

# STELCOR<sup>®</sup>

DRILLED-IN DISPLACEMENT MICROPILES



DRILLED-IN DISPLACEMENT MICROPILES INSTALLED WITH  
**NO VIBRATION OR NOISE**





# GREATER LOADS. LESSER DEPTHS. IN LESS TIME.

The STELCOR pile takes advantage of the strengths of steel and grout, uses relatively small installation equipment, produces no spoils and consistently produces better results than were projected in design. The soil is displaced and not removed. The end result is greater loads at lesser depths. The STELCOR pile is embedded into the improved soil with a unique corrugated weave of grout which greatly enhances the soil bond and load transfer capacity.

From structural, geotechnical, mechanical, and installation standpoints, STELCOR just makes sense, and the load test results prove it.

# HOW IT WORKS

STELCOR Drilled-In Displacement Micropiles are installed using hydraulic powered rotary equipment and are turned into the ground while crowd or downward pressure is exerted on the steel core and a continuous flow of grout is provided to the top of the pile. Reverse fighting welded to the steel core draws the grout into the annulus created by a displacement head located near the tip of the steel core.

The welded reverse fighting ensures a continuous grout column and structural load transfer from the grout column into the high strength steel core.

Grout ports in the steel core also provide consistent grout placement along the length of the pile.

No soil is removed during installation of STELCOR Drilled-In Displacement Micropiles and the steel cores are left in the ground at each location.

The STELCOR displacement lead section includes a drive plate, a lateral displacement plate and a secondary deformation structure.

The driving plate helps advance the pile downward and provides end bearing support which can be used for total axial capacity when required.

The lateral displacement plate creates a positive annulus around the steel core by displacing the soil outward, enhancing soil density surrounding the pile element.

The secondary deformation structure produces a ribbed or corrugation effect along the grouted pile shaft, greatly enhancing soil bond and load transfer.

A continuous grout column is thereby created by means of the STELCOR displacement lead section and reverse fighting. The structural steel core extends the entire length of the pile ensuring unbroken structural integrity.



# FEATURES+BENEFITS

VIBRATIONLESS INSTALLATION CAUSES NO DISRUPTION TO THE SURROUNDING PROPERTIES

NO SOIL IS REMOVED, MEANING NO CONTAMINATION OR COSTLY SPOILS REMOVAL

CAN BE INSTALLED IN HIGH WATER TABLES

EXCEPTIONAL LATERAL CAPACITY

NO REDUCTION IN BENDING CAPACITY AT THE BOLTED CONNECTION (UNLIKE THREADED CONNECTIONS)

PREDICTABLE GROUT VOLUMES AND PLACEMENT

POSITIVE GROUT DISPLACEMENT

MINIMAL MOBILIZATION AND DEMOBILIZATION COSTS

LOWER COST PER KIP OF SUPPORT COMPARED TO OTHER PILE TYPES

CAN BE INSTALLED IN TIGHT ACCESS AND LOW OVERHEAD ENVIRONMENTS



# INSTALLATION

## INSTALLATION SEQUENCE AND GROUT TAKE ESTIMATION FOR STELCOR

### PART 1 – GENERAL DESCRIPTION

DDM's are installed using hydraulic powered rotary equipment and are turned into the ground while crowd or downward pressure is exerted on the steel core and a continuous flow of grout is provided to the top of the pile. A reverse flighting welded to the steel shaft draws the grout into the annulus created by a displacement head located near the tip of the steel core.

