Construction system especially for bus stops

Constructional system, particularly for building stopping places, wherein the system consists of roadway panels 1 to 8 designed for carrying bulk passenger traffic means standing in the stopping place, which panels are set together to form a compact surface arranged on the subgrade layer of the roadway, the panels being formed as wedge-shaped lead-in panel sections comprising the first panel 1, one or more intermediate panels 2 and a terminating panel 3 and/or roadway filler panels 4 or as lead-out panels 5 to 7.

Fig.1
The present invention relates a constructional system intended particularly for building stopping places, especially in urban areas.

State of the art

The stopping places for the trackless bulk passenger traffic, especially in urban areas, are different from the adjacent roadway from the structural point of view. When driving away and stopping, passenger vehicles (buses, trolley buses) cause the structure of the roadway to be stressed by horizontal, tangential forces in addition to the vertical, radial ones. This leads to increased demands on the structure of the roadway. In addition to the vertical, radial ones. This leads to increased demands on the structure of the roadway.

Nowadays, the stopping places, which are adjacent to the urban roadways, may have the following basic variants:

1. with the same composition as the adjacent roadway,
2. with surfacing composed of modified asphalts having a high modulus of rigidity, alternatively in combination with reinforced structure of subgrade layers
3. with cement concrete surfacing, particularly with cast-in-place concrete surfacing
4. with tiled surfacing.

Ad 1. If the roadway leading through a stopping place has the same composition as the adjacent roadway has, it will have very low durability and will have to be frequently repaired because the common structure is not capable to transfer increased tangential loads in a sufficient extent.

Ad 2.

Stopping places provided with the asphalt surfacing having an increased modulus of rigidity are more durable in comparison with common structures. Notwithstanding that, their durability is not sufficient when they are subject to increased traffic loads.

Ad 3.

In order to achieve optimum functional characteristics of concrete surfacing, the wearing course must be laid by a road paver. However, the haulage of a paver to be used for building a stopping place is too expensive and, furthermore, such machines are not usually available in the urban areas. Laying the concrete surfacing using manual techniques is very demanding in terms of the technological expertise of the contractor and requires specialty equipment. Such equipment is not commonly used in urban areas, either. Therefore, the concrete surfacing of public stopping places exhibits neither high quality nor sufficient durability when having been laid manually.

Ad 4.

Tiled surfacing of public stopping places is considerably noisy and hence not quite suitable for the application in urban areas. Furthermore, the application of a tiled surfacing in a stopping place implies increased demands on the subgrade layers of the roadway that have to prevent distortions (sagging) of the tiled surfacing due to vertical forces.

If the stopping place is situated in a bay, an additional problem occurs consisting in that the compaction of asphalt or concrete surface layers is quite difficult because it is nearly impossible to employ classical and sufficiently performing compacting means (road rollers).

The aim of the present invention is to provide a constructional system that would enable to produce high quality wearing surfaces of stopping places and that would facilitate the corresponding building and dismantling procedures or, if need be, the modifications, such as lengthening or shortening.

Disclosure of the invention

The above drawbacks are largely eliminated by the universal constructional system, particularly for building stopping places, according to the invention, wherein the system consists of roadway panels designed for carrying bulk passenger traffic means standing in the stopping place, which panels are set together to form a compact surface arranged on the subgrade layer of the roadway. The constructional system according to the invention can be used as a modular system consisting of steel-concrete or prestressed prefabricated elements that form the surfacing of the roadway leading through a stopping place, including wedge-shaped lead-in sections when the stopping place is situated in a bay, or including safeguarding refuges when the stopping place is situated within a traffic lane. The prefabricated surfacing is designed to be laid on the subgrade layers of the roadway that were built up in a common way.

In a preferred embodiment, the panels are formed as wedge-shaped lead-in panel sections comprising the first panel, one or more intermediate panels and a terminating panel and/or roadway filler panels.

In another preferred embodiment, the panels are formed as lead-out panels.

In a further preferred embodiment, the individual panels of the system are separably interlocked by means of locking elements.

In a further preferred embodiment, the panels may be provided with integrated kerbs or openings for draining systems (gulleys) or drain inlets.
[0015] In a still further preferred embodiment, the panels comprise refuge panels and terminating panels with draining ducts integrated therein.

