

-14-

WHAT IS CLAIMED IS:

1. A traveling vehicle system including traveling vehicles each having an obstacle sensor for detecting a distance to an obstacle and an orientation to the obstacle, the
5 system further including:

a map memory configured to store a map of a travel route of the traveling vehicles;

a detection area generator configured to repeatedly define detection areas from the map based on current positions of the traveling vehicles, deceleration of the traveling
10 vehicles being required if any obstacle is present in the detection areas;

an interference detector for detecting an obstacle in the detection area, among obstacles detected by the obstacle sensor; and

a travel controller configured to control deceleration of the traveling vehicles for preventing interference with the obstacle detected by the interference detector.
15

2. The traveling vehicle system according to claim 1, the detection area generator being configured to determine interference ranges ahead of the traveling vehicles where an obstacle in the interference ranges may cause interference with the traveling vehicles, from the map based on the positions of the traveling vehicles, determine positions of
20 front ends of the traveling vehicles when the traveling vehicles stop based on current velocities of the traveling vehicles, and in the interference ranges, designates areas closer to the traveling vehicles in comparison with the positions of the front ends as the detection areas.

25 3. The traveling vehicle system according to claim 1, the travel route including diverging sections for allowing the traveling vehicles to move straight or diverge from the diverging sections, the detection area generator being configured to define different

-15-

detection areas in the vicinity of the diverging sections in diverging directions and straight directions, according to directions in which the traveling vehicles travel through the diverging sections.

5 4. The traveling vehicle system according to claim 2, the obstacle sensor being configured to scan areas ahead of the traveling vehicles in traveling directions at predetermined intervals; and

the detection area generator being configured to define the detection areas synchronously with detection of the obstacle by the obstacle sensor.

10

5. A method of preventing interference between traveling vehicles and obstacles, wherein the traveling vehicles repeatedly performing the steps of:

detecting distances to the obstacles and orientations to the obstacles by obstacle sensors in the traveling vehicles;

15 defining detection areas where deceleration of the traveling vehicles is required if there is any obstacle in the detection areas, based on a map of a travel route of the traveling vehicles and current positions of the traveling vehicles,

detecting obstacles in the detection areas, among obstacles detected by the obstacle sensors; and

20

controlling deceleration of the traveling vehicles for preventing interference between the traveling vehicles and the obstacles in the detection areas.

WHAT IS CLAIMED IS:

1. A traveling vehicle system including traveling vehicles each having an obstacle sensor for detecting a distance to an obstacle and an orientation to the obstacle, the
5 system further including:

a map memory configured to store a map of a travel route of the traveling vehicles;

a detection area generator configured to repeatedly define detection areas from the map based on current positions of the traveling vehicles, deceleration of the traveling
10 vehicles being required if any obstacle is present in the detection areas;

an interference detector for detecting an obstacle in the detection area, among obstacles detected by the obstacle sensor; and

a travel controller configured to control deceleration of the traveling vehicles for preventing interference with the obstacle detected by the interference detector,

15 wherein the detection area generator is configured to determine a stop position of the traveling vehicle in the travel route based on the current position and the current velocity of the traveling vehicle, to determine the front end of the traveling vehicle at the stop position based on the stop position and an orientation of the traveling vehicle at the stop position, and to determine the detection area extending till the front end at the stop
20 position of the traveling vehicle and covering a lateral range of the travel route in which another traveling vehicle interferes,

and wherein the travel route including diverging sections for allowing the traveling vehicles to move straight or diverge from the diverging sections, the detection area generator being configured to define different detection areas in the vicinity of the
25 diverging sections in diverging directions and straight directions, according to directions in which the traveling vehicles travel through the diverging sections.