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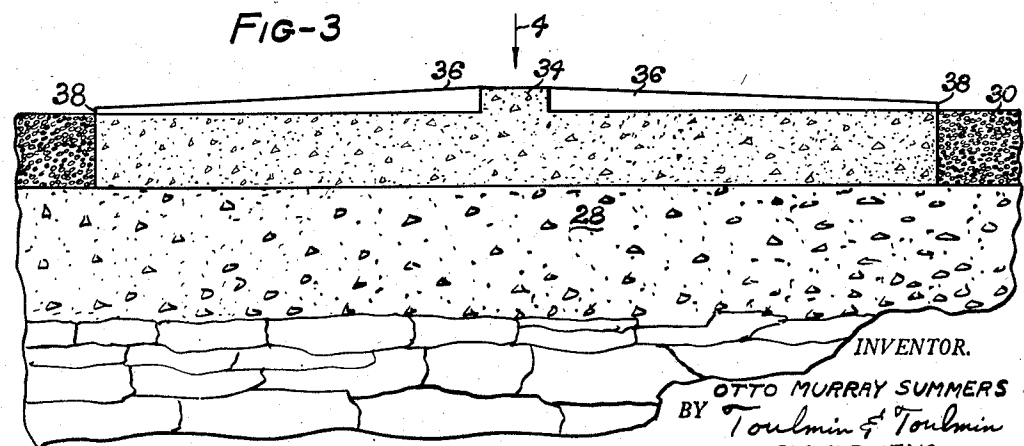
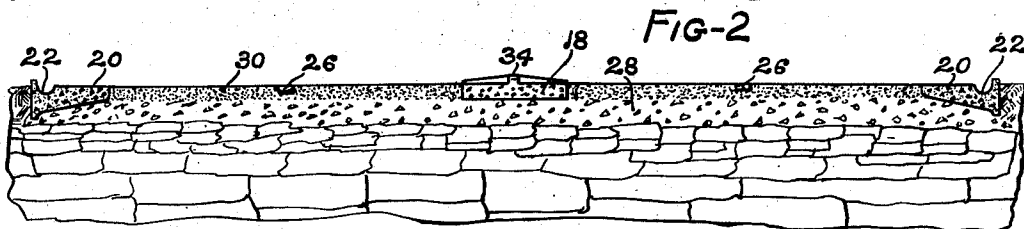
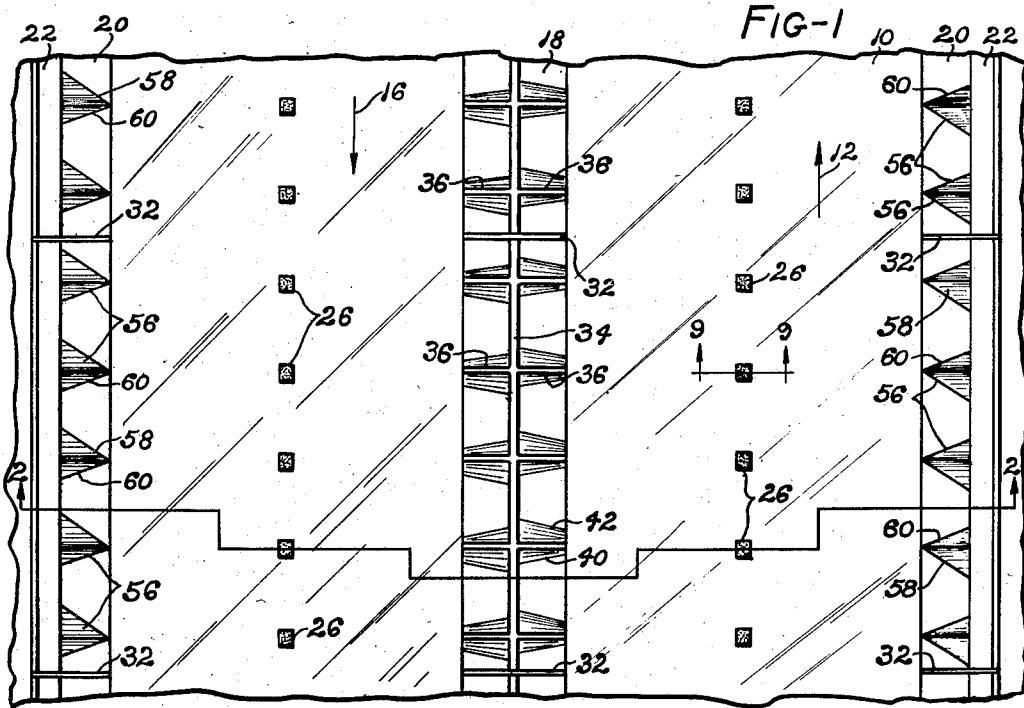
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2,826,128