Overview of the figures

[0016] The invention will be further explained by means of the accompanying drawing wherein Fig. 1 shows a schematic representation of a stopping place situated in a roadway bay and built up by means of the constructional system according to the invention and Fig. 2 shows a schematic representation of a stopping place situated within a through traffic lane provided with a safeguarding refuge.

Preferred embodiment of the invention

[0017] As seen in Fig. 1, the stopping place is built up of several types of prefabricated steel-concrete or prestressed concrete panels. Along the turn-out section, i.e. within the wedge-shaped lead-in area, the system comprises the first panel 1, one or more intermediate panels 2 and the terminating panel 3 of the wedge shaped lead-in section. In the service area of the stopping place extending along the entrance edge 0, there are several panels 4 and the roadway is terminated by the merging section, i.e. by the wedge-shaped lead-in area comprising the panels 5, 6, 7 that are arranged similarly to those making up the wedge-shaped lead-in area.

[0018] Fig. 2 shows an exemplary representation of a stopping place situated within a through traffic lane and provided with physical separating means known as so-called plug. Prestressed concrete or steel-concrete panels 4 are placed between the entrance edge 0 and the safeguarding refuge. The refuge comprises the terminating panels 9 that rest upon the roadway panel 8 and longitudinally enclose the elevated intermediate refuge panels 10.

[0019] The roadway leading through the stopping places illustrated in Figs. 1 and 2 is composed of the roadway panels 1 to 8 constituting the roadway surfacing and resting on an appropriate subgrade, e.g. on a gravel-sand one, arranged with the inclination of 2.5%. Dewatering of the course is resolved in a usual way, dewatering of the roadway being resolved either outside the stopping place or by means of the draining openings (gulleys) made in the prefabricated panels.

[0020] The first step of the construction of the stopping place includes preparing the ground bed provided, if need be, with the draining elements and laying the subgrade layer. Afterwards, the kerbs of a known type are placed and the roadway panels described above are laid onto the subgrade layer, or - if the panels are preferably provided with kerb locks, the roadway panels are placed at first and then the kerbs are set therein. The roadway panels may also incorporate the kerbs so that the railway panel and the corresponding kerb form a single element (monolith).

[0021] As illustrated in Fig. 2, the prefabricated elements making up the refuge, i.e. the terminating panels 9 and the refuge panels 10, rest upon the roadway panels 4 and 8, being anchored thereon e.g. by means of steel spikes or by means of the locks integrated in the roadway panels.

[0022] The mating faces of the panels may be joined by means of locks, spikes, anchoring elements or other fasteners known in the art. The joints between the panels are sealed with sealing strips, sealing compounds or other sealing means known in the art.

[0023] In case that modifications are necessary, such as an extension of the stopping place, a certain number of the panels may be taken apart, a part of the adjacent roadway can be removed, afterwards the subgrade layer may be prepared and finally additional panels may be placed. In case that a damage to one of the panels occurs, such panel may be easily removed and replaced with a new one. The panels may be provided with an appropriate colour or paint in advance. Alternatively, the panel may be provided with signalling signs.

Claims

1. Constructional system, particularly for building stopping places, characterized in that the system consists of roadway panels (1 to 8) designed for carrying bulk passenger traffic means standing in the stopping place, which panels are set together to form a compact surface arranged on the subgrade layer of the roadway.

2. Constructional system according to claim 1, characterized in that the panels are formed as wedge-shaped lead-in panel sections comprising the first panel (1), one or more intermediate panels (2) and a terminating panel (3) and/or roadway filler panels (4).

3. Constructional system according to claim 1 or 2, characterized in that the panels are formed as lead-out panels (5 to 7).

4. Constructional system according to any of the preceding claims, characterized in that the individual panels of the system are separably interlocked by means of locking elements.

5. Constructional system according to any of the claims 1 to 4, characterized in that the panels (1 to 8) comprise refuge panels (10) and terminating panels (9), the panels (9, 10) incorporating draining ducts.
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The present search report has been drawn up for all claims

Place of search: Munich
Date of completion of the search: 3 February 2010
Examiner: Flores Hokkanen, P

CATEGORY OF CITED DOCUMENTS
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 00 9647

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