

## Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

- A.7.1.1 Each jurisdiction or fire department could have its own rules governing the speed of fire service vehicles when responding to emergencies. Some jurisdictions permit fire apparatus vehicles to exceed posted speed limits, while others limit emergency vehicles to the posted speed limit. All drivers should have a thorough knowledge of the rules governing speed for fire service vehicles in their own jurisdictions and the jurisdictions of their mutual aid partners.
- A.7.1.3 Crashes at intersections can contribute to both civilian and fire department personnel deaths and injuries while fire department vehicles are responding to or returning from an emergency incident. Coming to a complete stop where there are any intersection hazards and proceeding only when the driver can do so safely can reduce crashes and risk of injury or death. It is recommended that intersection control devices be installed that allow emergency vehicles to control traffic lights at intersections.
- A.7.1.4 It is recommended that where railroad crossings are unguarded or where visibility is limited for any reason, including geography or weather, the fire apparatus should come to a complete stop before entering the crossing and should not proceed to cross until a crew member on foot outside the vehicle has signaled that it is safe to cross.
- Where the vehicle driver is responding alone or where, due to patient care, the crew member is unable to assist, the vehicle driver should idle the engine; turn off all radios, fans, wipers, and other noise-producing equipment in the cab; lower the windows; and listen for a train's horn before entering a grade crossing.
- A.7.1.5 Operating space is that area around the vehicle that enables the driver to stop or turn in order to avoid another vehicle or object. The necessary following distance varies depending on the type of pavement and whether the roadway is wet or dry, the speed of the vehicle, the condition of the braking system, and the reaction time of the driver. Rear-end collisions often occur because of inadequate operating space.

Table A.7.1.5(a) through Table A.7.1.5(c) were developed for educational rather than legal or engineering purposes. They provide recommended following distances based on vehicle speed, driver reaction time, and vehicle weight.

Table A.7.1.5(a) Recommended Following Distances for Light Two-Axle Trucks

| Speed |       |       |        | Driver Reaction Distance |    | Vehicle Braking Distance |     | Total Stopping Distance |     |
|-------|-------|-------|--------|--------------------------|----|--------------------------|-----|-------------------------|-----|
| km/hr | mi/hr | m/sec | ft/sec | m                        | ft | m                        | ft  | m                       | ft  |
| 16    | 10    | 5     | 15     | 3                        | 11 | 2                        | 7   | 6                       | 18  |
| 24    | 15    | 7     | 22     | 5                        | 17 | 5                        | 17  | 10                      | 34  |
| 32    | 20    | 9     | 29     | 7                        | 22 | 9                        | 30  | 16                      | 52  |
| 40    | 25    | 11    | 37     | 9                        | 28 | 14                       | 46  | 23                      | 74  |
| 48    | 30    | 13    | 44     | 10                       | 33 | 20                       | 67  | 31                      | 100 |
| 56    | 35    | 16    | 51     | 12                       | 39 | 28                       | 92  | 40                      | 131 |
| 64    | 40    | 18    | 59     | 13                       | 44 | 38                       | 125 | 52                      | 169 |
| 72    | 45    | 20    | 66     | 15                       | 50 | 50                       | 165 | 66                      | 215 |
| 80    | 50    | 22    | 73     | 17                       | 55 | 69                       | 225 | 85                      | 280 |
| 89    | 55    | 25    | 81     | 19                       | 61 | 84                       | 275 | 102                     | 336 |
| 96    | 60    | 27    | 88     | 20                       | 66 | 110                      | 360 | 130                     | 426 |

Table A.7.1.5(b) Recommended Following Distances for Heavy Two-Axle Trucks

| Speed |       |       |        | Driver Reaction Distance |    | Vehicle Braking Distance |     | Total Stopping Distance |     |
|-------|-------|-------|--------|--------------------------|----|--------------------------|-----|-------------------------|-----|
| km/hr | mi/hr | m/sec | ft/sec | m                        | ft | m                        | ft  | m                       | ft  |
| 16    | 10    | 5     | 15     | 3                        | 11 | 2                        | 10  | 6                       | 21  |
| 24    | 15    | 7     | 22     | 5                        | 17 | 7                        | 22  | 12                      | 39  |
| 32    | 20    | 9     | 29     | 7                        | 22 | 12                       | 40  | 19                      | 62  |
| 40    | 25    | 11    | 37     | 9                        | 28 | 20                       | 64  | 28                      | 92  |
| 48    | 30    | 13    | 44     | 10                       | 33 | 28                       | 92  | 38                      | 125 |
| 56    | 35    | 16    | 51     | 12                       | 39 | 38                       | 125 | 50                      | 164 |
| 64    | 40    | 18    | 59     | 13                       | 44 | 50                       | 165 | 64                      | 209 |
| 72    | 45    | 20    | 66     | 15                       | 50 | 64                       | 210 | 79                      | 260 |
| 80    | 50    | 22    | 73     | 17                       | 55 | 78                       | 255 | 99                      | 310 |
| 89    | 55    | 25    | 81     | 19                       | 61 | 99                       | 310 | 113                     | 371 |
| 96    | 60    | 27    | 88     | 20                       | 66 | 113                      | 370 | 133                     | 436 |

Table A.7.1.5(c) Recommended Following Distances for Three-Axle Trucks and Combinations

| Speed |       |       |        | Driver Reaction Distance |    | Vehicle Braking Distance |     | Total Stopping Distance |     |
|-------|-------|-------|--------|--------------------------|----|--------------------------|-----|-------------------------|-----|
| km/hr | mi/hr | m/sec | ft/sec | m                        | ft | m                        | ft  | m                       | ft  |
| 16    | 10    | 5     | 15     | 3                        | 11 | 4                        | 13  | 7                       | 24  |
| 24    | 15    | 7     | 22     | 5                        | 17 | 9                        | 29  | 14                      | 46  |
| 32    | 20    | 9     | 29     | 7                        | 22 | 15                       | 50  | 22                      | 72  |
| 40    | 25    | 11    | 37     | 9                        | 28 | 24                       | 80  | 33                      | 108 |
| 48    | 30    | 13    | 44     | 10                       | 33 | 35                       | 115 | 45                      | 148 |
| 56    | 35    | 16    | 51     | 12                       | 39 | 49                       | 160 | 61                      | 199 |
| 64    | 40    | 18    | 59     | 13                       | 44 | 63                       | 205 | 76                      | 249 |
| 72    | 45    | 20    | 66     | 15                       | 50 | 79                       | 260 | 99                      | 310 |
| 80    | 50    | 22    | 73     | 17                       | 55 | 98                       | 320 | 114                     | 375 |
| 89    | 55    | 25    | 81     | 19                       | 61 | 119                      | 390 | 138                     | 451 |
| 96    | 60    | 27    | 88     | 20                       | 66 | 142                      | 465 | 162                     | 531 |

A.7.1.6 A rule of thumb established by some training organizations standardizes the traveling distance for vehicles and apparatus traveling in queue as a 5-second interval for non-responding and 8-second interval for responding apparatus and vehicles. This margin would provide adequate safe separation during speed-up and braking maneuvers.

A.7.1.7 When it is necessary to pass other vehicles, the pass should be made to the left side of the other vehicle. Passing on the right side of other vehicles should be avoided.

A.7.1.9 Many fire department responses can be done in a non-emergency mode. Such responses can include the following:

- (1) Lock-outs
- (2) Dumpster fires (no exposures)
- (3) Investigation of unknown odors
- (4) Assisting police
- (5) Standby for bomb scare