

# Can You Stop Your Vehicle in Time to Avoid Accident and/or Injury?

## (Spring Hill Municipal Court)

### Perception to Reaction Time Lapse

- You must be able to see the hazard before you can even begin the actual physical process of reacting to the hazard (applying your brakes, steering the vehicle away from the hazard, blowing your horn, etc.)
- Average Reaction Times
  - Daytime: 1.6 seconds
  - Nighttime: 2.5 seconds

### Human Factors which can cause increased time to react to and avoid a hazard

- Age
- Alcohol/drug impairment (includes smoking)
- Fatigue
- Disease

These statistics are under normal driving conditions and should be a guideline to the minimums needed. There are various factors that can affect the dynamics of stopping a vehicle from human elements, to weather conditions, and even the type of vehicle itself.

## Braking/Stopping Distances

### Stopping Distances for Dry Pavement/Road <sup>1</sup>

| Speed  | Thinking Distance <sup>2</sup> | Braking Distance | Overall Stopping Distance | Comparisons  |
|--------|--------------------------------|------------------|---------------------------|--|
| 20 mph | 20 feet                        | 20 feet          | 40 feet                   |  |
| 30 mph | 30 feet                        | 45 feet          | 75 feet                   | Full length of tractor/semi-trailer or articulated wagon         |
| 40 mph | 40 feet                        | 80 feet          | 120 feet                  |  |
| 50 mph | 50 feet                        | 125 feet         | 175 feet                  |  |
| 60 mph | 60 feet                        | 180 feet         | 240 feet                  |  |
| 70 mph | 70 feet                        | 245 feet         | 315 feet                  | (USA = "Touchdown !")  |
| 80 mph | 80 feet                        | 320 feet         | 400 feet                  | About six semi-trailer or articulated wagon lengths <sup>3</sup> |

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### Stopping Distances for Wet Pavement/Road <sup>1</sup>

| Speed  | Thinking Distance <sup>2</sup> | Possible Braking Distance | Overall Stopping Distance Can Be: | Comparisons   |
|--------|--------------------------------|---------------------------|-----------------------------------|---|
| 20 mph | 20 feet                        | 40 feet                   | 60 feet                           |   |
| 30 mph | 30 feet                        | 90 feet                   | 120 feet                          |   |
| 40 mph | 40 feet                        | 160 feet                  | 200 feet                          |   |
| 50 mph | 50 feet                        | 250 feet                  | 300 feet                          | (USA = Touchdown !)   |
| 60 mph | 60 feet                        | 360 feet                  | 420 feet                          |   |
| 70 mph | 70 feet                        | 490 feet                  | 560 feet                          |   |
| 80 mph | 80 feet                        | 640 feet                  | 720 feet                          | Almost two and a half American Football fields <sup>3</sup> |

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# TIP

With thanks to Mr. Alex Beet

Instead of having to learn all the data contained in the table shown below there is a formula you can remember in order to calculate the overall stopping distance, which is as follows:

$x^2 \div 20 + x =$  Overall stopping distance in feet.

$x =$  speed

For example: If you are travelling at 30 mph

$$30^2 \div 20 + 30 =$$

$$(30 \times 30) \div 20 + 30 =$$

$$900 \div 20 + 30 = 75 \text{ ft.}$$

## Examples:

Example #1 You are traveling at 55 mph

The object in front of you is 350 feet away

Your perception to reaction time lapse is: 1.6 seconds

@ 55 mph you are traveling at 80.6 feet per second

You travel a total of 128.96 feet from the time you perceive the object until you begin to react

It takes you another 134.44 feet before you will be able to stop your vehicle

Grand total distance you will travel before you are able to stop once you see it is 263.4 feet

Leaves you 86.6 feet to spare with object 350 feet away! (= You should be able to stop in time.)

Example #2 You are traveling at 65 mph

The object in front of you 350 feet away

Your perception to reaction time lapse is: 1.6 seconds

@ 65 mph you are traveling at 95.2 feet per second

You travel a total of 152.32 feet from the time you perceive the object until you begin to react

It takes you another 187 feet before you are able to stop your vehicle

Grand total distance you will travel before you are able to stop once you see it is 339.32 feet

Leaves you only 10.68 feet (a car length?) to spare when the object is 350 feet away from you!

