Safety Training

- (1) This two day course is required for all persons with the following **Construction** type duties:
 - (a) Inspection of the placement or operational function of work zone traffic control devices;
 - (b) Construction Supervisory responsibilities;

- (c) Maintenance of Traffic Coordinators on construction projects;
- (d) Regional Traffic Engineering Work Zone Safety Coordinators;
- (e) Regional Safety Engineers (ES&H);
- (f) Traffic Control Supervisors;
- (g) Personnel with responsibility for the development of work zone safety policies and procedures.

(C) Advanced Work Zone Safety Training

- (1) 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.

5.2 Training for Basic, Intermediate, and Advance category levels, are required every 4 (four) years for all persons to continue to be qualified to perform their assigned duties. (See Table 5.1, WZ Traffic Control Training Requirements)

5.3 Upon successful completion of a training course, each individual shall receive a wallet size card, reflecting the student’s name, the provider’s name and ID #, the instructor’s name, the course category, the date the course was successfully completed and the issuance date, and the date training, or a refresher course, is required. Certificates may also be issued at the option of the Training Provider.

| 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 |
| Contractor (non-supervisory) | Basic | No | One per work site |

| | | | |
|--|--------------|-----|--------------------------|
| Utilities | Basic | No | One per work site |
| Maintenance Contract Monitors | Basic | No | All |
| Construction Inspection | Intermediate | No | At least one per project |
| Contractors (Supervisory) | Intermediate | No | At least one per project |
| Regional WZS Coordinator | Intermediate | Yes | All |
| ES&H Safety Engineer | Intermediate | Yes | All |
| Traffic Control Supervisor (Special Provision) | Intermediate | Yes | All |
| Contract Monitor | Intermediate | No | One per Residency |
| VDOT Land Development/Permit | Intermediate | No | One per Residency |
| Traffic Control Plan/MOT Designers | Advanced | No | One per design team |

6. SUBMITTAL AND EVALUATION OF SPONSOR/ PROVIDER TRAINING COURSE CRITERIA AND INSTRUCTOR QUALIFICATIONS

- 6.1** The basic, intermediate, or advanced work zone safety training courses may be purchased from the Department, or a self developed training course meeting the following criteria and approval process may be used:
- 6.2** Submit Work Zone Traffic Control (WZTC) training courses (Basic, Intermediate, Advanced) to the Department's Work Zone Safety Training Committee for review and approval. The WZSTC (or review subcommittee) shall review the course content, method of instruction, and the appropriate category of course training prior to approving its use in training of personnel that work within the State Highway System right of way. The sponsor shall meet all training course requirements contained in this procedure and receive an approved trainer identification number before performing Work Zone Traffic Control training in the State of Virginia.
- 6.3** Training Providers requesting the WZSTC to evaluate a training course shall submit one copy of course material, lesson plan, instructor resume, workshop exercises, and accompanying documentation of their course to:

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

6.4 Minimum qualification requirements for an instructor for:

- (1) **Basic:** Successful completion of the Intermediate or Advanced Course with a current valid and verifiable wallet card as well as successful completion of VDOT's Flagger Certification Program or ATSSA's Flagger Instructor Training course with a current valid and verifiable wallet card and successful completion of the Department's Basic Instructor Course (BIC) or two years of documented experience in conducting training courses. In addition, an instructor shall possess two years of appropriate work zone experience for specific work zone activities in one or more of the following: Highway Design; Construction; Maintenance or Traffic Operations
- (2) **Intermediate:** Successful completion of the ATSSA Traffic Control Supervisor (TCS) VDOT course with a current valid and verifiable wallet card as well as successful completion of VDOT's Flagger Certification Program with a current valid and verifiable wallet card or successful completion of the ATSSA Flagger Instructor Training course with a current valid and verifiable wallet card and successful completion of the Department's Basic Instructor Course (BIC) or two years of documented experience in conducting training courses. In addition, an instructor shall possess a minimum of two years of appropriate work zone experience for specific work zone activities in one or more of the following: Highway Design; Construction; Maintenance, Utilities or Traffic Operations.
- (3) **Advanced:** Successful completion of the ATSSA Traffic Control for Design Specialist (TCDS) VDOT course with a current valid and verifiable wallet card as well as successful completion of the Department's Basic Instructor Course (BIC) or two years of documented experience in conducting training courses. Documentation describing the instructor's knowledge, skills, and abilities detailing his/her involvement in using the following State of Virginia documents: ***Design Standards, Plans Preparation Manual, current edition of the Virginia Work Area Protection Manual, and VDOT Standard Specifications*** for work zone applications. In addition, an instructor shall possess a minimum of two years of appropriate work zone experience for specific work zone activities in one or more of the following: Highway Design; Construction; Maintenance; Utilities or Traffic Operations
- (4) Provide documentation of training experience, qualifications and a copy of the instructor's current valid wallet card or ATSSA certification number if required.
- (5) The WZSTC has the authority to 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.

