

SECTION 523 HELICAL PILING

523-1.01 DESCRIPTION. Furnish and install helical piles for board roads.

523-2.01 MATERIALS. Use materials that conform to the following:

Structural Steel Piles

Section 715

523-2.02 PILES. Furnish piles sufficient in length as specified in the Contract documents. Furnish full-length piles where practical. Where splices are required, follow the provisions of Subsection 523-3.03. Furnish additional pile length to provide for fresh heading and to suit the method of installation. Use metal shoes or reinforced tips as required. Store and handle piles in a manner that protects them from damage.

1. Steel Piles. Furnish structural steel pile sections described in the Contract. Weld in accordance with Section 504.

The Engineer will reject steel piles that exceed the camber and sweep permitted by allowable mill tolerance.

Hot-dip galvanize steel piles to a minimum thickness of 4 mils from the top to a distance not less than 10 feet below the finished ground line according to Subsection 716-2.07. Steel piles and pile shells that do not protrude above the final ground line do not require galvanizing.

2. Beam Saddle. Furnish a beam saddle designed for connection to a 4x12, including a minimum of two holes for 1/2" diameter bolts. Mechanically connect the beam saddle to the piles, except as noted on the Drawings.

CONSTRUCTION REQUIREMENTS

523-3.01 EQUIPMENT AND PLAN FOR INSTALLING PILES. Use rotary torque devices to install piles and to determine resistance during pile installation.

The rotary torque device and associated equipment shall be sized such that the piles can be installed to the required depth and torque without damage to the piles.

Support piles in line and position while being installed.

No less than 30 days prior to the anticipated start of pile installation, submit for approval a pile installation plan. Include in the pile installation plan:

1. Manufacturer's catalog cuts, specifications, manuals, guidelines, and technical bulletins for the helical piles.
2. Manufacturer's catalog cuts, specifications, manuals, guidelines, and technical bulletins for all pile installation equipment to be used.
3. A description of the techniques to be used for ensuring proper placement and alignment of the piles, obtaining the Installation Resistance, and advancing the piles to the required depth and torque.
4. Alternate methods of installation in the event obstructions (e.g., frozen ground, rock, etc.) are encountered.

Approval by the Engineer of the pile installation plan will not relieve the Contractor of responsibility for piles damaged during pile installation operations. Do not mobilize pile installation and driving equipment to the site without an approved pile installation plan.

Submit all revisions to the approved pile installation plan to the Engineer for approval. For all pile installation equipment not previously identified in the pile installation plan, include in the submittal all of the information required above for the pile installation plan. Explain to the Engineer, in writing, which portions of the approved pile installation plan will be superseded by the revision and which portions remain unchanged. Allow at least 10 days for the Engineer's approval of pile installation plan revisions.

Use only equipment included in the pile installation plan. The Engineer will inspect the pile installation equipment for conformance with the approved pile installation plan after it has been mobilized to the site and prior to beginning pile installation operations. Remove and replace pile installation equipment found out of conformance with the approved pile installation plan at no extra cost to the Department and with no adjustment to contract time.

523-3.02 INSTALLING PILES. Install all piles to the depth and torque specified in the Contract documents.

1. Placement and Alignment. Ensure proper placement and alignment of the piles. The Engineer will reject piles that are bent or otherwise damaged by forcing the pile into the leads, template, or position.

Drive piles within an allowed variation as to direction of pile of not more than 1/4 inch per foot. Do not vary the distance between any two piles more than 3 inches from that specified in the Contract documents. Keep the clear distance from the buried edge of pile helix to any existing buried piles a minimum of 6 inches.

2. Obstructions. Use alternate methods to install through or remove obstructions. Obtain written approval from the Engineer before employing any alternative methods of pile advancement. The Engineer will reject piles that have exceeded their design torque during installation or exhibit indications of yielding or twisting.

523-3.03 SPLICES, EXTENSIONS AND BUILD-UPS. If the length of a pile is not sufficient to obtain the minimum depth and torque specified in the Contract documents, the pile may be spliced in order to obtain the depth and torque required. Use additions with cross sections identical to the pile cross sections. Follow manufacturer instructions for making splices.

If splices require welding, make complete joint penetration welds over the entire cross section. If approved, piles may be spliced using pile cut-offs and short pieces if no piece used is less than 10 feet long.

Meet the welding requirements of Section 504. Align the piles at a splice to meet the dimensional tolerances for the allowable variation in straightness of welded columns in AWS D1.1.

Do not deviate the alignment of piles at a splice more than 1/4 inch per ten-foot length.

523-3.04 DEFECTIVE PILES. Use a pile installation method which does not damage the pile. Do not manipulate the piles to force them into proper position. Correct damaged or improperly installed piles using a method approved by the Engineer. Approved methods may include one of the following:

1. Withdraw and replace the pile with a new and, when necessary, longer pile.
2. Splice or build up the pile.
3. Modify the pile top bracket to provide the intended boardwalk framing support.

523-3.05 CUTTING OFF PILES. Cut off the piles at the elevations indicated on the Plans. Ensure that all injured material is removed.

523-4.01 METHOD OF MEASUREMENT. See Section 109 and as follows.

Furnish Piles. The sum of the lengths of the piles in place in the completed structure, measured from the tip of pile to the cut-off elevation.

Install Piles. The number of piles driven which are incorporated into the completed structure.

523-5.01 BASIS OF PAYMENT.

Furnish Piles. The contract price includes pile materials delivered to the site. Unused pile lengths removed by cut-offs and fresh heading are subsidiary. The payment amount will be calculated using the quantity of pile indicated on the bid schedule, or the measured quantity of installed piles, whichever is greater.

Install Piles. The contract price includes:

1. All related work required to install the piles including: pile crew time (including payroll and administrative additives), equipment costs, and other fixed or variable items incurred during pile installation, the construction of temporary work platforms, fresh heading, splicing, cutting off, and installing a beam saddle. Additional depth of up to 5 feet beyond minimums specified on the Drawings will be considered subsidiary.
2. All work and materials required to fabricate and install pile top brackets for connection to timber framing members, complete. Connection to the timber framing members is subsidiary to other work.

Payment will be made under:

PAY ITEM		
Item Number	Item Description	Unit
523.0005.	Furnish Structural Steel Helical Piles	LF
523.0006.	Install Structural Steel Helical Piles	EACH
523.2002.	Pile Pre-Bore	EACH