



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.02.2010 Bulletin 2010/07

(51) Int Cl.:
E01F 5/00 (2006.01) **E01C 7/18** (2006.01)

(21) Application number: **09009821.1**

(22) Date of filing: **29.07.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

(71) Applicant: **AS Amhold**
10615 Tallinn (EE)

(72) Inventor: **Mägi, Arvu**
13918 Tallinn (EE)

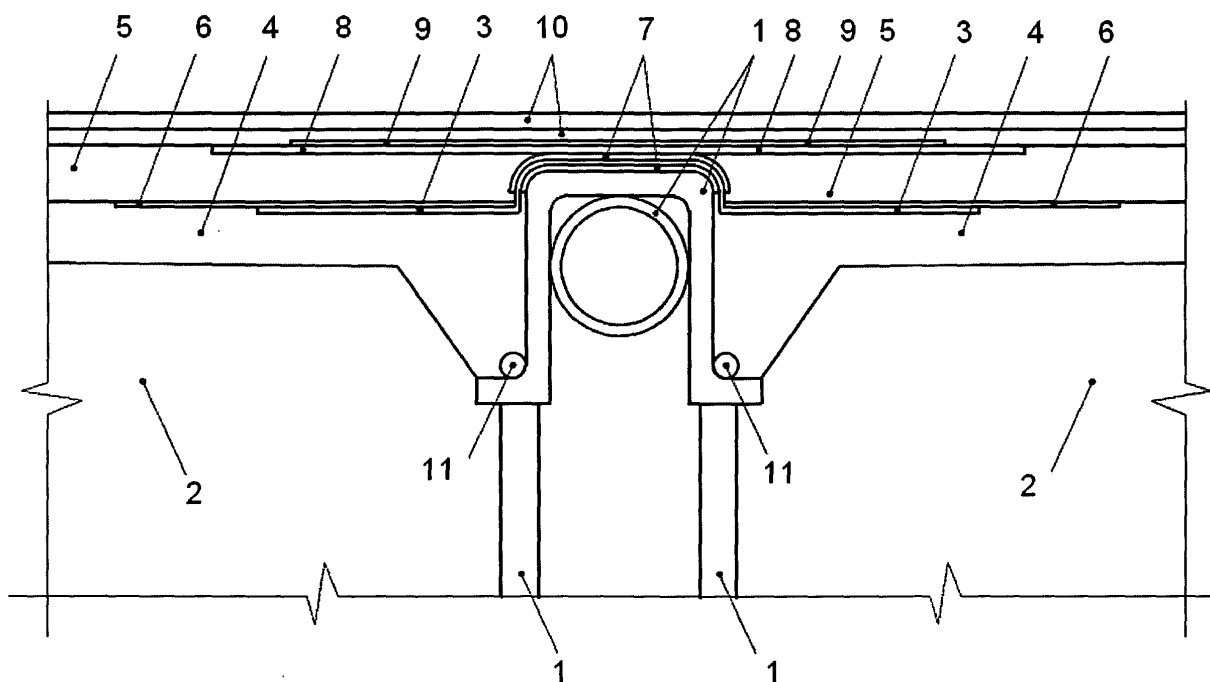
(74) Representative: **Koitel, Raivo**
Koitel Patent & Trademark Agency
Tartu mnt. 65
10115 Tallinn (EE)

(30) Priority: **31.07.2008 EE 200800078 U**

(54) **Road surface construction**

(57) The presented road surface construction is designed for motorways in order to avoid cracking and crumbling of the asphalt surface. The road surface construction includes a rigid base, an elastic base, a compensator for vertical and horizontal deformations of the

rigid base, a drain layer, a bed for the surface, a net for receiving and diffusing shear stress, elastic deformable adhesive layers, a mounting layer for the surface, a net for receiving and diffusing shear stress from the surface, a two-layer surface, and drains.



Description

Technical field

[0001] The invention belongs under the field of road construction and handles a road surface construction where a rigid infrasystem protection construction, e.g., a sewer header, is installed under the road surface.

Prior art

[0002] Carriageways with an asphalt concrete surface crack and crumble in transition points from the elastic basis to rigid basis due to a high difference in deformations. In order to reduce cracking of road surface, several solutions have been proposed.

[0003] In a known solution "Roadway construction and method therefor" (US 3,909,143, Walton W. Chusman, published on 30 September 1975), a containerized roadbed is used to increase the durability of roadway. Thereby, the enveloping walls are made of a suitable elastomeric material and the roadbed contains suitable filler material, such as dirt, sand, and rock. The containerized roadbed serves for removing moisture through the filler material. On this roadbed, a suitable road surface such as concrete is laid.

