lane, to a beam member provided at an upper end of the support strut. This work may result in an increase in costs for installation of support struts and the like, and the ultrasonic vehicle detector may adversely affect the scenery around the intersection.

Further, since the work for installing the support struts needs to be redone when detection points of the installed ultrasonic vehicle detector are adjusted, there is also a problem that it is difficult to adjust the detection points.

[0006]

In the case of the image-processing vehicle detector, since one image-processing vehicle detector can measure the traffic volumes in a plurality of lanes, the number of vehicle detectors to be installed can be reduced as compared to the case of the ultrasonic vehicle detector. However, the image-processing vehicle detector also needs to be installed on each approach path, which results in almost the same problem as above.

In view of the conventional problems, an object of the present invention is to generate, even when a vehicle detector is not actually installed, traffic indices of the same kinds as those obtained when a vehicle detector is installed, thereby to collect the traffic indices at low costs.

[0007]

(1) A traffic index generation device according to one aspect of the present disclosure is a device configured to generate a traffic index used for traffic signal control, and includes: a storage unit configured to store therein area information on a coordinate system, the area information forming detection area, assuming that a vehicle detector is installed on a roa; a communication unit configured to receive probe information including a vehicle position and temporal information of a traveling vehicle; and a control unit configured to generate the traffic index on the basis of the area

information and the probe information.

[0008]

(16) A computer program according to one aspect of the present disclosure is a computer program for causing a computer to function as a device configured to generate a traffic index used for traffic signal control, and includes: a step of causing a storage unit of the traffic index generation device to store area information on a coordinate system, the area information forming a detection area, assuming that a vehicle detector is installed on a road; a step of causing a communication unit of the traffic index generation device to receive probe information including a vehicle position and temporal information of a traveling vehicle; and a step of causing a control unit of the traffic index generation device to generate the traffic index on the basis of the area information and the probe information.

[0009]

(17) A traffic index generation method according to one aspect of the present disclosure is a traffic index generation method executed by a device configured to generate a traffic index used for traffic signal control, and includes: a step of causing a storage unit of the traffic index generation device to store area information on a coordinate system, the area information forming a detection area, assuming that a vehicle detector is installed on a road; a step of causing a communication unit of the traffic index generation device to receive probe information including a vehicle position and temporal information of a traveling vehicle; and a step of causing a control unit of the traffic index generation device to generate the traffic index on the basis of the area information and the probe information.

[0010]

According to various embodiments, even when a vehicle detector is not actually

CLAIMS

1. A traffic index generation device configured to generate a traffic index used for traffic signal control, the device comprising:

a storage unit configured to store therein area information on a coordinate system, the area information forming a detection area, assuming that a vehicle detector is installed on a road;

a communication unit configured to receive probe information including a vehicle position and temporal information of a traveling vehicle; and

a control unit configured to generate the traffic index on the basis of the area information and the probe information.

2. The traffic index generation device according to claim 1, wherein the storage unit stores therein a plurality of pieces of the area information that form a plurality of the detection areas located at different positions on the road, respectively, and the control unit generates the traffic index for each of the stored plurality of pieces of the area information.

3. The traffic index generation device according to claim 1, wherein the storage unit stores therein a plurality of pieces of the area information that form a plurality of the detection areas on a plurality of approach paths connecting to a single intersection, respectively.

4. The traffic index generation device according to any one of claims 1 to 3, wherein the traffic index generated by the control unit includes at least one of a traffic volume, an occupancy, and a detection pulse signal of the vehicle in the detection area.

5. The traffic index generation device according to claim 2, wherein the storage unit

stores therein the plurality of pieces of the area information that form the plurality of the detection areas corresponding to different types of local-actuated controls, respectively.

6. The traffic index generation device according to claim 5, wherein the traffic index generated by the control unit includes at least one of a detection pulse signal in the detection area, and a vehicle speed in the detection area.

7. The traffic index generation device according to claim 5 or 6, wherein

the probe information includes a type of the vehicle, and

the control unit causes the communication unit to transmit the vehicle type included in the probe information to the traffic signal controller.

8. The traffic index generation device according to any one of claims 1 to 7, wherein

the probe information includes a vehicle heading, and

the control unit does not generate the traffic index when an angular difference between the vehicle heading and a road heading exceeds a predetermined value, and generates the traffic index when the angular difference is less than or equal to the predetermined value.

9. The traffic index generation device according to any one of claims 1 to 8, wherein an area on the coordinate system, which is specified by the area information, extends two-dimensionally or three-dimensionally.

10. The traffic index generation device according to any one of claims 1 to 9, wherein

the communication unit is able to receive the area information from external equipment, and

the control unit causes the storage unit to store the area information received by the communication unit.

11. The traffic index generation device according to any one of claims 1 to 10, wherein

the communication unit is able to receive the area information from external equipment, and

the control unit updates the area information stored in the storage unit, to the area information received by the communication unit.

12. The traffic index generation device according to claim 11, wherein the control unit causes the communication unit to transmit the area information before being updated and the area information after being updated.

13. The traffic index generation device according to any one of claims 1 to 12, wherein

the probe information includes at least one of information about a length of the vehicle and information about a type of the vehicle, and

the control unit executes, by using the information, a process of correcting the position of the vehicle to at least one of a front end position of the vehicle and a rear end position of the vehicle.

14. The traffic index generation device according to any one of claims 1 to 13, wherein, in a case where the control unit generates a plurality of kinds of the traffic indices, the control unit determines, for each of the kinds of the traffic indices, whether or not to cause the

communication unit to transmit the traffic index.

15. The traffic index generation device according to any one of claims 1 to 14, wherein, in a case where the control unit generates a plurality of kinds of the traffic indices, the control unit determines, for each of kinds of external equipment as a transmission destination, the kind of the traffic index to be transmitted by the communication unit.

16. A computer program for causing a computer to function as a device configured to generate a traffic index used for traffic signal control, the computer program comprising:

a step of causing a storage unit of the traffic index generation device to store area information on a coordinate system, the area information forming a detection area, assuming that a vehicle detector is installed on a road;

a step of causing a communication unit of the traffic index generation device to receive probe information including a vehicle position and temporal information of a traveling vehicle; and

a step of causing a control unit of the traffic index generation device to generate the traffic index on the basis of the area information and the probe information.

17. A traffic index generation method executed by a device configured to generate a traffic index used for traffic signal control, the method comprising:

a step of causing a storage unit of the traffic index generation device to store area information on a coordinate system, the area information forming a detection area, assuming that a vehicle detector is installed on a road;

a step of causing a communication unit of the traffic index generation device to receive probe information including a vehicle position and temporal information of a traveling

vehicle; and

a step of causing a control unit of the traffic index generation device to generate the traffic index on the basis of the area information and the probe information.