

A covered walkway and a method for semi-precasting the same

5 Technical Field

The present invention relates to a building element and a method for fabricating the same. In particular, it relates to a covered walkway, especially suitable for those arranged at outdoor areas such as residential areas or parks, and a method for building
10 the same.

Background

At outdoor areas like residential areas or parks, generally there are only simple
15 ground pedestrian roads. Therefore, in hot summer or rainy days pedestrians have to suffer sun burns or rain showers. In addition, building pedestrian roads has to occupy corresponding greening areas, thus causing a certain influence on people's living environment. For building a covered walkway, the conventional method comprises casting in-situ all bases, pillars, beams and covers of concrete structures at the
20 construction site. The procedure of the conventional method for building a covered walkway is tedious and has to take a long time.

Summary of the Invention

25 In view of the defects in the prior arts, this invention provides a covered walkway that is convenient to construct, fast to install and can increase the greening area. It also provides a method for semi-precasting the covered walkway.

The present invention adopts a technical solution as follows: a covered walkway,
30 comprising a base, a road surface above said base, pillars fixedly connected to said

base at two sides thereof respectively, a bearing beam bridging over the tops of the pillars at both sides of the base, and a cover secured on at said bearing beam.

Two pillars at both sides of the base together with the bearing beam bridging
5 over the tops of said two pillars form a one-piece precast concrete supporting frame unit, and said cover comprises a plurality of precast base slab units positioned on the supporting frame unit, wherein the bottoms of said plurality of supporting frame units uniformly arranged are connected with each other through the base of cast-in-situ concrete, and the tops of said plurality of supporting frame units uniformly arranged
10 and the plurality of precast base slab units positioned on the supporting frame unit are connected with each other through a cast-in-situ concrete top layer over the precast base slab units.

The cast-in-situ concrete top layer is provided with an upstanding beam in a
15 position corresponding to pillar at each of the left and right sides thereof.

An enclosure plate extending upwardly is arranged at the left and right sides of the cast-in-situ base slab unit, and said upstanding beam is positioned at the inner side surface of the enclosure plate and cast with said cast-in-situ concrete top layer into
20 one piece.

A supporting frame connecting plate extending downwardly is further arranged at the left and right sides of said precast base slab unit.

25 Two precast base slab units are provided between two adjacent supporting units, and starter bars are provided in advance at the joint face of two adjacent precast base slab units and incorporated with said cast-in-situ concrete top layer.

Connecting bars that are exposed and arranged uniformly are provided upwardly
30 from the top of the bearing beam, and incorporated with said cast-in-situ concrete top

layer.

At the top of the two ends of the walkway along the length direction thereof is further provided with a cast-in-situ cantilever plate.

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The present invention further provides a method for semi-precasting a covered walkway, wherein supporting frame units and precast base slab units of standard sizes are precast in bulk at factories, and the method comprises the following steps:

Step A. hoisting a precast supporting frame unit to the construction site,
10 connecting it with a cast-in-situ concrete base, and refilling the jointing region of said base and the supporting frame unit with concrete;

Step B. placing a precast base slab support between two adjacent supporting frame units;

Step C. forming a cast-in-situ concrete top layer by casting in-situ concrete above
15 said precast base slab unit, such that said supporting frame unit is incorporated with the precast base slab unit;

In said step B, two precast base slab units are placed between adjacent supporting frame units, and starter bars at the jointing region of two adjacent precast
20 base slab units are spliced.

The method further comprises the following step: forming a cantilever plate by casting in-situ concrete at the top of both ends of said walkway along the length direction thereof.

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As compared with the prior arts, the covered walkway according to the present invention and the method for building the same have the following advantages:

(1) The novel covered walkway is provided with a plurality of top covers
30 connected to each other, which may form a large greening area, thus increasing

regional greening areas significantly and providing residents with a comfortable living environment;

(2) A covered traffic network can be formed among the buildings within a residential area, such that pedestrians are no longer suffer sun burns and rain showers,
5 which is very convenient to the residents;

(3) Traffic pressure can be effectively relieved, providing more living space; and

(4) The covered walkway can be built conveniently and mounted in a short time, such that the construction time is greatly shortened and the influence on residents is significantly reduced.