[0004] In the US patent (US 5,445,473, Chaverot etc., published on 29 August 1995), a crack anti-rise system inbetween the structural layer and the road carpet of a carriageway has been presented. The system comprises a geotextile layer impregnated with a first asphalt binder, and further comprises a layer of roadstones coated with a second asphalt binder adjacent to the geotextile layer. The double-layer construction of the rising crack prevention system is efficient in preventing or at least greatly slowing down the spread of cracks on the road.

[0005] Technically, the closest solution to the invention is the one presented in the US patent (US 4,909,662 Robert L. Baker, published on 20 March 1990) where the elastic bed is covered with a compacted dry concrete mix layer and then with a moisture impervious material. Then, a surface of wet concrete mix is applied atop the moisture impervious material and air passages are formed through the road surface as to be situated transversely thereof.

[0006] In these known solutions, there is no rigid bed under the road surface such as a protection construction for utility service lines or a bridge where the rigid and the elastic beds have different deformations.

Description of the invention

[0007] The purpose of the present invention is to develop a construction for road surface with a transition from the elastic base to the rigid base. For that purpose, a road surface construction is presented where the surface covers a rigid base, and the construction has been designed by taking into account the transition from the elastic base to the rigid base. The construction includes

a rigid and an elastic base, a compensator for vertical and horizontal deformations of the rigid base, a drain layer, a bed for the surface, a net for receiving and diffusing shear stress, elastic deformable adhesive layers, a mounting layer for the surface, a net for receiving and diffusing shear stress from the surface, a two-layer top surface, and drains.

List of figures

[0008] On the figure, the construction of the road surface has been schematically presented.

Embodiment of the invention

[0009] The invention relates to a construction for road surface where a rigid basis such as a bridge, a protection construction for utility service lines, or a construction resisting to reinforced concrete loads of sewer drains and wells or cables. In the example, the rigid basis is a sewer header under the road surface ($D = 120 \text{ mm}$).

[0010] The road surface construction comprises a rigid base 1, an elastic base 2, a compensator for vertical and horizontal deformations of the rigid base 3, a drain layer 4, a bed for the surface 5, a net for receiving and diffusing shear stress 6, elastic deformable adhesive layers 7, a mounting layer for the surface 8, a net for receiving and diffusing shear stress from the surface 9, a two-layer top surface 10, and drains 11.

[0011] The draining layer 4 is a draining compacted sand layer, the bed 5 for the surface is compacted crushed stone, the two-layer surface 10 is made of asphalt concrete.

[0012] The road surface construction is made as follows: on the sides of the protection construction on the sewer header situated under the road surface or the so-called rigid base 1, an elastic base 2 is planned and compacted. On the footing of the rigid base, a drain pipework 11 is built. Adjacent to the rigid base, the road surface 10, and under the road surface bed 5, the layer 4 made of draining compacted soil is built. On the rigid base 1, the compensator 3 of glass fibre geotextile receiving the vertical and horizontal deformations of the rigid base is installed. First, the compensator 3 is installed to one side of the rigid base and then to the other side. The ends of the compensator on the rigid base are not glued in the beginning and a sufficient reserve for overlay is left. After the compensator has been installed on the compacted draining layer 4, the nets 6 receiving and diffusing shear stress from the bed 5 of the surface are placed. Then, the base layer of the surface is installed and compacted, and the loose ends of the compensator are glued to the rigid base with a sufficient overlay to each other. Then, the mounting layer 8 is installed and compacted and the net 9 for receiving and diffusing shear stress from the surface is placed onto it; finally, the double-layer elastic surface 10 is installed and compacted.

[0013] In case of such a road surface construction, the

vertical and horizontal deformations in transition of the elastic base to the rigid base are ensured without breaking of the surface construction. Additionally, no ground-water reservoir is formed behind the rigid base.

