

Collision Avoidance – Brake

Overview: Computes speed, time and distance required to either stop before striking target vehicle, or decelerate enough to allow crossing target vehicle to escape.

Entry into Module:

This module of the program is normally entered by clicking on the **REC-TEC** block in the upper left of the **REC-TEC Window** causing the drop-down menu to appear. Place the cursor on the **Collision Avoidance** block and click on **Braking Maneuvers** on the sub-menu to initiate this module.

Under certain circumstances, the user may choose to use the **Files** block instead of the drop-down menu approach. Selecting any file with a **.BTA** extension in the **Dialog box** accessed from either the **Open Single File** or **Open Multiple Files** block opens this module.

Selecting **AutoLoad [ON]** from either the **Setup Menu** or the **AutoLoad Icon** on the upper right side (third line) of the **REC-TEC Window** automatically loads the scenario that was on the screen when the module was closed, either individually, or when the program was closed. With **AutoLoad [OFF]** on the main **REC-TEC Window**, modules will start without loading a file.

Data Entry:

This module contains the following data entry blocks within the leftmost frame:

- **Mu (Deceleration) - required**
- **Grade (Test) – not required (default is zero)**
- **Grade (Scene) – not required (default is zero)**
- **Braking (%) – required**
- **Speed (Veh 1) – Initial Speed of Vehicle 1**
- **Impact Distance – Distance from End of Reaction Time to Point of Impact**
- **Reaction Time – Actual or Imputed**
- **Speed (Veh 2) – Speed of Vehicle 2**
- **Clear Distance – Distance Vehicle 2 must travel to avoid contact**

Output:

The output from this module consists of the repeated input variables plus deceleration rates expressed in the primary and secondary configurations and the **Clear Time**.

The top two additional frames on the right side of the screen show the Time and Distance information if Vehicle 1 is at the **Initial Speed** as entered plus the Impact Speed with Vehicle 2

The lower two frames show the **Maximum Speeds** for Vehicle 1 if it is to **Brake to Stop**

before Impact (left frame) or if it is to **Brake to Clear - Vehicle 2** (right frame).

Time @ Initial Speed:

- **Time (Stop):** Time to Decelerate to a Stop
- **Time (React):** Reaction Time
- **Time (Decel):** Time in Deceleration to Impact
- **Time (Impact+):** Total Time to Impact (Includes Reaction Time)
- **Time (Stop+):** Total Time to Stop (Includes Reaction Time)

- **Impact Speed (T):** Impact Speed (Primary)
- **Impact Speed (T):** Impact Speed (Secondary)

Distance @ Initial Speed:

- **Distance (Stop):** Distance to Decelerate to a Stop
- **Distance (React):** Reaction Distance
- **Distance (Decel):** Distance in Deceleration to Impact
- **Distance (Impact+):** Total Distance to Impact (Includes Reaction Distance)
- **Distance (Stop+):** Total Distance to Stop (Includes Reaction Distance)

- **Impact Speed (D):** Impact Speed (Primary)
- **Impact Speed (D):** Impact Speed (Secondary)

Brake to Stop before Impact

- **Speed (Max):** Maximum Speed to Stop before Impact (Primary)
- **Speed (Max):** Maximum Speed to Stop before Impact (Secondary)

- **Time (Stop):** Time to Decelerate to a Stop
- **Time (React):** Reaction Time
- **Time (Decel):** Time in Deceleration Only
- **Time (Impact+):** Total Time to Stop without Impact (Includes Reaction Time)
- **Time (Stop+):** Total Time to Stop without Impact (Includes Reaction Time)

- **Distance (Stop):** Distance to Decelerate to a Stop
- **Distance (React):** Reaction Distance
- **Distance (Decel):** Distance in Deceleration Only
- **Distance (Impact+):** Total Distance to Stop without Impact (Includes Reaction Distance)
- **Distance (Stop+):** Total Distance to Stop without Impact (Includes Reaction Distance)

Brake to Clear – Vehicle 2

- **Speed (Max):** Maximum Speed to Clear (Primary)
- **Speed (Max):** Maximum Speed to Clear (Secondary)

- **Speed (Clear):** Speed at Clear (Primary)
- **Speed (Clear):** Speed at Clear (Secondary)

- **Time (Stop):** Time to Decelerate to a Stop
- **Time (React):** Reaction Time
- **Time (Decel):** Time in Deceleration Only
- **Time (Clear+):** Deceleration plus Reaction Time
- **Time (Stop+):** Total Time to Stop (Includes Reaction Time)

- **Distance (Stop):** Distance to Decelerate to a Stop
- **Distance (React):** Reaction Distance
- **Distance (Decel):** Distance in Deceleration Only
- **Distance (Clear+):** Deceleration plus Reaction Distance
- **Distance (Stop+):** Total Distance to Stop (Includes Reaction Distance)

Options:

Several **Command Buttons** appear in a frame located at the lower right corner of the module Window. The **Command Buttons** allow the user to engage options including the option to **Open** and **Save** the data required to generate the scenario shown on the screen at the time the file was saved.

- **Open .BTA File** – Calls up a **Dialog box**, which **Opens** any pre-existing **.BTA** file and displays the output results.
- **Save .BTA File** – Calls up a **Dialog box**, which **Saves** data on the screen to files with any user-selectable filenames. This is independent of the automatic saving as “**LastFile.BTA**” of the data at the close of this module or the close of the program.
- **Diagram** – The Diagram displays the Maneuvers plus the Speeds Times and Distances of both the Brake to Avoid – STOP and the Brake to Avoid - CLEAR. [Esc] to Exit
- **N** – This button toggles a graphical number pad on the screen that can be used to enter data into the input boxes without using your keyboard number pad. This

may be useful for presentations as data entry can be accomplished using a wired/wireless mouse.