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Brief Description of the Drawings

Fig. 1 shows the cross section of the covered walkway of the present invention along the direction perpendicular to the extent of the walkway;

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Fig. 2 is a three-dimensional view of a supporting frame unit;

Fig. 3 shows the cross section of the covered walkway of the present invention along the direction parallel to the extent of the walkway;

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Fig. 4 is a three-dimensional view of a precast base slab unit;

Fig. 5 schematically shows the connecting structure between the supporting frame unit and the precast base slab unit;

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Fig. 6 schematically shows the connecting structure of two precast base slab units between two supporting frame units.

Specific Embodiments of the Invention

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In the following the embodiments of the present invention will be explained in detail with reference to the attached drawings.

As shown in Fig. 1 and Fig. 3, the covered walkway according to the present invention comprises: a base 1, a road surface above said base 1 (not shown in the drawings), two pillars 2 fixedly connected to said base 1 at two sides thereof respectively, a bearing beam 3 fixedly connected to the pillars 2 at the tops thereof, and a cover 5 secured on said bearing beam 3.

The present invention is featured as follows: said pillar 2 and said bearing beam 3 are both precast concrete structural pieces; the pillars 2 at the left and right sides of the road surface respectively are connected with each other through the bearing beam 3 at the tops thereof, so as to form a one-piece precast supporting frame unit 10 with a shape similar to “[]” as shown in Fig. 2; and a plurality of supporting frame units 10 are arranged along the extending direction of the road surface. Said base 1 is of a cast-in-situ concrete structure, and is securely cast with the bottoms of said pillars 2 at the construction site. The supporting frame unit 10 together with the base 1 forms a bearing main body structure. Said cover 5 is a semi-precast structure, mainly comprising a precast base slab unit 51 and a cast-in-situ concrete top layer 52 that is incorporated with the precast base slab unit 51.

As shown in Fig. 3, two precast base slab units 51 are mounted between two adjacent supporting frame units 10. As shown in Fig. 4, an enclosure plate 54 extending upwardly and a supporting frame connecting plate 55 extending downwardly are provided at the left and right sides of the cast-in-situ base slab unit 51, wherein said supporting frame connecting plate 55 retracts inwardly at the end thereof connecting with the supporting frame unit 10, thus forming a gap 56 that precisely matches with the connecting end of the supporting frame unit 10 in a manner of form-fitting. The end of said precast base slab unit 51 with the gap 56 rests against the bearing beam 3 of the supporting frame unit 10, and the other end thereof is attached

to another precast base slab unit 51. When the walkway is formed into a straight line, said precast base slab unit 51 is of a square shape. When the walkway is formed into a curve line, said precast base slab unit 51 is formed by assembling several fan-shaped structures, in order to be in line with the curvature of the walkway.

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As shown in Fig. 1, said cast-in-situ concrete top layer 52 is cast on the top of the precast base slab unit 51, so that it connects all precast base slab units 51 together. Moreover, at each of the left and right sides, in a position corresponding to the pillar 2, an upstanding beam 53 in parallel with the centerline of the walkway is cast, in order to guarantee the firmness of the whole cover 5. Said upstanding beam 53 is cast on the inner side surface of the enclosure plate 54, and the area between the left and right upstanding beams 53 may form a large greening area.

As shown in Figs. 5 and 6, exposed starter bars 61 are provided in advance at the jointing face of two adjacent precast base slab units 51. The starter bars 61 of two precast base slab units 51 are spliced and connected with reinforcing bars 63 of the cast-in-situ concrete top layer 52; after that, concrete is cast in-situ at the top of the precast base slab unit 51 and in the jointing gap between two adjacent precast base slab units 51 to form the cast-in-situ top layer 52, such that the precast base slab unit 51 and the cast-in-situ concrete top layer 52 are incorporated together. Further, exposed connecting bars 62 are uniformly buried in advance at the top of said bearing beam 3 along the length direction thereof. These connecting bars 62 are incorporated with said cast-in-situ concrete top layer 52. As such, the cast-in-situ concrete top layer 52 and the supporting frame unit 10 are firmly jointed together.

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In addition, a cast-in-situ area is provided at the top of both ends of the walkway along the length direction thereof in advance, as shown in Fig. 3. A concrete cantilever plate 7 can be cast in this area for counteracting the installation tolerance.