SIGNALING SECTION AT THE EDGE OF A HIGHWAY LANE

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2 Sheets-Sheet 1



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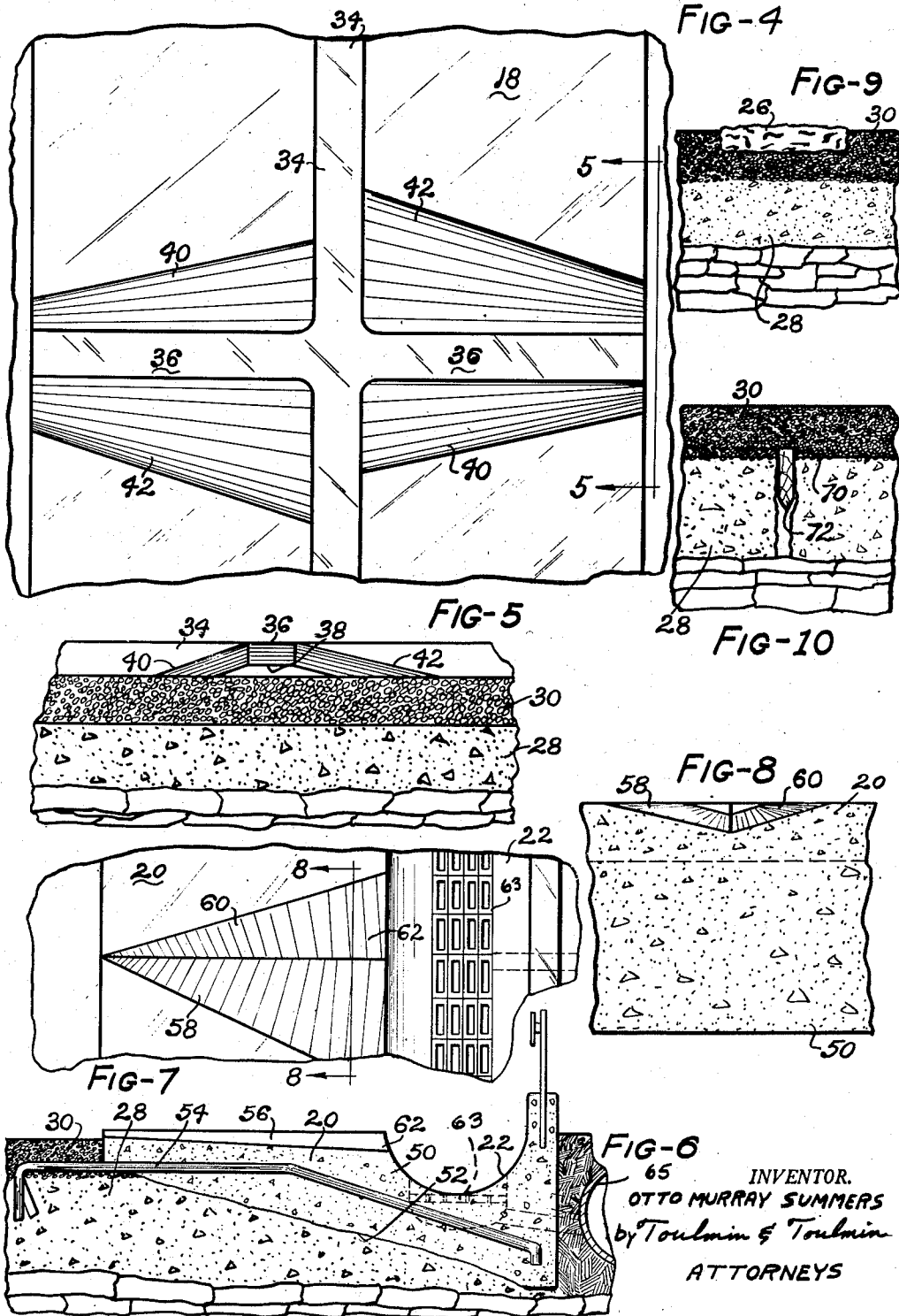
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2 Sheets-Sheet 2



