



## Intermediate Work Zone Traffic Control Training Instructor's Examination Answer Key



*Use the answer sheet 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:
  - A. Duty, Negligence, Laziness, Damage.
  - B. Civil Wrong, Breach of Duty, Pain, Suffering.
  - C. Duty, Breach of Duty, Proximate Cause, Damage. (Mod 2 – Slide 4)**
  - D. 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:
  - A. Have an approved plan and follow the Virginia Work Area Protection Manual.
  - B. Inspect the work zone immediately after set up and throughout the work day.
  - C. Keep comprehensive documentation.
  - D. All of the above. (Mod 2 – Slides 23-24)**
  
3. Fabrication requirement for signs can be found in the:
  - A. MUTCD's Standard Highway Signs and its 2012 Supplement or the MUTCD's 2012 or VA's Standard Highway Signs book. (Mod 4 – Slides 10 - 13)**
  - B. Mobile Operation.
  - C. MUTCD and the VA Erosion Control manual.
  - D. Virginia Road and Bridge Standards.
  
4. In which of the following manuals and guides would you find typical traffic control layouts for use in work zone operations in Virginia:
  - A. Virginia Road and Bridge Specifications.
  - B. Virginia Work Area Protection Manual.
  - C. Work Zone Safety Guidelines for Temporary Traffic Control (Pocket Guide).
  - D. Both B and C. (Mod 4 – Slide 15)**
  
5. A *Guidance* statement regarding the use of traffic control devices:
  - A. Is a mandatory practice.
  - B. Is a nice thing to do only if you have enough time to implement.
  - C. If not used, must be based and supported by engineering judgment or an engineering study and shall be documented. (Mod 4 – Slide 22)**
  - D. None of the above.

6. Work Zone Types are determined by:
- Work location & number of employees working.
  - The number of trucks that use the highway.
  - Type of work operation & day of the week.
  - Work location, roadway type, and the duration of the operation. (Mod 5 – Slide 3)
7. A Short-term stationary operation:
- Occupies a location for more than 1 hour but less than 12 hours during one daylight period. (Mod 5 – Slide 6)
  - Occupies a location longer than 3 days.
  - Occupies a location for 10 minutes to 1 hour.
  - A work location that moves continuously and does not occupy a location longer than 15 minutes.
8. Which best describes the buffer space:
- An area in the work zone to park equipment, materials and supplies.
  - An ideal place to park private vehicles.
  - An area for flaggers to stand and direct traffic in two-lane operations.
  - 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. (Mod 5 – Slides 13, 22)
9. What is the Travel way Channelizing Device Spacing for a roadway with a posted speed limit of 45 mph?
- 20 feet.
  - 40 feet.
  - 80 feet. (Mod 5 – Slide 15)
  - 120 feet.
10. The merging taper formula to use for a 60 mph roadway is \_\_\_\_\_ and the "Merging" taper is used to \_\_\_\_\_:
- 2L, move traffic out of a normal travel lane.
  - SW=L, move traffic out of a normal travel lane. (Mod 5 – Slides 17, 20)
  - 1/2L, shifts traffic out of its normal travel path.
  - 1/3L, closes a shoulder.
11. What is the length for a one-lane, two-way taper if the roadway posted speed limit is 50 mph?
- 445 feet.
  - 500 feet.
  - 550 feet.
  - 50 feet – 100 feet. (Mod 5 – Slides 17, 18)

12. 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:
- A. 540 feet.
  - B. 600 feet.
  - C. 660 feet.
  - D. 1000 feet. (Mod 5 – Slides 21)
13. To be effective, all TTC devices should meet the following basic requirements:
- A. Fulfill a need and convey a clear simple meaning.
  - B. Command attention and respect.
  - C. Give adequate time for response.
  - D. All of the above. (Mod 6 – Slide 4)
14. When placing advanced warning signs on multi-lane roadways separated by a median barrier and having a median less than 8 feet in width:
- A. For signs placed on the left side of the roadway, sign sizes may be reduced or the standard shape may be modified to provide left and right sign assemblies. (Mod 6 – Slide 50)
  - B. Sections of the median wall should be removed so signs can be placed.
  - C. Signs can be dual indicated on the right shoulder.
  - D. None of the above.
15. What types of weight can be added to portable sign supports to keep the sign supports erect and stable?
- A. Two drum collar weights or a sandbag weighing approximately 25 pounds can be added to each leg. (Mod 6 – Slide 61)
  - B. Three cone weights or 25 pound bags of gravel can be added to each leg.
  - C. Anything that weighs approximately 25 pounds such as a cinderblock, a large rock, or a bucket full of concrete.
  - D. Five cone weights installed over the center of the sign stand.
16. Arrow boards may have the following display capabilities:
- A. A flashing arrow or sequential (moving) chevron arrow.
  - B. A flashing double arrow or flashing (four corner) caution mode.
  - C. Sequential flashing arrow or flashing caution bar.
  - D. Both A and B. (Mod 6 – Slide 71-73)

