art, and it is an object of the present invention to provide a prefabricated rebar assembly with permanent forms and a manufacturing method therefor that are capable of allowing main rebars and the permanent forms to be coupled to inner and outer sides of closed type prefabricated hoops made by connecting end portions of support bars to each other, so that the permanent forms are in advance attached to the outer sides of the prefabricated hoops, thereby minimizing works in a construction site and being applicable to a column having a middle or small-sized section.

【Technical Solution】

To accomplish the above-mentioned object, according to one aspect of the present invention, there is provided a prefabricated rebar assembly with permanent forms, including: closed type prefabricated hoops one another in a longitudinal direction of a member to be built in a longitudinal direction of a member to be built, each of the prefabricated hoops being configured to allow the neighboring one side legs of a plurality of L-shaped support bars, each support bar having one side leg and the other side leg, to be connected to each other by means of welding; main rebars fixedly coupled to one side legs of the support bars on the inner corners of the pre-assembled prefabricated hoops by means of welding; the permanent forms coupled to outer sides of the prefabricated hoops and to the other side legs of the support bars; and tie bars for connecting the facing support bars to support the lateral pressure of concrete.

To accomplish the above-mentioned object, according to another aspect of the present invention, there is provided

a method for manufacturing the prefabricated rebar assembly with the permanent forms, including the steps of: (a) connecting end portions of support bars having L-shaped sections to each other by means of welding to make closed type prefabricated hoops; (b) locating main rebars on inner sides of corners of the prefabricated hoops and fixing the main bars to the inner sides of the prefabricated hoops by means of welding; and (c) coupling the permanent forms to the outer sides of the prefabricated hoops.

【Advantageous Effects】

According to the present invention, the prefabricated rebar assembly and the manufacturing method therefor are configured to have the main rebars and the permanent forms coupled to the inner and outer sides of the closed type prefabricated hoops made by connecting the end portions of the support bars to each other.

According to the present invention, in addition, the permanent forms are in advance attached to the outer sides of the prefabricated hoops, thereby minimizing the works in the construction site unlike conventional formwork.

Instead of shape steel members, further, the main rebars are fixed to the inner sides of the prefabricated hoops, so that the prefabricated rebar assembly can be sufficiently applied even to a member having a small section like a column having a middle or small-sized section.

【Description of Drawings】

FIG.1 is a front view showing a conventional PRC column.

FIG.2 is a perspective view showing a conventional prefabricated column with rib deck forms.

FIG.3 is a perspective view showing a coupling relation between prefabricated hoops and main rebars in a prefabricated rebar assembly with permanent forms according to the present invention.

FIG.4 is a perspective view showing the prefabricated hoop according to the present invention.

FIG.5 is a perspective view showing the prefabricated rebar assembly with permanent forms according to the present invention.

FIG.6 is a sectional view showing a column built by means of the prefabricated rebar assembly with permanent forms according to the present invention.

FIG.7 is an enlarged view showing a portion B of FIG.6.

FIG.8 is a sectional view showing an example where the prefabricated rebar assembly according to the present invention is applied to a girder.

FIG.9 is a perspective view showing a connection process where upper and lower prefabricated rebar assemblies are connected to each other according to the present invention.

FIG.10 is a perspective view showing support bars connected to each other by means of tie bars according to the present invention.

FIG.11 is a perspective view showing a coupling relation between the tie bar and the support bars according to the present invention.

FIGS.12 to 14 are perspective views showing a step by step procedure in a method for manufacturing a prefabricated rebar assembly with permanent forms according to the present invention.

【Mode for Invention】

Hereinafter, the present invention will be in detail explained with reference to the attached drawing.

FIG.3 is a perspective view showing a coupling relation between prefabricated hoops and main rebars in a prefabricated rebar assembly with permanent forms according to the present invention, FIG.4 is a perspective view showing the prefabricated hoop according to the present invention, FIG.5 is a perspective view showing the prefabricated rebar assembly with permanent forms according to the present invention, FIG.6 is a sectional view showing a column built by means of the prefabricated rebar assembly with permanent forms according to the present invention, FIG.7 is an enlarged view showing a portion B of FIG.6, FIG.8 is a sectional view showing an example where the prefabricated rebar assembly according to the present invention is applied to a girder, and FIG.9 is a perspective view showing a connection process where upper and lower prefabricated rebar assemblies are connected to each other according to the present invention.

As shown in FIGS.3 to 6, there is provided a prefabricated rebar assembly with permanent forms, including: a closed type prefabricated hoops 1 spaced apart from one another in a longitudinal direction of a member to be built, each of the closed type prefabricated hoops 1 being configured to allow neighboring one side legs 11 of a plurality of L-shaped support bars 10, each support bar 10 having one side leg 11 and the other side leg 12, to be connected to each other by means of welding W; main rebars 2 fixedly coupled to one side legs 11 of the support bars 10 on the inner corners of the pre-assembled closed type prefabricated hoops 1 by means of welding W; and the permanent forms 3 coupled to outer sides of the

prefabricated hoops 1 and to the other side legs 12 of the support bars 10.