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SIGNALING SECTION AT THE EDGE OF A HIGHWAY LANE

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4 Claims. (Cl. 94—1.5)

This invention relates to highway construction and a method of constructing highways, and to a system for repairing highways. In particular, this invention relates to an improved highway construction and a method of constructing a highway which includes signalling sections for warning drivers of vehicles when they leave the regular highway lanes, but which signalling sections, in distinct contrast to known sections of this nature, can readily be cleaned of snow and ice with conventional equipment.

It is well known that the present-day highway system is obsolete and inadequate for meeting traffic needs. On account of the extremely heavy vehicular travel on the highways, the inadequacies and obsolescence thereof has resulted in economic loss due to traffic accidents and delays.

The present tendency is to construct new highways wider than formerly and also to divide the highways so that the traffic that is moving in respective opposite directions on the highway is actually on different roads with a medial strip therebetween, generally an unpaved area which is seeded and shrubbed.

Such divided highways are safer than the conventional undivided highways but still have definite disadvantages.

For example, considerable space is required for such a highway which utilizes land that might otherwise be productive areas. Further, the medial strips of such highways, while they serve the desirable purpose of providing a divisional area between the oppositely moving lanes of traffic, represent a hazard if a vehicle for any reason leaves the roadway and gets onto the medial strip. Further, the medial strip forms a definite limit on one side of each of the two roadways of a divided highway so that, even in conditions of emergency, it is not possible to drive on the medial strip safely.

A divided highway of the nature referred to above having a seeded and shrubbed medial strip and a conventional gutter arrangement at the side for drainage purposes, or merely tapering off into the usual berm, is lacking in giving any indication to a driver of a car who may, perhaps, be groggy or become sleepy and whose car is drifting laterally over the roadway. In a case of this nature a serious accident could result between the time the car operator realizes his car is in a precarious position and the time he is able to react to correct the condition.

Certain highways have been constructed with a very narrow medial strip employed between the two highways which slants up from each side at about $22\frac{1}{2}^\circ$ to an elevation of about 6 inches with small ridges on the slanted surfaces, the object being to warn a driver when his automobile commences to cross the medial strip. The described arrangement, however, is a hazard and at any speed over 15 miles an hour it is extremely difficult to keep a car in control when crossing a strip of this nature. Also, a strip of this type is inconspicuous and it is quite easy for a wheel to strike the bluntly tapered end and, even at low speed, a severe shock to the car will result with the possibility that the driver will lose control.

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Having the foregoing in mind, it is a primary object of the present invention to provide a highway construction and a method of constructing a highway which will overcome the difficulties referred to above and which will promote safe driving conditions.

A particular object of this invention is to provide a divided type highway in which the side edges of the roadway are so constructed as to warn the driver when his car is too far to one side of the roadway, but to do this without tending to cause the driver to lose control of his car.

A still further object of the present invention is the provision of a divided type highway with a medial strip between the roadway portions thereof of the type that will warn the driver of a car when a wheel rides up on the medial strip but without in any way causing or tending to cause the driver to lose control of his car, whereby under conditions of emergency the car can be safely driven across the medial strip.

Another object of this invention is the provision of an improved arrangement for dividing the lanes in a highway which will discourage indiscriminate changing from lane to lane, but which will in no way prove a hazard when it is necessary or desirable to change lanes.

