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(54) **CONFIGURABLE TRAFFIC ZONE CONTROL SYSTEM**

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(57) **ABSTRACT**

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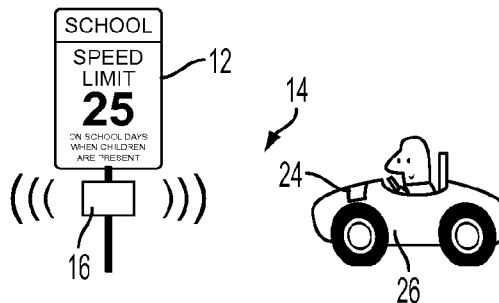
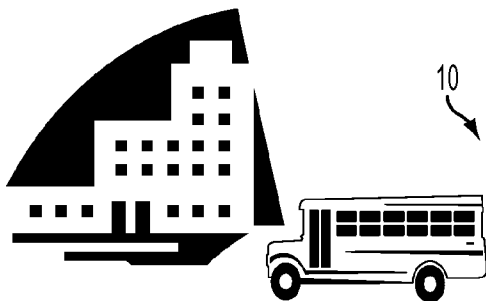
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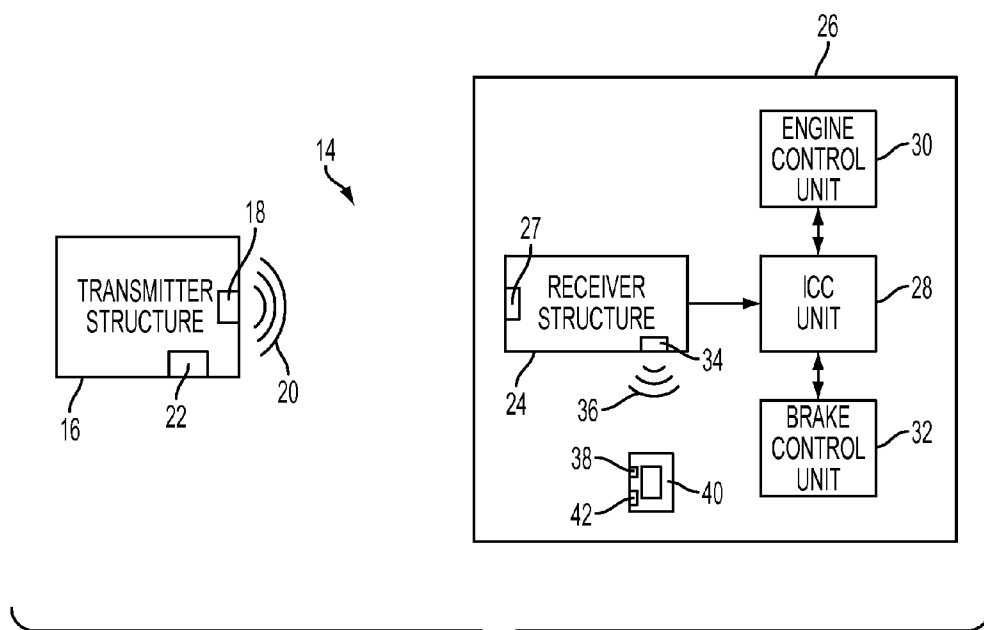
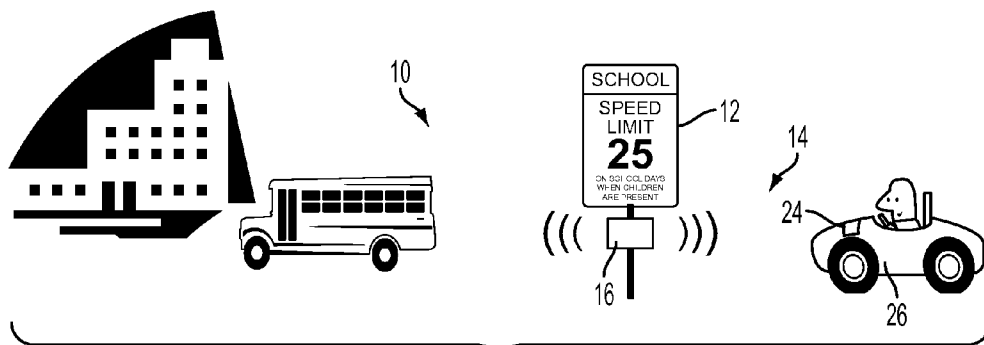
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A configurable traffic zone control system (14) includes transmitter structure (16) associated with a traffic zone (10). The transmitter structure includes a transmitter (18) for transmitting a wireless signal (20) indicative of a speed requirement of the traffic zone. Receiver structure (24) is provided in a vehicle (26) for receiving the wireless signal such that based on the wireless signal, speed of the vehicle is automatically controlled to be at or below the speed requirement while the vehicle is in the traffic zone.