The present invention relates to a prefabricated rebar assembly with permanent forms and a manufacturing method therefor that are capable of in advance attaching the permanent forms thereto to minimize works in a construction site and being applied to a column having a medium or small-sized section.

According to the present invention, the prefabricated rebar assembly with the permanent forms includes the prefabricated hoops 1, the main rebars 2, and the permanent forms 3.

The prefabricated hoops 1 are made in a closed form by connecting end portions of the plurality of support bars 10 to each other and are spaced apart from each other in the longitudinal direction of the member to be built.

The main rebars 2 are fixedly disposed to the inner surfaces of the prefabricated hoops 1.

Unlike hoops of a general RC column or support bars of a general PSRC column which are fixedly supported against main rebars or main shape steel members as vertical members, the present invention is configured to allow the main rebars 2 to be fixed to the inner surfaces of the prefabricated hoops 1.

To do this, the prefabricated hoops 1 are provided to the closed form.

As the rebars, not shape steel members, are arranged inside the prefabricated hoops 1, the present invention can be applied sufficiently to a member having a small section.

The permanent forms 3 are coupled to outer sides of the prefabricated hoops 1.

The prefabricated hoops 1 have the closed type sections, so that they can rigidly support the permanent forms 3 coupled to the respective sides thereof.

The permanent forms 3 are disposed on the outside of the member to form the surfaces of the member, thereby minimizing a thickness of a panel thereof.

The prefabricated rebar assembly with the permanent forms according to the present invention is applicable to a girder as well as a column, as shown in FIG.8.

In this case, the angled type support bar 10 is configured to have a shape of U open on top thereof so as to serve as a stirrup, and a support bar 10’ as a rebar is fixed to top of the angled type support bar 10, thereby making the closed type prefabricated hoop 1.

According to the present invention, the prefabricated rebar assembly is configured to have the main rebars 2 fixed in position to the inner sides of the prefabricated hoops 1 by means of welding, so that if upper and lower prefabricated rebar assemblies are coupled up and down to each other in a vertical direction, it is hard to connect the upper and lower prefabricated rebar assemblies to tops of each other.

To solve such a problem, as shown in FIG.9, a coupler 4 is coupled to one end of each main rebar 2, so that the main rebars 2 of the upper and lower prefabricated rebar assemblies can be connected to each other by means of the couplers 4.

As shown in FIGS.6 and 7, the main rebars 2 are fixed to one side legs 11 of the support bars 10 on the inner corners of the pre-assembled prefabricated hoops 1 by means of the welding W.

The main rebars 2 are fixed to the inner sides of the prefabricated hoops 1 by means of welding W.

It is necessary to fix the main rebars 2 just in position, and at this time, it is enough to temporarily fix the main rebars 2 to the inner sides of the prefabricated hoops 1 by means of tack welding.

As shown in FIGS.3 and 4, each prefabricated hoop 1 is made by connecting the end portions of the plurality of support bars 10 to each other, and each support bar 10 has an L-shaped section in such a manner as to have one side leg 11 coupled to the main rebars 2 by means of welding and the other side leg 12 coupled to the permanent form 3.

Each prefabricated hoop 1 is made by connecting the four support bars 10 to each other to a closed form.

At this time, one side support bar 10 whose end portion comes into close contact with the side of the end portion of the neighboring support bar 10 and is thus coupled thereto by means of welding W (See FIG.4).

The support bars 10 are formed of L-shaped angles so as to allow the main rebars 2 and the permanent forms 3 to be fixed to the inner and outer sides thereof.

The main rebars 2 are coupled to one side leg 11 of the support bar 10 by means of welding.

The main rebars 2 are located at the insides of the bonded portions between the neighboring support bars 10 perpendicularly meeting each other and are thus fixed to the support bars 10 by means of welding W.

The permanent form 3 is coupled to the other side leg 12 of the support bar 10.

As shown in FIG.7, each permanent form 3 includes a flat plate 31 adapted to build an outer surface of the member and protrusions 32 having ‘ㄱ’-shaped sections in

such a manner as to protrude from the inner surface of the flat plate 31 in a longitudinal direction of the member.

The protrusions 32 serve to maintain stiffness of the permanent form 3 and also to fixedly couple the permanent form 3 to the support bar 10.

To do this, the other side leg 12 of the support bar 10 has '¬'-shaped locking holes 221 formed thereon to insertedly lock the protrusions 32 of the permanent form 3.

So as to allow the permanent form 3 to be insertedly coupled to the front surface of the support bar 10, desirably, the inlets of the locking holes 221 are larger than widths of the protrusions 32.

The other side leg 12 of the support bar 10 has a flow through hole 122 formed thereon, so that upon casting of concrete C, concrete can flow through the flow through hole 122 and integration with the concrete C can be made therethrough.

FIG.10 is a perspective view showing support bars connected to each other by means of tie bars according to the present invention, and FIG.11 is a perspective view showing a coupling relation between the tie bar and the support bars according to the present invention.