- 6.4.1** The Department shall provide a copy of the course evaluation sheet and an examination to the Course Training Provider. The Training Provider shall provide course materials for the following courses:

Basic – Work Zone Safety Guidelines for Temporary Traffic Control pocket guide, a notebook containing a copy of the slides used in the PowerPoint presentation, written workshop exercises, a course/instructor evaluation sheet, and an examination.

Intermediate – VDOT Virginia Work Area Protection manual, a notebook containing a copy of the slides used in the PowerPoint presentation, written workshop exercises, a course/instructor evaluation sheet, and an examination.

Advanced – VDOT Virginia Work Area Protection manual, a notebook containing a copy of the slides used in the PowerPoint presentation, written workshop exercises and plan sheets, a course/instructor evaluation sheet, and an examination.

The instructor shall follow the VDOT lesson plan or one that was submitted to and approved by the WZSTC.

- 6.5** Training shall be offered in up to three (3) categories: Basic, Intermediate, or Advanced. In order to successfully complete Basic Training, the instructor shall determine that the trainee has demonstrated knowledge and proficiency in flagging operations. Successful completion of the Basic, Intermediate or Advanced training course by the student shall consist of classroom training, problem solving, and a written test with a score of 80% or greater. Higher course categories may be substituted for lower course categories.

A student failing to make a passing score on the test may take a makeup test after 24 hours. Sponsors/Providers must contact the WZSTC chairman to receive a copy of the makeup test. A second failure will require the student to attend the training course again prior to retesting.

- 6.6** Prerequisites:

- (1) Basic Training
No experience necessary;
- (2) Intermediate Training
No experience necessary;
- (3) Advanced Training

Hands on experience (preferably two years) in work zone traffic control or responsible for work zone traffic control plan development;

(4) Refresher Training

Work Zone Traffic Control training shall be renewed every four years by attending and successfully passing an approved training course in a given category based on a person's work zone job responsibilities.

6.7.1 Course Content - The minimum requirements for each course shall be as follows:

6.7.2 Basic WZS Training – Approximately seven (7) hours of classroom instruction on the Virginia Work Area Protection Manual and part 6 of the MUTCD and students participating in a workshop exercise selecting and setting up a sample work zone. A written test shall consist of at least 10 questions on traffic control devices, and 30 questions on the minimum design standards for traffic control on the State Highway System for maintenance type operations. See Appendix A for a Basic WZS Training Course outline.

6.7.3 Intermediate WZS Training – Approximately fourteen (14) hours of classroom instruction on the VA WAPM and Part 6 of the MUTCD and students participating in workshop exercises selecting and setting up two sample work zones. 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 30 questions on the minimum design standards for traffic control on the State Highway System for construction type operations. See Appendix A for an Immediate WZS Training Course outline.

6.7.4 Advanced WZS Training – Approximately fourteen (14) hours of classroom instruction on the *VA WAPM*, *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 30 questions on the minimum design standards for traffic control on the State Highway System. See Appendix A for an Advanced WZS Training Course outline.

6.8 Wallet Card for Completion for Basic, Intermediate, or Advanced Training.

6.8.1 Successful completion of a course is based on a passing score of 80% or greater and successful completion of class exercises. Upon successful completion of a training course, each individual shall receive from the Department a wallet size card, which shows the student's name, the provider's name and ID #, the instructor's name, the course category, the date the course was successfully completed, the issuance date, and the expiration date.

6.9 Periodic Evaluation and Course Update

6.9.1 The WZSTC may occasionally require all Training Providers to update their course content due to major changes in the Department's policy, such as the issuance of new ***Design Standards*** or work zone safety revisions/changes. Upon notification by the WZSTC chairman, the changes shall be incorporated into the course, but will not require resubmittal by the Training Provider unless requested by the WZSTC chairman.

6.10 Students' Training Documentation

6.10.1 Training Providers shall maintain a listing of all students' course training by: student name, course category, course date, course location, provider's name, instructor's name, pass/fail status and date when training or a refresher course is required and be able to provide the documentation to the WZSTC upon request.