It is also an object of this invention to provide a highway construction having improved drainage, but wherein the drainage arrangement in no way causes a road hazard.

In connection with highways which have become damaged, either due to vehicular travel or because of the ravages of weather, or both, present-day highway constructions afford little opportunity for bringing the road back into good condition.

Accordingly, it is a further object of the present invention to provide a highway construction and a method of installing such a highway that will enable obsolete or damaged roads to be brought into good condition at an expenditure entailing less time and far less cost than by the present-day methods.

Another object is to provide a highway having raised signalling sections at the side edges of the boundary lanes that will signal drivers when they leave the lanes, and which signals will increase in intensity the farther a car moves into the signalling sections.

A still further object of this invention is the provision of a raised signalling arrangement for a highway which can readily be cleaned of snow and ice with present-day equipment.

These and other objects and advantages of this invention will become more apparent upon reference to the following specification taken in connection with the accompanying drawings, in which:

Figure 1 is a plan view of a highway constructed according to my invention;

Figure 2 is a transverse section of the highway indicated by line 2—2 on Figure 1;

Figure 3 is an enlarged sectional view through the medial strip, according to my invention, and illustrated in Figure 2;

Figure 4 is a plan view of the medial strip looking down on top of Figure 3 as indicated by the arrow 4;

Figure 5 is a sectional view indicated by line 5—5 on Figure 4;

Figure 6 is an enlarged sectional view taken through the drainage gutter illustrated in Figure 2;

Figure 7 is a plan view looking down on top of Figure 6;

Figure 8 is a sectional view indicated by line 8—8 on Figure 7;

Figure 9 is a fragmentary sectional view indicated by line 9—9 on Figure 1; and

Figure 10 is a sectional view showing how an expansion joint or crack in the concrete base portion of the

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highway is provided with a reinforcing member before the black top surface coating is applied.

Referring to the drawings somewhat more in detail, the highway in Figure 1 comprises a right-hand roadway 10 on which traffic is moving in the direction of the arrow 12, and a left-hand roadway on which traffic is moving in the direction of the arrow 16. The roadways are separated by a medial strip 18 constructed according to my invention and which is preferably on the order of about six and one-half feet wide. Each side edge of the highway is provided with a strip 20 similar in construction to the medial strip 18, and which strips 20 also assist in draining the highway. Along the side edges of strips 20 are the gutters 22.

In Figure 1 each roadway comprises two lanes and the lanes are separated by a row of square inset members 26 which are clearly visible, as will be described hereinafter.

Turning to Figure 2, it will be seen that the highway has a concrete base portion 28 which may be newly poured if a highway is being newly constructed, or which may consist of an old highway where the highway is being repaired or converted. The medial strip 18 is either integral with or rests upon base portion 28, preferably resting thereon to permit precasting of medial strip 18 in order to obtain the proper configuration thereof according to the present invention.

In Figure 2 it will also be noted that the side strips 20 and gutter portions 22 are integrally formed, and this portion of the highway may also be advantageously precast and then placed in position on the base portion 28. The gutter portions may be drained, as through a grille 63 into a sewer line 65. The particular manner of draining the gutters, however, is subject to wide variation.

Between the side strips 20 and medial strip 18 base portion 28 is covered with the conventional asphaltic mix known as black top as at 30.

The members 26, as will be seen in Figure 2, are set into black top 30 so as to be substantially flush therewith.

Inasmuch as the medial strip 18 and the side strips 20, 22 will be made of concrete, preferably reinforced concrete, there will be some considerable expansion and contraction thereof on account of changes in the temperature, and these strips are, therefore, advantageously provided with expansion joints 32 which I prefer to have filled with bituminous or asphaltic mix compounded to assume a structure similar to sponge rubber and having a good adherence to the concrete. This mix is applied hot to within about $\frac{5}{8}$ of an inch of the surface of the expansion joint, and the joint is then filled with the conventional soft water sealing compound. Such joints are spaced on the order of about 35 feet apart.

