the like when the concrete is placed, it is difficult to make an arrangement to dissect the concrete. Thus, the weight of concrete rubble after the demolition is so large that use of a large crane is often required. In this case, there arise problems that it may be impossible to dispose a crane depending on the field or that a makeshift gantry on which a crane is to be placed is overengineered.

[0011]

Embodiments of ~~T~~the present invention ~~is in view of the foregoing problems and has an object~~ seek to provide a pile head treatment method that may enables suitable demolition and removal of extra concrete of a pile head with high operation efficiency.

TECHNICAL SOLUTION

[0012]

~~To achieve the above object, the present invention is a~~ According to an aspect of the present invention, there is provided pile head treatment method including: the step (a) of linearly charging a non-explosive demolition agent inward from a side surface of concrete of a pile head exposed on a ground, and charging a demolition agent into the concrete situated above the non-explosive demolition agent, at the time of constructing a pile in situ; and the step (b) of blasting of the non-explosive demolition agent to divide the concrete into upper concrete and lower concrete and thereafter blasting of the demolition agent to demolish the divided upper concrete.

[0013]

Embodiments of ~~T~~the present invention makes it possible to divide the extra concrete of the pile head from the lower concrete with the non-explosive demolition agent and thereafter demolish the divided extra concrete with the demolition agent such as a high explosive. Since the non-explosive demolition agent causes less noise and vibration, if the extra concrete is demolished with the non-explosive demolition agent and the demolition agent in this way, noise and vibration are generated only instantaneously and at minimum levels. In

addition, generation time can be set freely according to a surrounding environment. Furthermore, since the extra concrete is divided from the concrete situated below the extra concrete with the non-explosive demolition agent, which does not cause shock waves, and thereafter the divided extra concrete is demolished, the concrete situated below the extra concrete ~~is~~may not be given any damage by the division and demolition of the extra concrete.

[0014]

Further, since the charging and demolition are carried out as post processes on the ground, it is possible to adjust the charging positions and the like to appropriate positions according to the finished pile size so that the extra concrete can unfailingly be demolished into concrete rubble of the size of a human head. Thus, the demolished concrete rubble can be removed manually or with small heavy equipment. Furthermore, after the charging operations are finished, the extra concrete can be demolished instantaneously. Thus, the work efficiency ~~is~~may be high.

[0015]

A main reinforcing bar is buried in a vertical direction in an outer periphery portion of the concrete, and desirably in the step (a), a high explosive as a first demolition agent is linearly charged in a vicinity of the main reinforcing bar, and a high explosive as a second demolition agent is linearly charged in the vertical direction interiorly to the first demolition agent.

Also desirably, in the step (b), the first demolition agent and the second demolition agent are sequentially blasted such that the closest demolition agent to the outer periphery portion of the concrete is blasted first, followed by the interior demolition agents.

In this way, the respective demolition agents are disposed and then control blasted sequentially so that the extra concrete is sequentially extruded outward and demolished, whereby the extra concrete can be dismantled

efficiently with a small amount of demolition agents. As a result, noise and vibration ~~are~~may be reduced, and the amount of dust ~~is~~ may also be decreased.

[0016]

Desirably, prior to the step (b), a restraining member for restraining the main reinforcing bar from deforming is provided.

In this way, the main reinforcing bar can be restrained from deforming at the time of the demolition of the extra concrete.

[0017]

Also desirably, an elastic protecting member is provided in advance around the main reinforcing bar.

In this way, the main reinforcing bar can be protected, and also the moving width of the extra concrete at the time of the demolition can be reserved so that cracks are unfailingly produced, whereby the demolition can be carried out suitably.

[0018]

Desirably, in the step (a), the first demolition agent is charged into a duct that is spirally provided in advance along a circumferential direction of the concrete in the vicinity of the main reinforcing bar.

Or desirably, the first demolition agent is charged into a duct that is provided in advance along the vertical direction in the vicinity of the main reinforcing bar

[0019]

In this way, the duct for charging the demolition agent is provided in advance at the position where the duct does not interfere with the tremie pipe and the like for placing the concrete, whereby boring of charging holes after the placement of the concrete can be omitted. In the former case, the number of ducts and the number of charging operations can be reduced. In the latter case, the charging can be carried out with ease.

[0020]

Also desirably, prior to the step (b), the concrete of the pile head is covered with a sheet.

In this way, dispersion of the demolished extra concrete can be prevented.

ADVANTAGEOUS EFFECT OF THE INVENTION

[0021]

Embodiments of ~~T~~the present invention ~~can~~ provide a pile head treatment method that may enable~~s~~ suitable demolition and removal of extra concrete of a pile head with high operation efficiency.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022]

[Fig. 1] A figure illustrating a cast-in-place pile 1.

[Fig. 2] A figure illustrating a reinforcing bar cage 25.

[Fig. 3] A figure illustrating charging holes 9 and 37 and a combined duct 31.

[Fig. 4] A figure illustrating the charging of a demolition agent.

[Fig. 5] A figure illustrating a non-explosive demolition agent 15.

[Fig. 6] A figure illustrating a pile head treatment method.

[Fig. 7] A figure illustrating a pile head treatment method.

[Fig. 8] A figure illustrating a pile head treatment method.

[Fig. 9] A figure illustrating a reinforcing bar cage 25.

[Fig. 10] A figure illustrating charging holes 37 and a combined duct 43.

[Fig. 11] A figure illustrating the steps of constructing a pile in situ.

DETALED DESCRIPTION OF PREFFERD EMBODIMENTS

[0023]

The following describes embodiments of the present invention in detail with reference to the attached drawings.

[0024]

[First embodiment]

(Cast-in-place pile 1)