6.10.2 Documentation of all students' course training for Basic, Intermediate, and Advanced courses shall be accomplished by the course instructor on VDOT **Training Form 7A**, and forwarded to the WZSTC chairman within one month after the date the course is taught for entry into the VDOT University Virtual Campus.

6.10.2.1 Listings for Work Zone Traffic Control Training are in the Department's Learning Management System: VDOT University Virtual Campus. Each class listed begins with Work Zone Traffic Control followed by the category Basic, Intermediate, or Advanced:

Example: Work Zone Traffic Control: Basic, etc.

6.11 Courses for training categories shall be stand alone. Any higher category may be substituted for a lower course category. (Example: Basic Training requirements can be met by completing the Intermediate or Advanced Training courses.)

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 Department's Web site at:

<http://www.vdot.virginia.gov/business/trafficeng-default.asp>

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

8. FORMS

- 8.1** Training Form 7A is available on the Department's web site at:

<http://www.vdot.virginia.gov/business/virtualcampus.asp>

WORK ZONE TRAFFIC CONTROL TRAINING

Appendix A

Work Zone Traffic Control: Basic Course Outline

Introduction – Module 1

Reference: VDOT WZ Statistics, Work Area Protection Manual, Introduction

- Welcome/Expectations/House Rules
- Course Overview/Agenda
- Work Zone Statistics
- WAPM Definitions
 - Standard
 - Guidance
 - Option
 - Support
 - Engineering judgment
 - Documentation

Liability and Risk – Module 2

Reference: Course Notebook, Pocket Guide

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

Work Zones – Module 3

Reference: WAPM Chapter 6G and Chapter 6H, Pocket Guide

- Determining work zone types
 - Work duration
 - Work location
 - Work zone type
 - Highway type
- Five categories of work duration
 - Long-term stationary
 - Intermediate-term stationary
 - Short-term stationary
 - Short-duration
 - Mobile operation
- Five component parts of a work zone
 - Advance Warning Area
 - Transition Area
 - Buffer Area
 - Work Area
 - Buffer
 - Termination Area

PG exercises

- Tapers
- Warning Signs
- Channelizing Devices
 - Measuring tips

- Short-term stationary WZ
 - Layout
 - Setup
 - Review/Drive through
 - Remove
- Mobile operation

Traffic Control Devices – Module 4

Reference: Pocket Guide

- Signs
- Channelizing devices
- Removal and replacement of traffic control devices

Making adjustment to temporary traffic control – Module 5

Reference: WAPM, Chapter 6G, Chapter 6H and Chapter 6I,
Pocket Guide

- Hills and curves
- Incident management
- Detours
- Night work zones
- Urban areas
- Pedestrians and Bicyclists
- Inclement weather

Roles and Responsibilities - Module 6

Reference: WAPM, Chapter 6E and 6H

- Group Exercise
- Define a Work Zone
- Roles and Responsibilities
 - Flagging Operations
 - Flagger Daily Responsibilities
 - Flagger Apparel
 - Flagger Devices
 - Truck Mounted Attenuator Operator
 - Portable Changeable Message Sign Operator
 - Arrow Board Operator
 - Work Zone Inspector
- Review of Course Material and evaluation
- Top 10 problems in work zones

Course Exam (one hour)

Work Zone Traffic Control: Intermediate Course Outline

First Day

Introduction – Module 1

Reference: Course Notebook

- Welcome/Expectations/House Rules
- Course Overview/Agenda
- Accreditation

Liability and Risk – Module 2

Reference: Course Notebook

- Four Elements
- Ten Best Practices to Avoid a Suit
- Documentation

Human Factors – Module 3

Reference: Course Notebook

- WZ Hazards
- Driver Expectations
- Perception/Reaction Considerations

Manuals and References – Module 4

Reference: Course Notebook

- MUTCD
 - TTC Standards
 - TTC Guidance
 - TTC Options
- VA WAPM
- VDOT Pocket Guide, Specifications, and other references

Components Parts of Temporary Traffic Control – Module 5

Reference: Work Area Protection Manual, Chapter 6C

- Definition
- Advance Warning Area
- Transition Area
- Buffer Area
- Activity/Work/Traffic Area
- Termination Area

Temporary Traffic Control Devices – Module 6

Reference: WAPM, Chapter 6F and Appendix A & D

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

- Advance Warning Signs
 - Sheeting Requirements
 - Substrate Types
 - Placement & Spacing
 - Installation
 - Portable Sign Stands
- Portable Changeable Message Signs
 - Application
 - Displays
- Arrow Panels
 - Modes
 - Sizes
 - Placement
- Tapers
 - Types
 - Spacing & Placement

