# Intermediate Work Zone Traffic Control Training

Trainee’s Examination

Use the Answer Sheet to answer to the following questions (2 points each). A passing grade is 80 or above and you can miss up to 10 questions:

1. ***In order to succeed in a work zone tort claim against you, a plaintiff must prove the following four elements:***
   1. Duty, Negligence, Laziness, Damage.
   2. Civil Wrong, Breach of Duty, Pain, Suffering.
   3. Duty, Breach of Duty, Proximate Cause, Damage.
   4. Negligence, Breach of Duty, Damage, Carelessness.
2. ***Which of the following is the best method you can use to reduce your work zone liability exposure?***
   1. Have an approved plan and follow the Virginia Work Area Protection Manual.
   2. Inspect the work zone immediately after setting up and throughout the work day.
   3. Keep comprehensive documentation.
   4. All of the above.
3. ***How far from the Activity Area is the Road Work Ahead sign (W20-1) on a 2-lane road with a 11-foot lane and a posted speed of 55 MPH? (Use maximum distances) – No Rumble Strips are used.***
   1. 3830 feet
   2. 4830 feet
   3. 4250 feet
   4. 5010 feet
4. ***In which of the following manuals and guides would you find typical traffic control layouts for use in work zone operations in Virginia:***
   1. Virginia Road and Bridge Specifications.
   2. Most recent Virginia Work Area Protection Manual.
   3. Most recent Work Zone Safety Guidelines for Temporary Traffic Control (Pocket Guide).
   4. Both B and C.
5. ***A Guidance statement regarding the use of traffic control devices:***
   1. Is a mandatory practice.
   2. Is a nice thing to do only if you have enough time to implement.
   3. If not used, must be based and supported by engineering judgment or an engineering study and shall be documented.
   4. None of the above.
6. ***Work Zone Types are determined by:***
   1. Work location & number of employees working.
   2. The number of trucks that use the highway.
   3. Type of work operation & day of the week.
   4. Work location, roadway type, and the duration of the operation.
7. ***An Intermediate-term stationary operation:***
   1. Occupies a location more than one daylight period up to 3 days
   2. Occupies a location longer than 3 days.
   3. Occupies a location for 10 minutes to1 hour.
   4. A work location that moves continuously and does not occupy a location longer than 15 minutes.
8. ***Which best describes the buffer space:***
   1. An area in the work zone to park equipment, materials, and supplies.
   2. An ideal place to park private vehicles.
   3. An area for flaggers to stand and direct traffic in two-lane operations.
   4. An area set aside to protect against impact or reduce the shock of an impact - a clear space which protects traffic or workers; free of workers, equipment or materials.
9. ***What is the sign spacing for an urban street with the posted speed limit of 45 mph***?

A. 100 – 200 feet.

B. 250 – 350 feet.

C. 350 – 500 feet.

D. 500 – 800 feet.

1. ***The merging taper formula to use for a 60-mph roadway is \_ and the "Merging" taper is used to :***
   1. 2L, move traffic out of a normal travel lane.
   2. L=SW move traffic out of a normal travel lane.
   3. 1/2L, shifts traffic out of its normal travel path.
   4. 1/3L, closes a shoulder.
2. ***What is the length for a one-lane, two-way taper if the roadway posted speed limit is 50 mph?***
   1. 445 feet.
   2. 500 feet.
   3. 550 feet.
   4. 50 feet – 100 feet.
3. ***The minimum merging taper length on a Limited Access highway with the posted speed of 60 mph and the lane width of 12 feet is:***
   1. 540 feet.
   2. 600 feet.
   3. 660 feet.
   4. 1000 feet.
4. ***To be effective, all TTC devices should meet the following basic requirements:***
   1. Fulfill a need and convey a clear simple meaning.
   2. Command attention and respect.
   3. Give adequate time for response.
   4. All the above.
5. ***When placing signs on a 4-lane road and there is an 8-foot median:***
   1. Signs shall be placed on both sides of the road.
   2. Sections of the median wall should be removed so signs can be placed.
   3. Signs can be dual indicated on the right shoulder.
   4. None of the above.
6. ***What types of weight can be added to portable sign supports to keep the sign supports erect and stable***?
   1. Two drum collar weights placed on the center of the sign stand or a sandbag weighing approximately 25 pounds can be added to each leg.
   2. Three cone weights or 25-pound bags of gravel can be added to each leg.
   3. Anything that weighs approximately 25 pounds such as a cinderblock, a large rock, or a bucket full of concrete.
   4. Five cone weights installed over the center of the sign stand.
7. ***Which of these can be safely placed in the Buffer Space?***
   1. Inspector’s truck if less than 15 minutes
   2. Shadow Vehicle
   3. Shadow Vehicle if it has a TMA
   4. None of these
8. Arrow boards shall be delineated with 4 channelizing devices matching those used in the taper (either cones or drums) while other trailer mounted devices shall be delineated by:
   1. 4 cones.
   2. 4 vertical panels.
   3. 4 drums.
   4. 4 flaggers.
9. ***When a Shadow Vehicle with a TMA is used:***
   1. Meet the manufacture’s weight requirement for the supporting vehicle.
   2. When stationary, no one should be in it.
   3. When parked be equipped with amber warning light, visible for 360° or visible for 180° if equipped with an arrow board it shall be in the flashing caution mode.
   4. All the above.
10. ***What is the distance from the beginning of the rural work activity area to the Road Work Ahead sign on a 2-lane road, double center line 45mph? The work will take 8 hours. Use maximum distances.***
    1. 2,160’
    2. 2,910’
    3. 2,980’
    4. 5,280’
11. ***The spacing of barrier panels is 40 feet in the \_ area and 80 feet in the***

