

# Foundation Systems and Services

Farrell specializes in proven, design-build, Ground Improvement Support and Deep Foundation Pile solutions. Farrell also provides design-build excavation support solutions, foundation design peer review, and specialty ground improvement and pile design services. Proven Foundation Solutions include:

ACP DDP Auger Cast Pile & Drill Displacement Pile	ACC DDC Auger Cast Column™ & Drill Displacement Column™	CSC CAP Compacted Soil Column & Compacted Aggregate Pier	VSC VDC Vibro Stone Column & Vibro Displacement Column	RIC RVC Rapid Impact Compaction & Rapid Vibro Compaction	MP HP Micro Piles & Helical Piles
<b>Diameter/Depth</b>					
14, 16, 18, 24 in dia 20 – 104 ft deep	14, 16, 18, 24 in dia 10 – 80 ft deep	18, 24, 30 in dia 6 – 32 ft deep	18 – 48 in dia 14 – 58 ft deep	5 – 8 ft dia 6 – 48 ft deep	4 – 14 in dia 10 – 150 ft deep
<b>Compatible Soils</b>					
Sand (SP, SM, SC) Silt (ML, MH) Clay (CL, CH) Contaminated Soil - DDP Undocumented Fill	Contaminated Soil - DDC Sand (SP, SM, SC) Silt (ML, MH) Clay (CL, CH) Undocumented Fill	Silt (ML, MH) Clay (CL, CH) Clayey Sand (SC) Silty Sand (SM) Undocumented Fill	Poorly Graded Sand (SP) Silty Sand (SM) Silt (ML) Clayey Sand (SC) Undocumented Fill	Sand (SP, SM, SC) Sand - Gravel mixtures Silt (ML, MH) Undocumented Fill Contaminated Soil	Sand (SP, SM, SC) Silt (ML, MH) Clay (CL, CH) Bedrock Contaminated Soil HP
<b>Bearing Capacity Range (ASD)</b>					
100 – 800+ kips	4,000 – 14,000 psf	4,000 – 9,000 psf	3,000 – 8,000 psf	2,000 – 8,000 psf	20 – 250+ kips
<b>Key Advantages</b>					
Deep pile with ground improvement - DDP High capacity No vibration Low spoil - DDP Steel reinforcement CBC compliant	High stiffness & High capacity - Type 2 No vibration Low spoil - DDC Uplift-tension hold-down Well defined concrete/ grout column Liquefaction mitigation	Cost effective support Readily available material - CAP LEED opportunity Re-use onsite soil - CSC High bearing capacity Uplift-tension hold-down	Liquefaction mitigation Densification CBC/SP117 compliant Use for confinement Low spoil No casing	Highly cost effective Liquefaction mitigation Densification Use for confinement Fast install process No spoil	Small equipment for tight access Ideal for repair/retrofit Minimal site impact Low spoil - HP No vibrations CBC compliant
<b>Key Considerations</b>					
Deep pile Engineered grout Low spoil - DDP Concrete cleanup Flat stable pad Pile connections	Impermeable Rigid inclusion Gravel cushion Grout with low spoil Concrete cleanup Flat stable pad	Vibration system Requires confinement in liquefiable layers Spoil haul-off - CAP Semi-rigid inclusion Casing Moderate depth limit	Vibration system Requires confinement in liquefiable layers Soft clay need grout Big operation for small site No work next to buildings	Vibrations at 30 ft Pad grading Import needed Shallow depth - RIC High noise - RIC	High material cost Steel below water Pile connections Need access
<b>Comparable To</b>					
Auger pressure grouted piles CFA Piles Driven piles Concrete piers Torque/pipe piles	Rigid inclusions Concrete piers Driven piles Geopier® Soil mix columns	Overex/replace Concrete piers Driven piles Geopier® Soil mix columns	Overex/replace Concrete piers Driven piles Geopier® Soil mix columns	Deep dynamic compaction Overex/replace Geopier® Resonant Compaction	Torque piles Pipe piles Concrete piers Driven piles Soil nails/tiebacks

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