Referring now to Figures 3, 4 and 5, the construction of the medial strip 18 will be more clearly seen. This medial strip is a concrete member generally rectangular and of transverse cross section, about six and one-half feet wide and about six inches thick at the side edges. Extending along the center of the medial strip is a raised portion or rib 34 upstanding about one and one-half inches above the body of the medial strip and extending laterally from which are the portions 36 which taper downwardly toward the side edges of the medial strip to a point about one-half inch above the body of the strip at 38.

As will best be seen in Figures 4 and 5, each portion 36 has an inclined approach side or ramp 40 on one side and an inclined exit side or ramp 42. Approach side 40 is inclined upwardly at an angle of 15° to the horizontal and the exit side 42 is inclined downwardly at an angle of 10° to the horizontal. The approach and exit sides 40 and 42 on the opposite sides of portions 36 taper from a predetermined width on the road side of the medial strip outwardly toward a greater width adjacent the central raised portion 34 of the medial strip.

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Wider or narrower medial strips can be employed, but I prefer at all times to maintain a 30 inch wide ramp section at the side of the innermost traffic lane on each side of the highway.

As will be seen in Figures 1, 3 and 4, the described arrangement of the raised portion 36, with its inclined approach and exit sides or ramps, is duplicated on the opposite sides of the center line of the medial strip with the approach side in each case being toward the oncoming traffic.

The described arrangement of the medial strip operates to warn a driver of a car who drives on the medial strip by producing a rhythmical bumping of the wheels that are on the medial strip, but this is done in such a manner that if a car is within or close to the legal speed limit there is no tendency for the car to get out of control. In fact, the driver can drive his car completely across the strip without any danger of losing control. The indications which the medial strip gives to the driver that his car is not on the proper roadway are very sharp and pronounced and will immediately awaken or alert a sleepy or groggy driver so that he can redirect his car in sufficient time to avoid any mishap. This is particularly true where the medial strip is six and one-half feet wide, which is sufficient width within which to commence restoring a car to the proper lane of traffic in any ordinary emergency.

Strips 20 and gutters 22 at the sides of the highway are illustrated in Figures 6, 7 and 8. With particular reference to Figure 7, it will be observed that the concrete member 50, making up the strips 20 and 22, is preferably provided with a tapered under-surface 52 resting on a similarly tapered surface at the side edges of base portion 28. Reinforcing bars 54 provide means for anchoring the members 50 to the base portion 28.

That portion of members 50 forming strips 20, which strips extend along the side edges of black top 30, is provided with recesses 56 tapering downwardly and outwardly from the edge of black top 30. These recesses have approach sides or ramps 58 tapering downwardly at an angle of 10° and exit sides or ramps 60 tapering upwardly at an angle of 15° . The strips 20 are thus signal strips answering the same purpose as the medial strip 18, except that the bumping of the car wheels is brought about by the recesses 56 rather than by the raised areas described in connection with the medial strip. The recesses 56 of members 50 are connected as by passages 62 with the gutters 22, and thus the recesses 56 have the dual function of signalling drivers and also providing for infinite drainage of the highway and thus preventing water from accumulating on the highway. It will be understood, of course, that the highway preferably is somewhat crowned toward the center so that water falling thereon will tend to drain toward the side edges.

In Figure 9 there is illustrated one of the inset members 27 which form the lane markers between individual lanes on each side of the highway. These lane markers take the form of broken stone or precast concrete blocks set into the black top 30 substantially flush therewith but of sufficient roughness and protruding far enough from the black top 30 to bump the wheels of a car if it is driven over the lane, thereby discouraging indiscriminate changing of lanes and giving a signal to a driver whose car drifts laterally from a lane, but at the same time providing no hazard to a vehicle that is deliberately changing lanes.

The concrete base 28 of the highway will, of course, be provided with expansion joints along its length if a new installation, and if the portion 28 is an old highway it will probably have cracks therein which can serve as expansion joints. In either case, before applying the black top 30 to the base portion 28, I prefer to cover the expansion joints with a strip of expanded metal 70 about six inches wide and held in place by wooden pegs 72 while the black top is being applied thereto.