***section.***

* 1. Taper, buffer.
  2. Taper, tangent.
  3. Transition, Taper.
  4. Transition, termination.

1. ***Using barriers, we must close the right lane which is 12’ wide and the posted speed limit is 60 mph. What is the barrier transition flare rate and how much barrier will we need to close the lane completely?***

A. 22:1, 264 ft.

B. 19:1, 228 ft.

C. 20:1, 240 ft.

D. 17:1, 204 ft.

1. ***On long-term projects, Temporary Raised Pavement Markers are installed on \_ \_ centers in all merging and shifting lane tapers.***

A. 10’.

B. 20’.

C. 40’.

D. 80’.

1. ***What reference guide should be used to replace temporary traffic control devices?***
   1. Virginia Road and Bridge Specifications.
   2. Virginia Work Area Protection manual.
   3. ATSSA Quality Guidelines for Temporary Traffic Control Devices.
   4. Virginia Road and Bridge Standards.
2. ***Workers who are responsible for installing, maintaining, and removing traffic control devices shall wear:***
   1. ANSI 107-2010 High Visibility Safety Vest Class 2 and Class E trousers or approved Leg Gaters.
   2. Approved high visibility Class 2 leg gaiters
   3. ANSI 107-2010 Class 2 high visibility safety vests.
   4. ANSI 107-2004 Class 2 high visibility safety apparel and Type D long pants.
3. ***Flaggers:***
   1. Both C and B.
   2. Has the option to use Class E trousers or Leg Gaiters during daylight flagging operations to their ANSI High Visibility Safety vests.
   3. Are never required to wear Class E trousers
   4. During night flagging operations shall wear ANSI 107-2010 High Visibility Safety Vest Class 2 and Class E trousers.
4. **Flaggers shall have the ability to receive and give instructions to road user in .**
   1. Latin
   2. English
   3. Spanish
   4. Portuguese
5. ***The minimum illumination requirement of 5-foot candles (50 lux) for the flagger station may be satisfied using*** 
   1. Streetlights.
   2. Non-glare balloon lights or anti-glare visors.
   3. Flashing wands.
   4. Vehicle headlights.
6. ***A flagger must ensure all advance warning signs are installed correctly and:***
   1. A clear line of sight is provided from the correctly spaced flagger symbol sign to the flagger station.
   2. They shall stand on the shoulder or in a closed lane.
   3. They should have an escape route.
   4. All of the above.
7. ***List the signs as they would appear on the roadway, from the first to the last; for a stationary lane closure on a two-lane roadway using flaggers:***
   1. Road Work Ahead, Right Lane Closed Ahead, Be Prepared to Stop, Rumble Strips Ahead, Flagger Ahead (word message), and End Road Work.
   2. Road Work Ahead, One Lane Road Ahead, Rumble Strips Ahead, Be Prepared to Stop, Flagger Symbol Sign, and End Road Work.
   3. Road Work Ahead, Flagger Symbol Sign, Rumble Strips Ahead, Be Prepared to Stop, One Lane Road Ahead, and End Construction.
   4. Road Work Ahead, One Lane Road Ahead, Flagger Ahead (word message), Rumble Strips Ahead and End Road Work.
8. **How far from the Activity Area is the Road Work Ahead sign (W20-1) on a 4-lane limited access road with a speed limit of 55 mph and 12-foot lanes? (use maximum distances)**
   1. 3,160’
   2. 4,390’
   3. 6,700’
   4. 7,530’
9. ***In work zones, pedestrians should:***
   1. Not be led into conflict with vehicles, equipment or work operations.
   2. Be provided with a convenient and accessible path that replicates as nearly as practical the existing sidewalk or footpath.
   3. Both A and B.
   4. None of the above.
10. ***In order to LAY OUT (design) a lane closure work zone, the crew member should:***
    1. Install the warning signs, install the transition, arrow board, channelizing devices throughout the tangent section and install the end road work sign.
    2. Start at the end of the work zone removing the end road work sign, remove channelizing devices in reverse order using a TMA to protect the workers, remove the arrow board then finally with the flow of traffic remove all warning sign beginning with the road work ahead sign.
    3. Determine where the work will begin, working backwards determine the amount of buffer space required, types of tapers and their lengths based on the posted speed limit, shoulder taper if necessary, and sign spacing starting at the beginning of the taper to the first advance warning sign.
    4. Start at the End Road Work sign, work backwards allowing for the buffer space, transition(s) and each warning sign back to the Road Work Ahead sign.
11. ***Vehicles used in a mobile operation shall:***
    1. Be equipped with a TMA when a mobile operation vehicle occupies all or part of the travel lane on a multi-lane roadway with a posted speed of 45 mph or greater.
    2. Be equipped with amber vehicle waning lights.
    3. Have radio communications between vehicles.
    4. All the above.
12. ***Things that block your cone of vision such as horizontal and vertical curves, trees, shrubs, vegetation, longitudinal barrier and rock outcroppings are called:***
    1. Tunnel vision.
    2. Optical illusions.
    3. Sight distance.
    4. Sight obstructions.
13. ***A diversion:***
    1. Directs traffic around a work zone on a temporary roadway or shoulder.
    2. Reroutes traffic onto adjacent roadways or highways.
    3. Uses Detour signs to direct motorist onto adjacent streets or highways.
    4. Requires a drainage structure.