As shown in FIGS.10 and 11, the facing support bars 10 are connected supportedly to each other by means of tie bars 5 so that through the tie bars, the lateral pressure of concrete can be supported against the support bars 10.

According to the present invention, the permanent forms 3 are supportedly coupled to the prefabricated hoops 1, and upon concrete casting, accordingly, the prefabricated hoops 1 have to support a lateral pressure of the concrete.

To do this, the facing support bars 10 of the prefabricated hoops 1 are connected to each other by means of the tie bars 5, thereby allowing the prefabricated hoops 1 to support the lateral pressure of the concrete.

Through the tie bars 5, besides, the prefabricated hoops 1 effectively restrain the concrete therein, thereby increasing the strength and ductility of the member.

Each tie bar 5 is penetratedly coupled to one side leg 11 of the support bars 10.

A length of the tie bar 5 is longer than a distance between the facing support bars 10 so that the tie bar 5 is penetrated into one side leg 11 of the support bars 10 and is fastened to the support bars 10 through nuts 51 fastened to the ends exposed to the outside.

By the way, the prefabricated hoops 1 are made by welding the end portions of the support bars 10 to each other, and after the prefabricated hoops 1 have been made, accordingly, the distance between the facing support bars 10 is fixed. So as to couple the tie bars 5 to the support bars 10, in this case, it is hard to penetrate both ends of each tie bar 5 into the support bars 10.

Accordingly, one end of the tie bar 5 is penetrated into one side leg 11 of one side support bar 10 in such a manner as to be fixed to both sides of one side leg 11 by means of the nuts 51, and a coupler 52 is fitted to the other end of the tie bar 5 in such a manner as to face one side leg 11 of the other side support bar 10 and to be thus coupled to a bolt 53 on the opposite side thereto.

One side leg 11 of the support bars 10 into which the tie bar 5 is penetrated has a through hole 111 extended in an up and down direction, so that the tie bars 5

perpendicular to each other in the prefabricated hoop 1 can cross up and down.

In this case, the tie bars 5 can be perpendicular to each other, without any interference.

FIGS.12 to 14 are perspective views showing a step by step procedure in a method for manufacturing a prefabricated rebar assembly with permanent forms according to the present invention.

A method for manufacturing a prefabricated rebar assembly with permanent forms according to the present invention relates to a method for manufacturing the prefabricated rebar assembly with the permanent forms 3 as mentioned above with reference to FIGS.3 to 11.

First, the end portions of the support bars 10 having the L-shaped sections are connected to each other by means of the welding to make the closed type prefabricated hoops 1 (See FIG.12).

The prefabricated hoops 1 are spaced apart from each other in the longitudinal direction of the member and are then fixed to each other by means of jigs.

After the prefabricated hoops 1 have been made, the facing support bars 10 are connected to each other by means of the tie bars 5.

Next, the main rebars 2 are disposed on the inner sides of the corners of the prefabricated hoops 1, and they are then fixed to the inner sides of the prefabricated hoops 1 by means of the welding W (See FIG.13).

In detail, the main rebars 2 are inserted into the prefabricated hoops 1 spaced apart from each other, and next, they are fixed to the inner sides of the corners of the prefabricated hoops 1 by means of tack welding.

After that, the permanent forms 3 are coupled to the outer sides of the prefabricated hoops 1 (See FIG.14).

Next, the corresponding member is installed on a given position in a construction site, and concrete is cast and cured in an interior of the member, thereby finishing the process for manufacturing the member.

The method for manufacturing the prefabricated rebar assembly with the permanent forms according to the present invention is characterized in that after the closed type prefabricated hoops 1 have been made, the main bars 2 are fixed to the prefabricated hoops 1.

【CLAIMS】

【Claim 1】

A prefabricated rebar assembly with permanent forms, comprising:

closed type prefabricated hoops (1) one another in a longitudinal direction of a member to be built, each of the prefabricated hoops (1) being configured to allow the neighboring one side legs (11) of a plurality of L-shaped support bars (10), each support bar (10) having one side leg (11) and the other side leg (12), to be connected to each other by means of welding (W);

main rebars (2) fixedly coupled to one side legs (11) of the support bars (10) on the inner corners of the pre-assembled prefabricated hoops (1) by means of welding (W);

the permanent forms (3) coupled to outer sides of the prefabricated hoops (1) and to the other side legs (12) of the support bars (10); and tie bars (5) for connecting the facing support bars (10) to support the lateral pressure of concrete.

【Claim 2】

A method for manufacturing the prefabricated rebar assembly with permanent forms according to claim 1, the method comprising the steps of:

(a) connecting end portions of support bars (10) having L-shaped sections to each other by means of welding to make closed type prefabricated hoops (1);

(b) locating main rebars (2) on inner sides of corners of the prefabricated hoops (1) and fixing the main bars (2) to the inner sides of the prefabricated hoops (1) by means of welding (W); and

(c) coupling the permanent forms (3) to the outer sides of the prefabricated hoops (1).