17. 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:
- A. 4 cones.
  - B. 4 vertical panels.
  - C. 4 drums. (Mod 6 – Slide 85)
  - D. 4 flaggers.
18. If a shadow vehicle is parked in a stationary lane closure it must:
- A. Protect workers and equipment from an errant vehicle
  - B. Be parked 80 to 120 feet in advanced of the first work area
  - C. Be equipped with amber warning light, visible for 360°, and if equipped with an arrow board it shall be in the flashing caution mode.
  - D. All of the above. (Mod 6 – Slides 105 )
19. When trucks are delivering materials to a work site; they should use their amber warning lights when entering and exiting the work area and have a \_\_\_\_\_ sign mounted on the rear of the truck.
- A. Work Vehicle Stay Back 500 Ft.
  - B. Caution Frequent Stops.
  - C. Work Vehicle Frequent Turns (Mod 6 – Slide 112)
  - D. Caution Be Prepared To Stop.
20. The spacing of barrier panels is 40 feet in the \_\_\_\_\_ area and 80 feet in the \_\_\_\_\_ section.
- A. Taper, buffer.
  - B. Taper, tangent. (Mod 6 – Slide 120)
  - C. Transition, Taper.
  - D. Transition, termination.
21. Using barriers, we must close the right lane which is 12' wide and the posted speed limit is 65 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. 20:1, 240 ft. (Mod 6 – Slide 131)
  - C. 19:1, 228 ft.
  - D. 17:1, 204 ft.

22. On long-term projects, pavement markers are installed on \_\_\_\_\_ centers in all merging and shifting lane tapers.
- A. 10'.
  - B. 20'. (Mod 6 – Slides 162)
  - C. 40'.
  - D. 80'.
23. What reference guide should be used to replace temporary traffic control devices?
- A. Virginia Road and Bridge Specifications.
  - B. Virginia Work Area Protection manual.
  - C. ATSSA Quality Guidelines for Temporary Traffic Control Devices. (Mod 6 – Slides 167)
  - D. Virginia Road and Bridge Standards.
24. Workers who are responsible for installing, maintaining, and removing traffic control devices shall wear:
- A. ANSI 107-2010 High Visibility Safety Apparel Performance Class 3 and Type E trousers. (Mod 7 – Slides 8-9)
  - B. ANSI 107-2004 Class 2 high visibility safety apparel.
  - C. ANSI 107-2010 Class 1 low visibility safety apparel.
  - D. ANSI 107-2004 Class 2 high visibility safety apparel and Type D long pants.
25. Flaggers:
- A. During night flagging operations shall wear ANSI 107-2010 High Visibility Safety Apparel Performance Class 3 and also Class E trousers. (Mod 7 – Slide 10-11)
  - B. Should consider adding Class E trousers to their ANSI 107-2010 High Visibility Safety Apparel Performance Class.
  - C. Are never required to wear Class E trousers
  - D. Can wear leg gaiters and overalls
26. Flaggers shall have the ability to receive and give instructions to road user in \_\_\_\_\_.
- A. Latin
  - B. English (Mod 7 – Slide 15)
  - C. Spanish
  - D. Portugueser
27. The minimum illumination requirement of 5 foot candles (50 lux) for the flagger station may be satisfied by the use of \_\_\_\_\_
- A. Street lights.
  - B. Non-glare balloon lights or anti-glare visors. (Mod 7 – Slide 31-32)
  - C. Flashing wands.
  - D. Vehicle headlights.