Circle T for True or F for False at the end of each statement (2 points each):

1. Keeping comprehensive documentation on work zone changes is not necessary. T or F
2. The three contributing factors to vehicle crashes are human factor, vehicle factor and roadway factor. T or F
3. Signs not found in the MUTCD Standard Highway Sign book and its latest Supplement or the Virginia Standard Highway sign book shall be submitted to and approved by the State Traffic Engineer prior to fabrication. T or F
4. In the VA Work Area Protection Manual, the term "may" is a statement of optional practice regarding a traffic control device; but should be documented when used.

T or F

1. A Portable Changeable Message Sign (PCMS) may display animated images and

messages may scroll vertically and horizontal on the screen to get motorists’ attention.

T or F

1. Three channelizing devices are used to delineate PCMS’s, arrow boards and other trailer mounted devices and shall be spaced every 20 feet. T or F
2. Roll up signs may be mounted on posts. T or F
3. The Flagger’s primary handheld signal device for a planned operation is a 20-inch STOP/SLOW FLAG. T or F
4. A flagger shall stand-alone but may park a vehicle beside the flagger station so the flagger can use the vehicle’s radio to communicate to other flaggers and workers on the

job site. T or F

1. When flagging operations are suspended the Flagger symbol sign shall remain in place

to control traffic. T or F

1. When using portable temporary rumble strips the advance warning sign “*RUMBLE STRIPS AHEAD”* shall be used. T or F
2. When a work zone causes traffic to backup or stop on an active rail tracks a law enforcement officer or flagger shall control traffic to prevent vehicles from stopping within the highway-rail grade crossing, even with automatic warning devices.

T or F

1. Tractor trailers and over height vehicles should be considered in your decision to close the lane or not when work is being performed over a roadway. (on bridges, overhead signs, traffic signals, etc.),

T or F

1. A law enforcement vehicle shall be protected by a shadow vehicle or parked on the shoulder as far off the roadway as possible when working in a work zone.

T or F

1. The five C’s of good documentation are that it should be: complete, comprehensive, concise, clear, and correct. T or F