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ANCHOR FOOTING FOR STEEL TOWERS

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This invention relates primarily to the foundations for fabricated steel towers of high tension electric transmission lines, and the principal object of the invention is to provide a novel form of anchor and footing consisting of a number of comparatively small and precast elements adapted for assembly in the ground hole prepared for their reception, and providing when assembled a combined anchor and footing answering all the requirements.

The invention has a particularly important aspect in the erection of towers in remote or mountainous districts where raw materials, for the commonly used monolithic concrete anchorages are not available, and difficult to transport from available sources. With this in view, the invention contemplates the provision of a sectional precast anchor footing which may be transported with the steel parts of the tower without difficulty and are capable of erection without the use of water or other raw materials commonly required for this type of structure.

In the attached drawings:

Figure 1 is a vertical section showing in position an assembled anchor footing made in accordance with my invention;

Fig. 2 is a sectional plan view of the anchor footing on the line 2—2, Fig. 1, and

Fig. 3 is a plan view of the base block of the footing.

With reference to the drawings, the structure comprises a base 1 which may be of any form desired and which in the present instance I have illustrated as circular, this being the form preferred. This base is preferably made of concrete and has cast in the center thereof and projecting above the top surface a metal socket 2 for a steel anchor rod 3 whose lower end is in assembly threaded into the said socket.

The anchor-foothing further comprises one or more hollow concrete members 4 which in the present instance are annular in form and which are adapted to be mounted one above another upon the base 1 to form a truncated conical section immediately above the said base. In the present instance, two of these elements 4 are employed, although it will be understood that there is no limitation as to their number.

The anchor-foothing further comprises a plurality of hollow concrete members 5 so constructed as to be capable of mounting one above the other from the top of the aforesaid conical lower section, as clearly illustrated, these sections 5 being in the present instance annular in shape and four in number with the upper section extending above the ground surface, designated by the reference numeral 6.

In order to bind the sections together and to the base 1, each of the sections 4 and 5 is provided at one edge, in the present instance the bottom, with a tongue or other suitable projection 7, and on the other side with a correspondingly formed groove or recess 8 whereby the projection 7 of one section may fit within the corresponding groove of the section which it abuts. In the present instance, the base 1 is provided with a groove or recess 9 for the reception of the tongue 7 of the bottom section 4.

The anchor rod 3 is of such length as to project above the topmost section 5, and a metal bearing plate 10 having a central aperture through which said rod projects rests upon the top of the upper section 5 of the concrete structure and constitutes a base for the leg of the steel tower designated by the reference numeral 11. As shown, the top of the anchor rod passes through a suitable recess or aperture in the bottom of the tower leg, and a nut 12 binds the said leg to the anchor rod and to the anchor-foothing, and also, through the said rod, binds the parts or elements of the anchor-foothing together.

In establishing these anchor-foothngs, it is only necessary to dig a hole of sufficient depth for the purpose and of such size as to receive the base 1. The sections 4 and 5 are thereupon lowered into place one by one until the entire structure is built to the surface of the ground. The earth is then filled in around the structure thus formed, and if desired, the interior of the hollow anchor footing may also be filled with dirt or stone around the anchor rod.

The sections 4 and 5 and the base plates 1 are of such size as to be easily transported with the materials of which the tower is built, and may be assembled and built upon without water or other raw materials. Transportation of water in dry and mountainous districts, and transportation of cement and other materials used in concrete have been one of the great problems in constructing high power electric lines, and the unavailability of water and the losses due to
damage to the cement has made such operations extremely difficult. By my present invention, I have provided an entirely practicable and easily constructed anchor-footing whose relatively small component parts are easily transported with no more trouble than the transportation of the other materials and metal parts of which the tower is built.

My structure has a further advantage, in that it may be used as soon as built, there being no requirement, as in monolithic concrete anchors, for time to allow the structure to set.

While other anchor footings have been suggested, employing metal, which possess to some extent the advantageous assembly and transportation features of my structure, the relative advantages of concrete over metal for this purpose are well understood, and it will be noted that my anchorage partakes of all the advantages of the concrete structure with the simplicity of assemblage and transportation of the steel or other metal anchors.

I claim:

An anchor footing of the type described comprising a plurality of hollow sections, open top and bottom, and mounted in alignment one above another, a base block closing the open bottom of the lowest section, a tie rod secured in said base block and extending upwardly through the assembled sections, and a bearing plate resting upon the top of the upper section and having an opening for said tie rod.

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