[CLAIMS]

1. A signal control device comprising:

an emergency vehicle information acquisition unit configured to acquire emergency vehicle information including position information on an emergency vehicle;

a traffic condition change amount information acquisition unit configured to acquire traffic condition change amount information indicating, for each road section, an amount of change in traffic conditions according to a lighting state of traffic lights;

a signal control unit configured to perform, on the basis of the emergency vehicle information and the traffic condition change amount information, control of the traffic lights provided in a road section on which the emergency vehicle travels;

a signal switching information acquisition unit configured to acquire signal switching information indicating that the lighting state of the traffic light has been switched;

a traffic condition indicator acquisition unit configured to acquire a traffic condition indicator of a road section in which the traffic light is provided; and

a traffic condition change amount information generation unit configured to generate, on the basis of the traffic condition indicator at a time point at which the signal switching information is acquired from the traffic light and the traffic condition indicator at a time point at which the previous signal switching information has been acquired from the traffic light, generate traffic condition change amount information on a road section in which the traffic light is provided.

2. The signal control device according to claim 1, wherein:

the emergency vehicle information further includes a scheduled traveling route of the emergency vehicle;

the traffic condition change amount information acquisition unit acquires the traffic condition change amount information on each road section included in the scheduled traveling route; and

the signal control unit performs, on the basis of the emergency vehicle information and the traffic condition change amount information on each road section included in the scheduled traveling route, control of the traffic light provided in each road section before the emergency vehicle reaches each road section.

3. The signal control device according to claim 1 or 2, further comprising a restriction information transmission unit configured to transmit restriction information on a road section subject to restrictions on which traffic restrictions are performed by the signal control unit performing the control of the traffic light to at least one of an on-board unit mounted in a vehicle located in the road section subject to restrictions and a restriction information notification unit provided in the road section.

4. A signal control system comprising:

the signal control device according to any one of claims 1 to 3;

a probe data collection unit configured to collect probe data including position information on an on-board unit mounted in each of a plurality of vehicles; and

a traffic condition indicator generation unit configured to generate a traffic condition indicator for each road section on the basis of the probe data and record the generated traffic condition indicator in a traffic condition database.

5. A signal control method comprising:

an emergency vehicle information acquisition step of acquiring emergency vehicle information including position information on an emergency vehicle;

a traffic condition change amount information acquisition step of acquiring traffic condition change amount information indicating, for each road section, an amount of change in traffic conditions according to a lighting state of traffic lights; and

a signal control step of performing, on the basis of the emergency vehicle information and the traffic condition change amount information, control of the traffic light provided in a road section on which the emergency vehicle travels;

a signal switching information acquisition step of acquiring signal switching information indicating that the lighting state of the traffic light has been switched;

a traffic condition indicator acquisition step of acquiring a traffic condition indicator of a road section in which the traffic light is provided; and

a traffic condition change amount information generation step of generating, on the basis of the traffic condition indicator at a time point at which the signal switching information is acquired from the traffic light and the traffic condition indicator at a time point at which the previous signal switching information has been acquired from the traffic light, generate traffic condition change amount information on a road section in which the traffic light is provided.

6. A program causing a computer of a signal control device to function as:

an emergency vehicle information acquisition unit configured to acquire emergency vehicle information including position information on an emergency vehicle;

a traffic condition change amount information acquisition unit configured to acquire traffic condition change amount information indicating, for each road section, an amount of change in traffic conditions according to a lighting state of traffic lights; and

a signal control unit configured to perform, on the basis of the emergency vehicle information and the traffic condition change amount information, control of the traffic lights provided in a road section on which the emergency vehicle travels;

a signal switching information acquisition unit configured to acquire signal switching information indicating that the lighting state of the traffic light has been switched;

a traffic condition indicator acquisition unit configured to acquire a traffic condition indicator of a road section in which the traffic light is provided; and

a traffic condition change amount information generation unit configured to generate, on the basis of the traffic condition indicator at a time point at which the signal switching information is acquired from the traffic light and the traffic condition indicator at a time point at which the previous signal switching information has been acquired from the traffic light, generate traffic condition change amount information on a road section in which the traffic light is provided.