A WHARF CONSTITUTED BY ARCHED WALLS AND PLANE TIES

Background of the invention

The present invention relates to retaining works made in ground, and in particular to works that are to form the walls of wharves.

More particularly, the invention relates to a retaining work in ground having a front portion extending substantially vertically while separating a first portion of ground from a second portion of ground.

The invention is particularly advantageous when the levels of the first and second portions of ground are substantially different, e.g. when the difference in height between the first and second portions of ground is of the order of 15 meters (m) to 30 m.

This applies when the first portion of ground is situated under a body of water, the front portion of the retaining work then constituting a wharf wall also separating the body of water from the second portion of ground.

Traditionally, the front portion of such a retaining work is a plane wall, and part of the forces exerted by the second portion of ground on the front portion are taken up by elongate metal ties connecting the plane wall to a rear anchor curtain that is parallel to the plane wall and that is situated in the second portion of ground at a distance from the plane wall, thereby stabilizing the work. The rear anchor curtain may be situated at more than 50 m from the plane wall, and the metal ties may be positioned at a depth of about 5 m. Conventionally, work begins by making the plane wall and the anchor curtain in the second portion of ground. Thereafter, the volume of ground that extends over the distance between the plane wall and the rear curtain is dug out to the depth at which the metal ties are to be positioned.

CLAIMS

1. A retaining work in ground, the work having a front portion that extends substantially vertically while separating a first portion of ground from a second portion of ground, the retaining work being characterized in that:

the front portion is in the form of a juxtaposition of arched walls extending in a longitudinal direction that is vertical; in that

each arched wall presents a concave side facing the first portion of ground and a convex side facing the second portion of ground; and in that

the retaining work further includes a rear portion connected to the front portion and comprising a plurality of wall elements having their largest faces extending vertically in the second portion of ground , each wall element being arranged between two adjacent arched walls and extending transversely relative to the front portion.

2. A retaining work according to claim 1, wherein the front portion has two vertical end edges, and wherein the rear portion also has two other wall elements extending transversely relative to the front portion and arranged on either side of said plurality of wall elements, extending from the vertical end edges of the front portion.

3. A retaining work according to claim 1 or claim 2, wherein the wall elements are plane.

4. A retaining work according to any preceding claim, wherein the wall elements are parallel to one another.

5. A retaining work according to any preceding claim, wherein the wall elements present a greatest height that is strictly less than the height of the front portion.

6. A retaining work according to claim 5, wherein the height of the front portion is substantially equal to twice the greatest height of the wall elements.

7. A retaining work according to claim 5 or claim 6, wherein at least one of the wall elements, when considered lengthwise connected to the front portion and a second end opposite from the first end , and wherein the height of the wall element decreases between the first end and the second end of said wall element .

8. A retaining work according to any preceding claim, wherein the length of the wall elements is greater than the greatest height of said wall elements.

9. A retaining work according to any preceding claim, wherein the distance between two adjacent wall elements is less than the length of a wall element.

10. A retaining work according to any preceding claim, wherein at least two adjacent arched walls are connected to each other and to one of the wall elements by a coupling element that presents a first connection portion connected to the wall element and second and third connection portions that are connected to the two adjacent arched walls.

11. A retaining work according to any preceding claim, wherein the front and/or rear portions are made of reinforced concrete.

12. A retaining work according to any preceding claim, wherein the front portion and/or the rear portion is a diaphragm wall.

13. A retaining work according to any preceding claim, wherein the front portion is made of reinforced concrete while the wall elements comprise sheet piling.

14. A wharf including at least one retaining work according to any preceding claim, wherein the first portion of ground is situated under the bottom of a body of water such that the front portion separates the body of water from the second portion of ground.

15. A wharf according to claim 14, characterized in that it further includes a first rail that extends transversely relative to the wall elements of the rear portion while being supported by a plurality of said wall elements, and in that the wharf further includes a second rail parallel to the first rail.

16. A wharf according to claim 15, characterized in that the second rail is supported by the front portion.