5

Claims

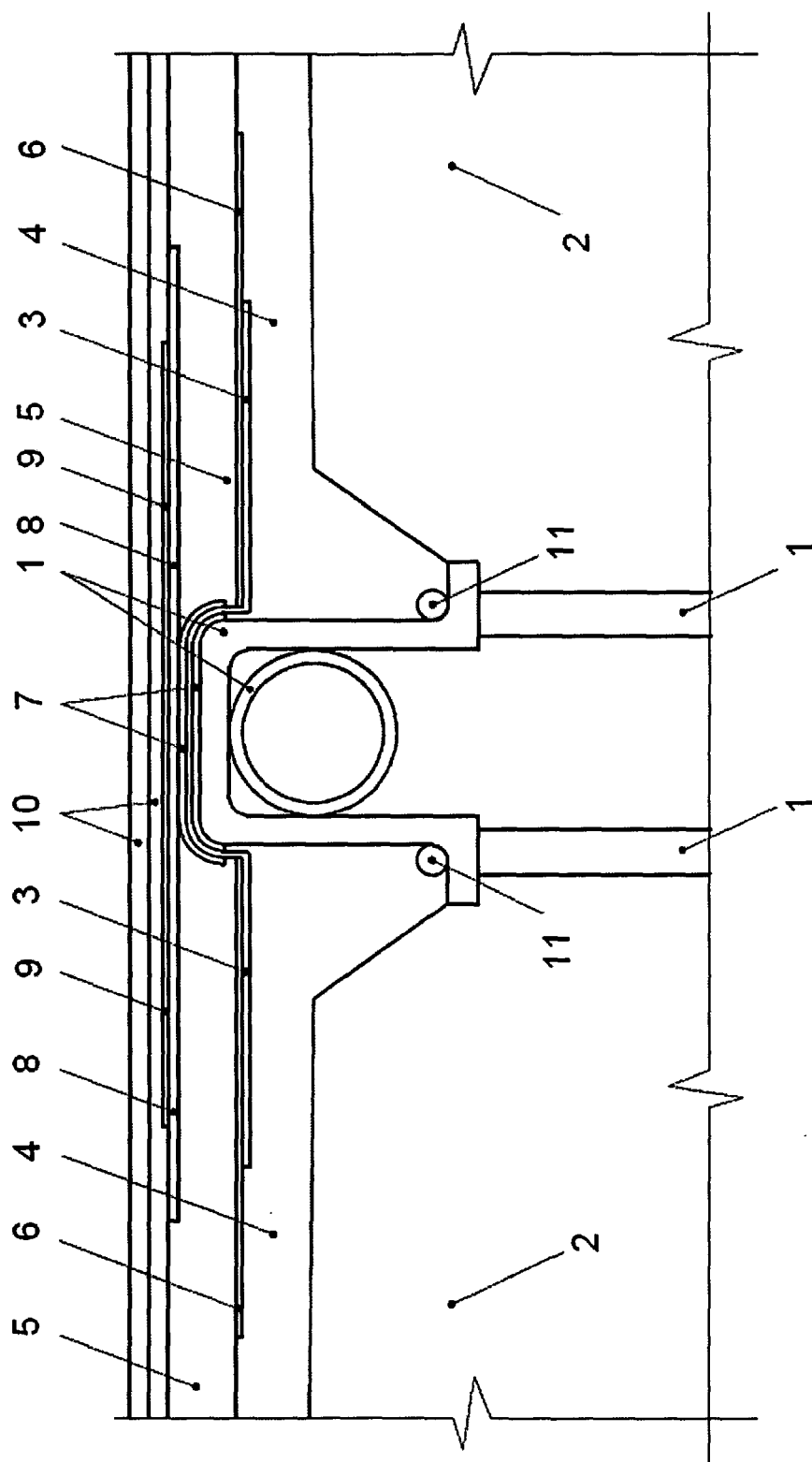
1. A road surface construction comprising an elastic base (2), a draining compacted layer (4), elastically deforming adhesive layers (7), a road surface (10), and drains (11) **characterized in that** by containing a rigid base (1), a compensator (3) for vertical and horizontal deformations of the rigid base, a bed (5) for the surface, a net (6) for receiving and diffusing shear stress of the surface bed, a mounting layer (8) for the surface, and a net (9) for receiving and diffusing shear stress of the surface. 10 15
2. A road surface construction according to claim 1 **characterized in that** by having a protection construction of a service medium or a bridge as a rigid base. 20
3. A road surface construction according to claim 1 **characterized in that** by having a compacted sand layer as the drain layer, and compacted crushed stone as the bed (5) for the surface. 25
4. A road surface construction according to claim 1 **characterized in that** by a compensator (3) made of glass fibre geotextile for receiving vertical and horizontal deformations. 30
5. A road surface construction according to claim 1 **characterized in that** by the two-layer road surface (10) made of asphalt concrete. 35

40

45

50

55



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 3909143 A, Walton W. Chusman **[0003]**
- US 5445473 A, Chaverot **[0004]**
- US 4909662 A, Robert L. Baker **[0005]**