CONFIGURABLE TRAFFIC ZONE CONTROL SYSTEM

FIELD

[0001] This invention relates to traffic zones and, more particularly, to a method and system for providing a configurable and adjustable speed limit in a traffic zone and for controlling a vehicle's speed and operator cellular communication while in the traffic zone.

BACKGROUND

[0002] Bright signs, flashing lights and even a parked motorcycle policeman aren't always enough to stop motorists from speeding through school or construction traffic zones. Furthermore, driver distraction rises due to the proliferate amount of new electronics in automobiles. One of the biggest distractions is texting and/or cellular phone use. Distracted drivers and speeding vehicles pose a significant danger to children in the school traffic zone or workers in the construction traffic zone.

[0003] Thus, there is a need to provide a traffic zone control system that regulates vehicle speed by automated controls and regulates cellular wireless transmission in a particular traffic zone.

SUMMARY

[0004] An object of the invention is to fulfill the need referred to above. In accordance with the principles of the present invention, this objective is achieved by a configurable traffic zone control system that includes transmitter structure associated with a traffic zone. The transmitter structure includes a transmitter for transmitting a wireless signal indicative of a speed requirement of the traffic zone. Receiver structure is provided in a vehicle for receiving the wireless signal such that based on the wireless signal, the speed of the vehicle is automatically controlled to be at or below the speed requirement while the vehicle is in the traffic zone.

[0005] In accordance with another aspect of an embodiment, a method is provided for controlling a vehicle in a particular traffic zone. The method provides transmitter structure associated with the traffic zone. The transmitter structure includes a transmitter for transmitting a wireless signal indicative of a speed requirement of the traffic zone. The wireless signal is received at the vehicle. Based on the wireless signal, the speed of the vehicle is automatically controlled to be at or below the speed requirement while the vehicle is in the traffic zone.

[0006] Other objects, features and characteristics of the present invention, as well as the methods of operation and the functions of the related elements of the structure, the combination of parts and economics of manufacture will become more apparent upon consideration of the following detailed description and appended claims with reference to the accompanying drawings, all of which form a part of this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The invention will be better understood from the following detailed description of the preferred embodiments thereof, taken in conjunction with the accompanying drawings, wherein like reference numerals refer to like parts, in which:

[0008] FIG. 1 is a schematic diagram of a school traffic zone employing a configurable traffic zone control system in accordance with an embodiment.

[0009] FIG. 2 is a block diagram of the configurable traffic zone control system employed in FIG. 1.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0010] With reference to FIG. 1, a school traffic zone 10 includes a speed limit sign 12 to indicate the legal speed limit through the zone 10 when school is in session. In accordance with an embodiment, a configurable traffic zone control system, generally indicated at 14 is provided. As best shown in FIG. 2, the system 14 includes transmitter structure 16 associated with the traffic zone 10. The transmitter structure 16 is preferably mounted on or adjacent to the speed limit sign 12 or is mounted anywhere in or near the traffic zone 10. The transmitter structure 16 includes a transmitter 18 for transmitting a wireless signal 20 indicative of a speed requirement of the traffic zone 10. The signal 20 can be transmitted, for example by using radio frequency (RF), infrared (IR), or cellular wireless communication. The transmitter structure 16 also includes a processor 22 that can be programmed to set the speed requirement of the speed zone 10 so as to be configurable as to the time of day, multiple enforcements during the day, calendar days, and/or to special events.

[0011] With reference to FIG. 2, the system 10 also includes receiver structure 24 disposed in a vehicle 26 that includes a receiver 27 for receiving the signal 20 from the transmitter structure 16 as the vehicle 26 approaches and enters the traffic zone 10. The receiver structure 24 electrically communicates with an intelligent cruise control (ICC) unit 28 of the vehicle 26 that communicates with the engine control unit (ECU) 30 and the brake control unit 32 of the vehicle 26 to automatically control the speed of the vehicle 26 so as to operate at or below the speed requirement of the traffic zone 10. Such speed control can be implemented, for example, in the manner disclosed in U.S. Patent Application Publication No. 20100217494 A1, the content of which is hereby incorporated into this specification by reference.

[0012] Thus, the receiver structure 24 will receive the wireless signal 20 containing data for the speed limit in the traffic zone 10 and the ICC unit 28 will control the ECU 30 and brake unit 32 to correct and slow the vehicle 26 per the adjustable periods programmed into the transmitter structure 16. In addition, if a cellular call is in process while the vehicle 26 is approaching and entering the protected zone 10, the system 14 will place the call on hold and send a notification message (preferably a voice message) to the other party that the call is on hold and will resume when the vehicle 26 leaves the protected zone 10. Emergency calls would be allowed in case of emergencies.

