CLAIMS

1. A vehicle electric power consumption simulation device comprising:

a link setting unit that, with reference to information indicating a link that is a division of a road determined by a traffic simulation, sets a link, in which a travel object travels, based on a track of the travel object in which position information of the travel object at each time acquired by a preliminary travel are arranged in a time series;

a speed setting unit that sets an average free flow speed in the link set by the link setting unit based on speed information of the travel object at each time acquired by the preliminary travel;

a traffic simulator that simulates vehicle traffic based on the link set by the link setting unit and the average free flow speed set by the speed setting unit; and

an electric power consumption estimation unit that calculates the electric power consumption of a vehicle traveling in the link based on data relating to electric power consumption obtained from a travel status of the vehicle simulated by the traffic simulator, wherein

the link setting unit determines a path candidate with the smallest area of a region surrounded by the track and each path candidate as a path corresponding to the track of a travel history information collection device that collects information indicating a travel history of the vehicle.

2. The vehicle electric power consumption simulation device according to claim 1,

wherein the speed setting unit selects one link from the links set by the link setting unit, determines whether or not a speed variation in each selected link is greater than a threshold determined in advance based on the speed information, divides the link at a point where the speed variation is greater than the threshold, and sets the average free flow speed for each divided section.

3. The vehicle electric power consumption simulation device according to claim 1 or 2,

wherein, in a case where simulation conditions representing the travel status of the vehicle to be simulated are set, the traffic simulator simulates driving of the vehicle in a condition in which disturbance indicated by the simulation conditions is imparted to the travel status of the travel object.

4. The vehicle electric power consumption simulation device according to any one of claims 1 to 3, further comprising:

a storage unit that records attribute information relating to electric power consumption according to a vehicle type,

wherein the electric power consumption estimation unit calculates the electric power consumption of the vehicle according to the vehicle type with reference to the attribute information stored in the storage unit.

5. The vehicle electric power consumption simulation device according to any one of claims 1 to 4,

wherein the link setting unit sets a link corresponding to a road, on which the travel object travels, by applying position coordinates of the travel object at each time acquired by the preliminary travel to position coordinates set in the traffic simulation.

6. A vehicle electric power consumption simulation method comprising:

a link setting step of, with reference to information indicating a link that is a division of a road determined by a traffic simulation, setting a link, in which a travel object travels, based on a track of the travel object in which position information of the travel object at each time acquired by a preliminary travel are arranged in a time series and determining a path candidate with the smallest area of a region surrounded by the track and

each path candidate as a path corresponding to the track of a travel history information collection device that collects information indicating a travel history of the vehicle;

a speed setting step of setting an average free flow speed in the link set in the link setting step based on speed information of the travel object at each time acquired by the preliminary travel;

a traffic simulation step of simulating vehicle traffic based on the link set in the link setting step and the average free flow speed set in the speed setting step; and

an electric power consumption estimation step of calculating the electric power consumption of a vehicle traveling in the link based on data relating to electric power consumption obtained from a travel status of the vehicle simulated in the traffic simulation step.

7. A program which causes a computer to function as:

link setting means for, with reference to information indicating a link that is a division of a road determined by a traffic simulation, setting a link, in which a travel object travels, based on a track of the travel object in which position information of the travel object at each time acquired by a preliminary travel are arranged in a time series and determining a path candidate with the smallest area of a region surrounded by the track and each path candidate as a path corresponding to the track of a travel history information collection devicethat collects information indicating a travel history of the vehicle;

speed setting means for setting an average free flow speed in the link set by the link setting means based on speed information of the travel object at each time acquired by the preliminary travel;

traffic simulation means for simulating vehicle traffic based on the link set by the link setting means and the average free flow speed set by the speed setting means; and

electric power consumption estimation means for calculating the electric power consumption of a vehicle traveling in the link based on data

relating to electric power consumption obtained from a travel status of the vehicle simulated in the traffic means.