From the foregoing detailed description of my invention it will be appreciated that what is provided thereby is a highway that will automatically and safely warn a driver who is at fault, either through carelessness or who has become inalert through lack of sleep or exhaustion or the like, when his car is proceeding improperly, as, for example, when it is drifting from one lane to another, or from a lane to the medial strip, or to the side edge of the highway. The driver is not only given an unmistakable signal but the signal increases in intensity the farther the car moves into the medial or side strips. At the same time, however, there is no tendency whatsoever for the car to be deflected or for the driver to lose control of his car. Further, the construction of the medial strip is such that, if necessary, in an emergency a car can be driven thereacross at substantially any angle at no loss of control.

It will also be appreciated, from the foregoing description, that a highway according to this invention could be entirely new construction or could be built upon an old highway with a substantially waterproof and solid roadbed being provided by using the old highway as the base portion, or a part of the base portion, of a highway constructed according to my invention.

Further, it will be noted that I am enabled to take advantage of factory methods of production for the medial strip and side strips if desired by precasting these members in a shop and conveying them to their point of use. However, if preferred, the medial strip and side strips could be cast in situ, either on the base portion 28 or integrally therewith, or tied thereto as by reinforcing bars such as those illustrated at 54 in Figure 6 merely by employing suitable forms. In either case the highway, when completed, will embody the claimed advantages.

A feature of my invention that obtains from forming the medial and side strips of concrete, and the main portion of the highway surface of a black top mix, is that the medial strip and side strips are readily visible at all times, thereby forming a visual guide for drivers.

Because of the basic difference in color between the black top mix and the medial and side strips it becomes a simple matter to paint the medial strip and side strips by an automatic spraying machine or the like and maintain them in a condition of sharp visible contrast with the black top surface 30. I do not rule out the construction of the center part of the highway from concrete, however.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions, and, accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. A signaling section at the edge of a highway lane comprising a body member with the upper face thereof at the level of the highway, a longitudinally extending central rib on the upper face of said body member, a plurality of spaced lateral ribs on both sides of said central rib, each said lateral rib sloping downwardly from the top of said central rib to the outer edge of said body member, and inclined surfaces on opposite sides of said

lateral ribs, said surfaces leading from the top edges of said lateral ribs and thus being longer adjacent the central rib than at the outer edges of the body member.

2. A signaling section at the edge of a highway lane comprising a body member with the upper face thereof at the level of the highway, a longitudinally extending central rib on the upper face of said body member, a plurality of spaced lateral ribs on opposite sides of said central rib, each of said lateral ribs sloping downwardly from the top of said central rib to the outer edges of said body member, and inclined surfaces on opposite sides of said lateral ribs, said surfaces leading from the top edges of said lateral ribs downwardly to the upper face of said body member and thus being longer adjacent the central rib than at the outer side edges of the body member, said surface of each lateral rib facing the direction from which traffic approaches being inclined upwardly on the order of 15° and the surface on the opposite side of said lateral rib being inclined downwardly on the order of 10°, the maximum height of said central and lateral ribs being on the order of about 1½ inches and thus insufficient to create a road hazard.

3. A signaling section at the edge of a highway lane comprising a body member with the upper face thereof at the level of the highway, a longitudinally extending central rib on the upper face of said body member, a plurality of spaced lateral ribs on both sides of said central rib, each said lateral rib sloping downwardly from the top of said central rib to the outer edges of said body member and having a slope on the order of 1:36, each of said lateral ribs having inclined surfaces leading to the top edges of said ribs from opposite sides thereof.

4. A signaling section at the edge of a highway lane comprising a body member with the upper face thereof at the level of the highway, a central rib projecting above said body, spaced pairs of inclined surfaces whose planes intersect on opposite sides of said central rib with the line of intersection extending perpendicularly of said central rib, the upper edges of said inclined surfaces extending downwardly from the top of said central rib to the sides of said body member, said inclined surfaces on the corresponding sides of said lines of intersection being inclined from the horizontal on the order of 15° and the inclined surfaces on the other corresponding sides of said lines of said intersection being inclined from the horizontal on the order of 10°.

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