[0013] Placing the call on hold or preventing texting while entering the traffic zone 10 can be implemented by the signal 20 activating a signal broadcasting system 34 in the vehicle 26 that emits a wireless signal 36 received by a sensor 38 in the cellular device 40 such as the driver's cell phone or the vehicle's telematics system. The sensor 38 processes the signal 36 to place the call on hold or prevents texting until the signal 20 is no longer received, due to exiting the traffic zone 10. An example of such a signal broadcasting system 34 and its function is disclosed in U.S. Patent Application Publication No. 20110294465A1, the content of which is hereby incorporated by reference into the present specification. Alterna-

tively, the signal 20 can be received directly by the telematics system 40 that is capable of receiving and placing cellular calls. The telematics system 40 can process the signal 20 to place a cellular call on hold (and can provide notification to the other party) until signal 20 is no longer received. The receiver structure 24 can be part of the telematics system 40.

[0014] The system 14 provides a configurable and adjustable speed limit zone. As noted above, the speed limit in the zone 10 can be varied by time of day and by calendar days, or can be configured as the user desires. Thus, the system 14 can control the speed zone 10 only during days school is in session and/or when children are present.

[0015] Although the system 14 has been described for use in a school traffic zone, it can be appreciated that the system 14 can be used in construction traffic zone, near day care centers, or in any traffic zone that requires the driver to reduce the vehicle's speed.

[0016] Since many vehicles have on-board GPS mapping systems that knows that the vehicle is near a school, the GPS mapping system 42 (as part of the telematics system 40) can be configured to map the school traffic zone. Thus, the on-board GPS mapping system 42 can include the receiver structure 24, or the function thereof, and receive the signal 20 from the transmitter structure 16 at the GPS location of the school, day care center, etc. and initiate the vehicle speed and cell device control as described above.

[0017] The foregoing preferred embodiments have been shown and described for the purposes of illustrating the structural and functional principles of the present invention, as well as illustrating the methods of employing the preferred embodiments and are subject to change without departing from such principles. Therefore, this invention includes all modifications encompassed within the scope of the following claims.

What is claimed is:

- 1. A method of controlling a vehicle in a particular traffic zone, the method comprising:
 - providing transmitter structure associated with the traffic zone, the transmitter structure including a transmitter for transmitting a wireless signal indicative of a speed requirement of the traffic zone,
 - receiving the wireless signal at the vehicle, and
 - based on the wireless signal, automatically controlling a speed of the vehicle to be at or below the speed requirement while the vehicle is in the traffic zone.
- 2. The method of claim 1, wherein the traffic zone includes a speed limit sign, the transmitter structure being provided near the speed limit sign.
- 3. The method of claim 1, wherein the wireless signal is transmitted via cellular communication.
- 4. The method of claim 1, further comprising:
 - controlling a cellular device while in the traffic zone based on receiving the wireless signal.

5. The method of claim 4, wherein the cellular device is controlled to place an active call on hold while the vehicle is in the traffic zone.

6. The method of claim 5, wherein the cellular device is further controlled to send a notification message to the other party indicating that the call is on hold.

7. The method of claim 4, wherein the cellular device is a telematics system of the vehicle.

8. The method of claim 1, wherein the transmitter structure is configurable to set the required speed based on time of day and/or calendar days.

9. The method of claim 1, wherein the step or receiving includes providing receiver structure in the vehicle.

10. The method of claim 1, wherein the vehicle includes a telematics system including a global positioning system (GPS), the method further comprising:

determining a position of the vehicle via the GPS, and if the position of the vehicle is in the traffic zone, receiving the wireless signal.

11. A configurable traffic zone control system comprising: transmitter structure associated with the traffic zone, the transmitter structure including a transmitter for transmitting a wireless signal indicative of a speed requirement of the traffic zone, and

receiver structure in a vehicle for receiving the wireless signal such that based on the wireless signal, speed of the vehicle is automatically controlled to be at or below the speed requirement while the vehicle is in the traffic zone.

12. The system of claim 11, wherein the receiver structure communicates with a cruise control unit, an engine control unit, and a brake control unit of the vehicle for automatically controlling the speed of the vehicle while in the traffic zone.

13. The system of claim 11, wherein the traffic zone includes a speed limit sign, the transmitter structure being provided near the speed limit sign.

14. The system of claim 11, wherein the transmitter is constructed and arranged to transmit the wireless signal via cellular communication.

15. The system of claim 11, further comprising a telematics system in the vehicle capable of placing and receiving cellular calls, the telematics system being constructed and arranged, based on the wireless signal, to place a cellular call on hold while the vehicle is in the traffic zone.

16. The system of claim 16, wherein the telematics system is constructed and arranged to send a notification message to the other party indicating that the cellular call is on hold.

17. The system of claim 15, wherein the telematics system includes the receiver structure.

18. The system of claim 17, wherein the telematics system includes a global positioning system (GPS) constructed and arranged to determine if the vehicle is in the traffic zone.

19. The system of claim 11, wherein the transmitter structure includes a processor for selectively setting the speed requirement based on time of day or calendar days.

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