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A FLEXIBLE ROAD SAFETY-GUARD

ABSTRACT

A flexible road safety-guard, comprising a base (1), an upright column (2), a safety-guard (3) and connectors, wherein the base (1) is positioned at the lower end of the upright column (2) forming an integrated whole therewith, mounting holes are provided in the safety-guard. Each of the upright column (2), the base (1) and the safety-guard (3) is made of Rotational Grade Polyethylene material by slush moulding and has a hollow structure. A male and female die block interface are formed respectively at each end of the safety-guard (3) along its length, that is, one end is an insert interface having smaller outer profile and the other end is a mating interface which engages with the insert interface. The present invention has extremely high flexibility, so that in case of a vehicle crash it has extremely high shock absorption to eliminate the enormous energy generated by the shock. Meanwhile, it can greatly reduce the damage to the vehicle as well as injuries or deaths. Generally it needs no maintenance and is economical and durable.
The claims defining the invention are as follows:

1. A flexible road safety-guard, comprising a base, an upright column, a safety-guard and connectors, wherein the base is positioned at the lower end of the upright column forming an integrated whole therewith, mounting holes are provided in the safety-guard and further wherein:
   each of the upright column, the base and the safety-guard is made of Rotational Grade Polyethylene material by slush moulding and has a hollow structure; and
   male and female interengageable portions are provided at respective longitudinal ends of said safety-guard.

2. A flexible road safety-guard according to claim 1, wherein the cross section of said safety-guard is of “B” shape.

3. A flexible road safety-guard according to claim 1 or 2, wherein said connectors further include a hollow cushion block and connecting bolts, wherein the front end surface of the cushion block is planar, and the back end surface of the cushion block is complimentary to the shape of the cross section of the upright column, so that the upright column and the back end surface of the cushion block can engage with each other.

Dated 25 November, 1999
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Invention Title: A Flexible Road Safety-Guard

The following statement is a full description of this invention, including the best method of performing it known to me/us:-
DESCRIPTION

A FLEXIBLE ROAD SAFETY-GUARD

The present utility model relates to a road safety-guard, particularly, to a flexible road safety-guard having excellent anti-impact properties.

In the prior art, there are many types of road safety-guards, and two factors considered normally are to make disassemble and assemble operations easier and make the safety-guards have better anti-shock properties, as shown in Chinese Utility Model 92102135.6, entitled “A removable erection device for safety-guards”. This utility model is designed to improve the damping effect of the erection device of the conventional vehicle safety-guards and facilitate both assemble and disassemble operations. In this utility model, a hollow cushion block is used instead of the solid cushion block, thus absorbing vibrations; and the members are attached to each other in a removable manner, so as to shorten the assembling time. However, disadvantages still remain in the above-said utility model as all the members of the safety-guard are made of metallic materials having higher strength and hardness or cement, etc.; though the hollow cushion block is used to absorb vibrations, the damping effect is very limited; when subject to an impact from vehicle, the safety-guard will deform and be damaged thereby inevitably, and vice versa, the counteractive impact on the vehicle will also cause serious damages to the vehicle and the injuries or deaths. The damaged road safety-guards need replacement with new members and repairing. Even if the crash is not too serious, the safety-guard will deform certainly, so frequent maintenance is needed.

It is the object of the present invention to substantially overcome or at least ameliorate one or more of the above disadvantages.

Accordingly, the present invention provides a flexible road safety-guard comprising a base, an upright column, a safety-guard and connectors, wherein the base is positioned at the lower end of the upright column forming an integrated whole therewith, and mounting holes are provided in the safety-guard, further wherein:

- each of the upright column, the base and the safety-guard is made of Rotational Grade Polyethylene material by slush moulding and has hollow structure;
- male and a female interengageable portions are provided at respective longitudinal ends of said safety-guard, preferably so that many pieces of safety-guards can be connected end to end to form a safety-guard as long as desired.
The cross section of the safety-guard according to the present utility model may be of "B" shape, so as to improve the strength and toughness of the safety-guard.

In a preferred embodiment the present invention may further include a hollow cushion block and connecting bolts, wherein the front end surface of the cushion block is planar, engaging with the back side of the safety-guard; and the back end surface of the cushion block complimentary to the shape of the cross section of the upright column to facilitate the engagement between these two members. The cushion block may enlarge the usage range of the shape of the upright column; no matter whether the upright column is cylindrical, square or polygonal in shape, all may be used; additionally, the cushion block may also improve the anti-shock properties of the safety-guard.