28. A flagger must ensure all advance warning signs are installed correctly and:
- A clear line of sight is provided from the correctly spaced flagger symbol sign to the flagger station.
  - They shall stand on the shoulder or near the shoulder as possible.
  - They should have an escape route.
  - All of the above. (Mod 7 – Slides 27 & 28)
29. 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:
- Road Work Ahead, Right Lane Closed Ahead, Be Prepared to Stop, Rumble Strips Ahead, Flagger Ahead (word message), and End Road Work.
  - Road Work Ahead, One Lane Road Ahead, Rumble Strips Ahead, Be Prepared to Stop, Flagger Symbol Sign, and End Road Work. (Mod 7 – Slide 45)
  - Road Work Ahead, Flagger Symbol Sign, Rumble Strips Ahead, Be Prepared to Stop, One Lane Road Ahead, and End Construction.
  - Road Work Ahead, One Lane Road Ahead, Flagger Ahead (word message), Rumble Strips Ahead and End Road Work.
30. Automatic flagging assistance devices shall only be used when:
- 2-lane, 2 way roadway closed to one lane of traffic
  - One lane of approaching traffic in the direction to be controlled.
  - ADT 12,000 per day
  - All of the above (Mod 7 – Slide 53)
31. AFAD's can be:
- Run on a timed relationship
  - Used as a temporary traffic signal
  - Controlled remotely by a certified Flagger (Mod 7 – Slide 55)
  - None of the above.
32. In order to **LAY OUT** a lane closure work zone, the crew member should:
- Install the warning signs, install the transition, arrow board, channelizing devices throughout the tangent section and install the end road work sign.
  - 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.
  - 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. (Mod 8 – Slide 3)
  - 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.

33. Vehicles used in a mobile operation shall:

- A. Be equipped with amber vehicle warning lights.
- B. Have radio communications between vehicles.
- C. 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.
- D. All of the above. (Mod 8 – Slides 39-40)

34. Things that block your cone of vision such as horizontal and vertical curves, trees, shrubs, vegetation, longitudinal barrier and rock outcroppings are called:

- A. Sight obstructions. (Mod 9 – Slide 6)
- B. Tunnel vision.
- C. Optical illusions.
- D. Sight distance.

35. In work zones, pedestrians should:

- A. Not be lead into conflict with vehicles, equipment or work operations.
- B. Be provided with a convenient and accessible path that replicates as near as possible the existing path.
- C. Both A and B (Mod 8 – Slides 21-22)
- D. None of the Above

*Circle **T** for True or **F** for False at the end of each statement (3 points each):*

36. Keeping comprehensive documentation on work zone changes is not necessary. T or **F**  
(Mod 2 – Slides 26-28)

37. The three contributing factors to vehicle crashes are human factor, vehicle factor and roadway factor. (Mod 3 – Slide 3) **T** or F

38. Signs not found in the MUTCD Standard Highway Sign book and its 2012 Supplement or the Virginia Standard Highway sign book shall be submitted to and approved by the State Traffic Engineer prior to fabrication. (Mod 4 – Slide 13) **T** or F

39. In the VA Work Area Protection Manual, the term "shall" is a statement of required, mandatory, or specifically prohibitive practice regarding a traffic control device. (Mod 4 – Slide 21) **T** or F

40. A Portable Changeable Message Sign (PCMS) may display animated images and messages may scroll vertically and horizontal on the screen to get motorists' attention. (Mod 6 – Slide 10) T or **F**

41. Three channelizing devices are used to delineate PCMSs, arrow boards and other trailer mounted devices and shall be spaced every 20 feet. (Mod 6 – Slide 13) T or **F**

42. Roll up signs may be mounted on posts. (Mod 6 – Slide 44) T or **F**

43. The Flagger's primary hand held signal device for a planned operation is a 20-inch STOP/SLOW paddle. (Mod 7 – Slides 18) T or F
44. 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. (Mod 7 – Slides 30) T or F
45. When flagging operations are suspended the Flagger symbol sign shall be removed. (Mod 7 – Slides 37) T or F
46. When using portable temporary rumble strips the advance warning sign RUMBLE STRIPS AHEAD shall be used. (Mod 7 – Slide 45) T or F
47. 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. (Mod 7 – Slide 51) T or F
48. When work is being performed over a roadway open to traffic (on bridges, overhead signs, traffic signals, etc.), the travel lane(s) or shoulder that the work operation is over shall be closed, unless it is physically impossible materials, equipment or personnel could fall into the open lane or shoulder. (Mod 9 – Slide 41) T or F
49. 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. (Mod 10 – Slides 6-7) T or F
50. The five C's of good documentation are that it should be: complete, comprehensive, concise, clear, and correct. (Mod 10 – Slide 42) T or F