REMOVAL OF HELICAL PILES AND HELICAL ANCHORS

One of the advantages of helical piles and helical anchors is that they are removable. Helical piles and helical anchors have been used on a variety of projects where they have been installed, used for a period of time, then removed. In many cases, the salvaged materials can be re-purposed and re-used on other projects. Helical piles and helical anchors are a sustainable foundation system.

Helical piles and helical anchors can be removed by reversing the direction of torque and "unscrewing" the shaft elements from the ground while simultaneously applying some tension. The amount of torque required to remove helical piles and helical anchors is typically on the order of the same amount of torque that was required to install the piles/anchors. It is beneficial to obtain and review past pile/anchor installation records so that the torque motor capacity can be matched with the pile/anchor requirements. Also, it is beneficial to know the length of the pile/anchor sections used for construction so that the hydraulic machine can be sized with the reach required to handle the pile/anchor sections.

The procedure for removing helical piles/anchors consists of detaching the steel caps on the ends of the helical shafts by loosening and removing heavy hex bolts and nuts. Start removal of helical piles/anchors located towards the edges of the project and work toward the center in sequence. Maintain alignment of the torque motor with the pile/anchor shaft orientation while unscrewing. Avoid application of excessive tension or flexure on pile shaft during extraction. Pile tension should be limited to an amount required to cause the pile/anchor to back-out of the ground a distance equal to the pitch of the helical bearing plates (typically 3 inches per revolution) with each revolution. Helical bearing plates can be damaged by application of excess tension depending on size and capacity of hydraulic machine and ground conditions. Also, avoid bending the shaft during extraction as application of torque to bent shaft can cause binding and damage to bolt holes and couplers.

Removal of helical piles/anchors results in an extraction hole approximately the same diameter of the pile/anchor shaft and extending into the ground the length of the original pile/anchor. At a minimum, the extraction hole should be backfilled to the extent practicable to avoid trip hazards and provide rodent control. Backfill may be placed by shoveling material and tamping with a metal rod. On-site soils or imported granular materials are typically suitable for extraction hole backfill. Some projects require filling extraction holes by pumping using a sand slurry, low strength cement grout, or low permeable bentonite. Check with a local engineer and/or code agency for backfill requirements in your area. Grade ground surface in area of work to restore proper drainage and remove signs of disturbance.

After successful removal, arrange pile materials for quality inspection. Identify any dented or bent materials, structural cracks, weld separations, or excessive corrosion with marking paint. Pay careful attention to helical bearing plates as these occasionally can be bent or broken during pile removal particularly in soils containing cobble, boulders, and/or debris. Recycle damaged helical pile materials and order replacement pile materials from Magnum Piering, Inc. Materials free from defects may be stockpiled and re-used. Stockpile and secure pile materials using wood dunnage and tie-down straps for safe transport. Helical pile/anchor caps should be packaged in rigid containers.

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