# Custom

The **Custom Maneuver** can be set through a specific property file (see *latin_ncap.ccp* in the VI-CarRealTime database as example).
The content of the file includes the position of the cones, the list of the control points which determine the base trajectory, some data used to build the control points grid and other auxiliary parameters.

- *CONES* table

  It contains the centers of the cones ordered along the x-axis (vehicle advancing direction). The y-coordinates must be entered first for the left cones and then for the right ones, considering that the y-axis is oriented towards the left side.

- *CONTROL_POINTS* table

  Adopting the same coordinate reference of the cones, the table is used to list the x-y pairs of the control points that define the shape of the base trajectory. Starting from this base set of control points, a grid is constructed to determine the full set of perturbed trajectories.

- *GENERAL* data
  - *LATERAL_RANGE:* maximum lateral distance of the perturbed control point (default 2 meters)
  - *LATERAL_STEP*: lateral step of the grid (default 1 m)
  - *SPEED_STEP*: velocity increment after a feasible trajectory (default 0.5 m/s)
  - *BEGIN_CONTROL_POINT*: index of the first control point to be perturbed (default 1)
  - *END_CONTROL_POINT*: index of the last control point to be perturbed (default is the last control point of the list)
  - *SETTLING_DISTANCE*: longitudinal distance that the vehicle must travel before the first cone (default 30 m)
  - *ABORT_LENGTH*: longitudinal length that determines the end of the maneuver (default is the position of the last cone)
  - *ABORT_TIME*: progressive time that determines the end of the maneuver (default 100 s)

The figure below illustrates the concept of base trajectory and grid generation (BEGIN_CONTROL_POINT = 3 and END_CONTROL_POINT = 7) and highlights the meaning of *LATERAL_RANGE* and *LATERAL_STEP*.