Two types of links are considered: priority links and non-priority links. Non priority links have been assigned type=0. Priority links have been assigned type=1. If link *a* is of type 0, then the set of links with priority on it are those links of type 1 entering the same junction as link *a*.

Link travel time (minutes) for a non priority link *a* is given by:



Where *v* is the vector of link flow volumes, is the free flow travel time of link *a*, , , and:



In previous expression is the flow on link , is the capacity of link *a* and *X*(*a*) is the set of links with priority over link . Constants for links *a’* with priority over link *a* are evaluated as . The hourly capacity coefficient  of non-priority links has been set to  for the network of Hesse,  for the network of Terrassa and  for the network of Winnipeg

For the priority links, the classical BPR function has been used for the link travel time:



where  is the capacity on link , which is link dependent.  is the link travel time (minutes) under free flow conditions, which has been set to 0.75;  and  are fixed parameters set to  and  for all the test networks.

The length of the modeling time period has been set to H= hours for the network of Hesse,  hours for the network of Terrassa and to  hours for the network of Winnipeg. The O-D matrices are expressed in total trips for these periods.