Applications of preferred embodiments provide the following advantages compared with the prior art:

(1) Extremely high shock absorption and flexibility. Due to the use of Rotational Grade Polyethylene material and the hollow structure, the safety-guard has extremely high flexibility so that in case of vehicle crash, not only the safety-guard but also the upright column will deform as a spring, absorbing shock to the utmost extent, thus eliminating the enormous energy generated by the shock. Especially when the connectors are hollow cushion block, the effect is remarkable. Moreover, the inherent properties of the material make itself so flexible like a sponge that the reactive force to the vehicle is minimized, greatly reducing the damage to the vehicle as well as the injuries or deaths. If the mounting hole on one of the engaging interfaces of the safety-guard are formed into a rectangular shape, the safety-guard will more easily tend to deform elastically, thereby further improving shock absorption.

(2) When the safety-guard is crashed, the damage thereto is very limited due to its flexibility; and if the crash is not too serious, it can recover after the removal of the external force, and does not need renovation.

(3) The safety guard needs low costs and no maintenance, and is also sun- and rain-proof, so the construction and maintenance costs of the road safety-guard can be reduced and the safety-guard is economical and durable.

(4) The safety-guard is available in a large choice of colours, thus being advantageous to improving the environment along the road.

Preferred forms of the present invention will now be described by way of example only with reference to the accompanying drawings, wherein:

Fig. 1 is a perspective view of an embodiment of the present invention;
Fig. 2 is an elevation view of the interface of the safety-guard of the present invention;

Fig. 3 is a top view of the present invention in Fig. 1;

Fig. 4 is a view illustrating the operation condition of an embodiment of the present invention; and

Fig. 5 is a perspective view of another embodiment of the present invention.

Shown in Fig. 1 to Fig. 4 is an embodiment of the flexible road safety-guard according to the present utility model, which comprises a base 1, an upright column 2, a safety-guard 3 and connectors, wherein the base 1 is positioned at the lower end of the upright column 2 forming an integrated whole therewith; the base 1 is embedded in ground in order to secure the upright column 2; mounting holes are provided on the safety-guard; each of the upright column, the base and the safety-guard is slush-moulded of Rotational Grade Polyethylene material and has hollow structure. A male
and a female die block interfaces are provided respectively at each end of
the safety-guard along its length, that is, one end is an insert interface having
smaller outer profile and the other end is a mating interface which engages
with the insert interface, the mounting holes in the insert interface are in the
shape of rectangle, thereby benefiting the engagement; more important is
that the safety-guard is permitted more freely to deform elastically when
subject to an impact. In this manner, when the safety-guard is secured on the
upright column, the interfaces of two pieces of safety-guards can also be
secured together. Many pieces of safety-guards can be connected end to end,
so as to form a safety-guard as long as desired. The cross section of said
safety-guard is of “B” shape, which can help improving the strength and
toughness thereof. Said connectors include hollow cushion block 4 and self-
lock connecting bolts 5 and 6. The front end surface of the cushion block is
plane, which engages with the backside of the safety-guard, and the
connecting bolt 5 connects these two engaging surfaces and secures them
together. The shape of the back end surface of the cushion block corresponds
with the round cross section of the upright column; the connecting bolt 6
penetrates the upright column to secure the back end surface of the cushion
block thereon. Other road facilities, such as reflecting road signs, can also be
mounted on the safety-guard.

The flexible road safety-guard shown in Fig.5 being another
embodiment of the present utility model, comprises a base 1, an upright
column 2, a safety-guard 3 and connectors, which is different from the
connectors of the former embodiment in that said connectors include only
self-lock bolt 5 penetrating the upright column, through which the safety-
guard 3 is mounted directly onto the upright column 2.
The claims defining the invention are as follows:

1. A flexible road safety-guard, comprising a base, an upright column, a safety-guard and connectors, wherein the base is positioned at the lower end of the upright column forming an integrated whole therewith, mounting holes are provided in the safety-guard and further wherein:
   each of the upright column, the base and the safety-guard is made of Rotational Grade Polyethylene material by slush moulding and has a hollow structure; and
   male and female interengageable portions are provided at respective longitudinal ends of said safety-guard.

2. A flexible road safety-guard according to claim 1, wherein the cross section of said safety-guard is of “B” shape.

3. A flexible road safety-guard according to claim 1 or 2, wherein said connectors further include a hollow cushion block and connecting bolts, wherein the front end surface of the cushion block is planar, and the back end surface of the cushion block is complimentary to the shape of the cross section of the upright column, so that the upright column and the back end surface of the cushion block can engage with each other.

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Fig. 2

Fig. 3