### PART 2 – INSTALLATION SEQUENCE

1. Attach the hydraulic drive head to the DDM lead section and align pile tip at specified pile location.
2. Advance the lead section 12 inches below ground and lift up, removing soil, to create a grout reservoir. Remove soil from extracted pile tip, fill the reservoir with grout, and re-insert lead section.
3. As the lead section advances beyond the grout reservoir, commence grout flow. Monitor and record grout take during entire installation of each pile using the STELCOR pile installation record provided. A grout flow meter can be utilized to increase grout volume measurement accuracy.
4. Grout shall flow continuously to fill the annulus created by the DDM displacement head. Maintain grout level within 24 inches of installation grade.
5. Sufficient crowd shall be applied to the pile throughout the entire installation process to ensure 6 inches of advancement per revolution.
6. Where extensions are required, stop the drive head and remove from lead section.
7. Attach the hydraulic drive head to a DDM extension section.
8. Attach the extension section to the lead section with specified hardware and continue installation. Add extensions as required to reach design depth.
9. If dense soils or obstructions are encountered and the pile will not advance, reverse the pile 24 inches and re-advance. Repeat 3 to 5 times while measuring how much the pile advances each time. Do not exceed maximum specified torque of the shaft. If the pile will not advance, then pre-auguring may be required to reach design depth. Consult with Ideal to determine if the pile can be terminated in dense/stiff layers above design depth.
10. If the pile top is terminated above the pile cut-off elevation, cut the steel core using an appropriate method such as a band saw or torch.
11. Upon completion of pile installation, ensure that the grout level is brought to the top of pile (inside and outside of the steel core).
12. Install steel pile cap if applicable.
13. Document installation torque every 5 feet during installation and at pile termination using the STELCOR pile installation record provided. Pile capacity is not determined by installation torque and data is used as reference only.

### PART 3 – GROUT TAKE APPROXIMATIONS

Recommended grout mix of 0.44 water to cement (W/C) or 94 lb. bag to 5 gallons of water using Type I/II Portland cement. A colloidal mixer must be used.

- STELCOR 1200 - 0.38 Cubic ft. per lineal foot (0.33 bags per lineal foot)
- STELCOR 1400 - 0.44 Cubic ft. per lineal foot (0.38 bags per lineal foot)
- STELCOR 1600 - 0.67 Cubic ft. per lineal foot (0.59 bags per lineal foot)
- STELCOR 1800 - 0.88 Cubic ft. per lineal foot (0.77 bags per lineal foot)
- STELCOR 2000 - 1.15 Cubic ft. per lineal foot (1.00 bags per lineal foot)

Note: Published grout take approximations are for bidding purposes only. Actual grout take will vary depending on soil type. The test pile(s) establishes the installation parameters including depth, grout take, and capacity for production piles in the site-specific soil.

# APPLICATIONS

STELCOR is the perfect solution when the objective is to provide a deep foundation solution in extremely poor soils at comparatively shallow depths. STELCOR repeatedly delivers higher than expected load test results in compression, tension, and lateral applications.

The lower cost per kip of support compared to other pile types makes STELCOR an extremely competitive alternate on projects requiring a deep foundation solution.



<b>MULTI-STORY NEW CONSTRUCTION</b>	<b>COMMERCIAL BUILDING REMEDIATION</b>	<b>BRIDGE SUPPORT</b>
<b>SANITARY PIPELINE SUPPORT</b>	<b>SUBSTATIONS</b>	<b>BULKHEADS</b>
<b>STORAGE SILO FOUNDATIONS</b>	<b>TIE-DOWNS/MOORINGS</b>	<b>SHORING PIPELINE</b>
<b>WORK CAMP FOUNDATIONS</b>	<b>SOUND WALLS</b>	<b>MACHINE BASES</b>
<b>TOWERS – QUAD BASE</b>	<b>ROADWAY SIGNAGE TRAFFIC SIGNALS</b>	<b>STORAGE TANKS AND SILOS</b>
<b>UTILITY ANCHORING</b>	<b>BILLBOARD/SIGNAGE GENERATOR BASES</b>	<b>TIE-BACKS/ANCHORS/RETAINING WALLS</b>





Our mission is to provide our clients and associates with proprietary technology, products, equipment, and support, ensuring excellence in the design and performance of deep foundation and earth anchoring projects.

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