Taper & Buffer Exercise

- Channelizing Devices
 - Cones
 - Drums
 - Type III Barricades
 - Spacing
- Barriers
 - Application
 - Delineation
 - End Treatments

Barrier Exercise

- Pavement Marking Eradication, Marking, & Markers
 - Eradication Requirements
 - Construction Markings Requirements
 - Marker Requirements
- Truck Mounted Attenuators
 - Application
 - Placement

Lane Closure Evaluation Exercise

Flagging Operations – Module 7

Reference: WAPM, Chapter 6E and 6H

- Flagger Daily Responsibilities
- Flagger Apparel
- Flagger Devices

Flagger Operation Evaluation Exercise

Work Zone Traffic Control: Intermediate Course Outline

Second Day

Roles and Responsibilities – Module 8

Reference: Course Notebook

- Contractor's
- Inspector's
- Maintenance of Traffic (MOT) Coordinator

Laying out, Installing and Removing Temporary Traffic Control – Module 9

Reference: Course Notebook, Pocket Guide

- Steps in Laying Out Temporary Traffic Control (TTC)
- Steps in Installing TTC
- Installation Review and Adjustments
- Steps in Properly Removing TTC

Types of Temporary Traffic Control Activities – Module 10

Reference: Work Area Protection Manual, Chapter 6G and Chapter 6H

- Duration of Work
- Location of Work
- Work Activities
- Constructability
- Types of Work Zones

Review of TTC Typical Applications – Module 11

Reference: Course Notebook, WAPM Chapter 6G

- Activities Beyond the Shoulder (TTC-1.0)
- Shoulder Closure Activities (TTC-3.0, 4.0)
- Standard Lane Closure on a Multi-lane Roadway (TTC-12.0, 13.0)
- Lane Closure with Concrete Barrier Service (TTC-16.0)
- Flagging Operation on a Two-lane Roadway (TTC-18.0)
- Work Activities Near a Highway Rail Crossing (TTC-39.0)

Making Adjustments to Temporary Traffic Control – Module 12

Reference: Work Area Protection Manual, Chapter 6G and Chapter 6H

- Hills and Curves
- Night Operations
- Weather Conditions
- Urban Areas
- Pedestrians and Bicyclists

Use of Virginia State Police in Work Zones – Module 13

Reference: Work Area Protection Manual, Appendix C

- Review Guidelines in Appendix C
- Slow Roll Traffic Control

Team WZ Layout Exercises
Reference: Work Area Protection Manual, Training Kits.

Review of Course Material

Course Exam (ninety minutes)

Work Zone Traffic Control: Advanced Course Outline

First Day

Introduction – Module 1

Reference: Course Notebook

- Welcome/Expectations/House Rules
- Course Overview/Agenda
- Certification

Temporary Traffic Control Standards, Manuals and References – Module 2

Reference: Course Notebook

- Defining Temporary Traffic Control
- TTC Standards
- TTC Requirements
- TTC Guidelines

Fundamental Principles – Module 3

Reference: Work Area Protection Manual, Chapter 6B, Chapter 6D

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

Human Factors – Module 4

Reference: Course Notebook

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

Components Parts of Temporary Traffic Control – Module 5

Reference: Work Area Protection Manual, Chapter 6C

- Definition
- Advance Warning Area
- Transition Area
- Buffer Area
- Activity/Work/Traffic Area
- Termination Area
- Tapers
- Flagging Methods
- Diversions & Detours

TTC Exercise

Types of Temporary Traffic Control Activities – Module 6

Reference: Work Area Protection Manual, Chapter 6G and Chapter 6H

- Duration of Work
- Location of Work
- Work Activities
- Constructability
- Types of Work Zones

Design Considerations – Module 7

Reference: Work Area Protection Manual, Chapter 6G and Appendix C, Course Notebook

- Planning
- Designing
 - Issues
 - Special Needs
- Enforcement
 - Application
 - Procedures

Second Day

Temporary Traffic Control Devices – Module 8

Reference: Work Area Protection Manual, Chapter 6F and Appendix A & D

- General Requirements
- Device Categories
- Signs
 - Regulatory
 - Warning
 - Guide
 - Placement
 - Portable
 - 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-343

- TTC Requirements

TTC Exercise

Night-time Work Zones – Module 10

Reference: Course Notebook

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

TTC Exercise

Urban and Other Considerations – Module 11

Reference: Course Notebook, Work Area Protection Manual, Chapters 6D, 6G and 6H

- Urban Considerations
- Pedestrian/ADA Considerations
- Accommodating Motorcycles

Review of Course Material

Course Exam (ninety minutes)