30 The method for building the covered walkway comprises the following steps:

Step A. Hoisting the precast supporting frame unit 10 to the construction site, connecting it with the cast-in-situ concrete base 1, fixing the supporting frame unit 10, and refilling the jointing region between said base 1 and the supporting frame unit 10
5 with concrete;

Step B. Providing a precast base slab support, hoisting two precast base slab units 51 to the position between two adjacent supporting frame units 10, placing one end of the precast base slab unit 51 at the top of the supporting frame unit 10, and splicing the starter bars 61 exposed at the other end thereof with the starter bars 61 of
10 the adjacent base slab units 51;

Step C. Forming a cast-in-situ concrete top layer 52 by casting in-situ concrete above said precast base slab unit 51, in the jointing gaps between adjacent base slab units 51 and the jointing regions between the supporting frame units 10 and the precast base slab units 51, such that said supporting frame unit 10 and the precast base
15 slab unit 51 are incorporated together;

Step D. Repeating the above Steps A, B and C to complete the installation and construction of the covered walkway;

Step E. Forming the cantilever plate 7 by casting in-situ concrete at the top of both ends of said walkway along the length direction thereof.

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It should be noted that the above-mentioned embodiment shows particularly preferred one but that this is not restricted thereto. Any amendments, equivalents or improvements made under the spirit and principle of the present invention shall be included in the protection scope of the present invention.

CLAIMS

1. A covered walkway, comprising a base (1), a road surface above said base (1), pillars (2) fixedly connected to said base (1) at two sides thereof respectively, a bearing beam (3) bridging over the tops of the pillars (2) at both sides of the base, and a cover (5) secured on at said bearing beam (3); characterized in that: two pillars (2) at both sides of the base together with the bearing beam (3) bridging over the tops of said two pillars (2) forms a one-piece precast concrete supporting frame unit (10), and said cover (5) comprises a plurality of precast base slab units (51) positioned on the supporting frame unit (10), wherein the bottoms of said plurality of supporting frame units (10) uniformly arranged are connected with each other through the base (1) of cast-in-situ concrete, and the tops of said plurality of supporting frame units (10) uniformly arranged and the plurality of precast base slab units (51) positioned on the supporting frame unit (10) are connected with each other through a cast-in-situ concrete top layer (52) over the precast base slab units.

2. The covered walkway according to claim 1, characterized in that: the cast-in-situ concrete top layer (52) is provided with an upstanding beam (53) in a position corresponding to pillar (2) at each of the left and right sides thereof.

3. The covered walkway according to claim 2, characterized in that: an enclosure plate (54) extending upwardly is arranged at the left and right sides of the cast-in-situ base slab unit (51), and said upstanding beam (53) is positioned at the inner side surface of the enclosure plate (54) and cast with said cast-in-situ concrete top layer (52) into one piece.

4. The covered walkway according to claim 3, characterized in that: a supporting frame connecting plate (55) extending downwardly is further arranged at the left and right sides of said precast base slab unit (51).

5 5. The covered walkway according to any one of claims 1-4, characterized in that:
two precast base slab units (51) are provided between two adjacent supporting units
(10), and starter bars (61) are provided in advance at the joint face of two adjacent
precast base slab units (51) and incorporated with said cast-in-situ concrete top layer
(52).

10 6. The covered walkway according to any one of claims 1-4, characterized in that:
connecting bars (62) that are exposed and arranged uniformly are provided at the top
of the bearing beam (3), and incorporated with said cast-in-situ concrete top layer
(52).

15 7. The covered walkway according to any one of claims 1-4, characterized in that:
at the top of the two ends of the walkway along the length direction thereof is further
provided with a cast-in-situ cantilever plate (7).

8. A method for semi-precasting a covered walkway, characterized in that:
supporting frame units and precast base slab units of standard sizes are precast in bulk
at factories, and the method comprises the following steps:

20 Step A, hoisting the precast supporting frame unit (10) to the construction site,
connecting it with a cast-in-situ concrete base (1), and refilling the jointing region of
said base (1) and the supporting frame unit (10) with concrete;

Step B, placing the precast base slab support (51) between two adjacent
supporting frame units (10);

25 Step C, forming a cast-in-situ concrete top layer (52) by casting in-situ concrete
above said precast base slab unit (51), such that said supporting frame unit (10) is
incorporated with the precast base slab unit (51);

30 9. The method for semi-precasting a covered walkway according to claim 8,
characterized in that: in said step B, two precast base slab units (51) are placed
between adjacent supporting frame units (10), and starter bars at the jointing region of

two adjacent precast base slab units (51) are spliced.

10. The method for semi-precasting covered walkway according to claim 8 or claim 9, characterized in that: it further comprises the following step: forming a
5 cantilever plate (7) by casting in-situ concrete at the top of both ends of said walkway along the length direction thereof.