(= BARELY AVOID VEHICLE CRASH)

**Example #3** You are traveling at 75 mph

The object in front of you 350 feet away

Your perception to reaction time lapse is : 1.6 seconds

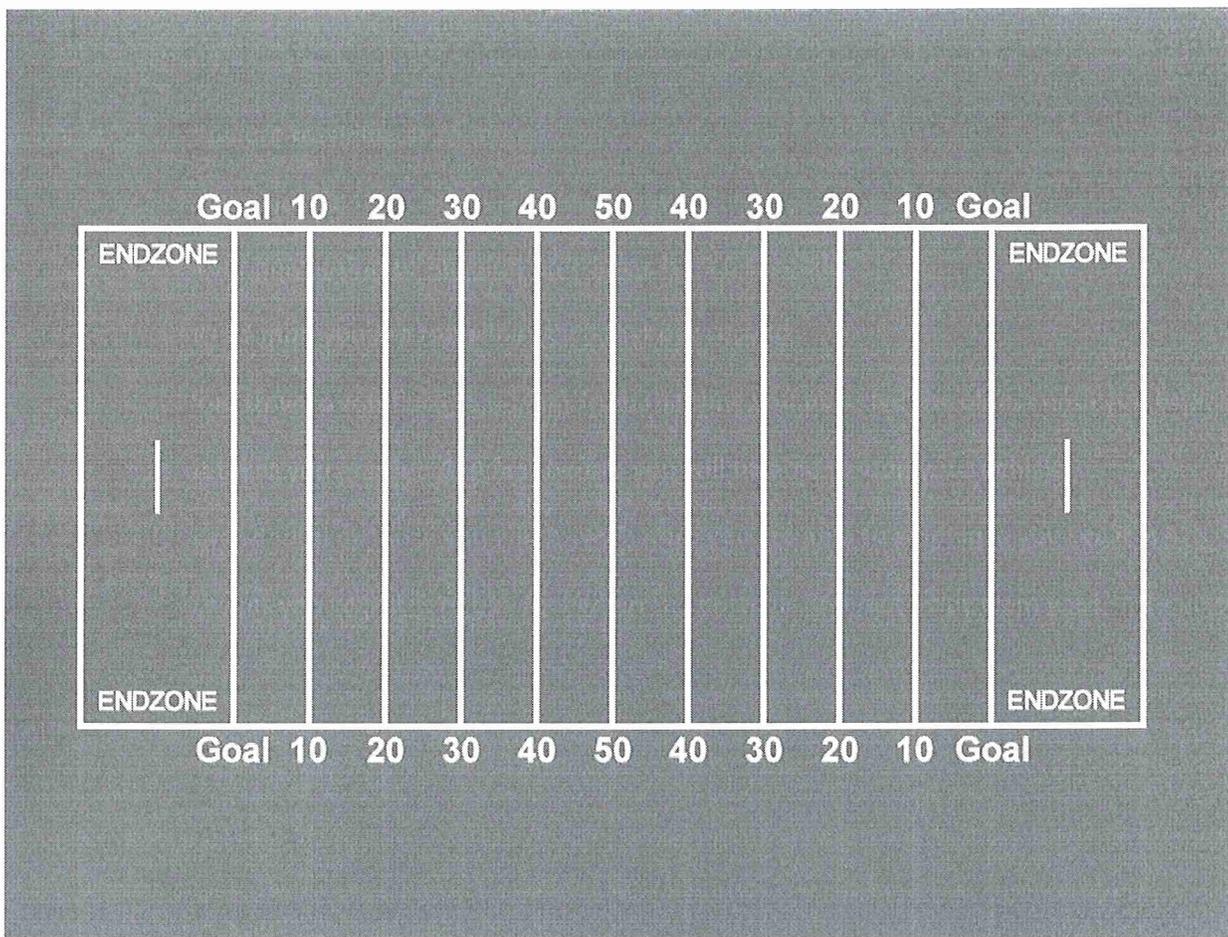
@ 75 mph you are traveling 109.5 feet per second

You travel a total of 175.92 feet from the time you perceive the object until you begin to react

It takes you another 250 feet before you will be able to stop your vehicle

Grand total distance you will travel before you are able to stop once you see it is 425.92 feet

Leaves you <MINUS 75.92> feet when the object is 350 feet away from you! (= VEHICLE CRASH !!!!)



Things to compare:

Endzone to endzone is 120 yards but 360 feet. Very close to comparisons above.

**NOTE:** Information provided for general illustrative purposes only. Motorists are responsible to perform their own stopping calculations to ensure their safety and the safety of other drivers and pedestrians.

[With appreciation to Lt. Chris Bishop and Detective Marcus Albright of the Spring Hill Police Department for providing this information for Citizen education purposes.] (4/2013)