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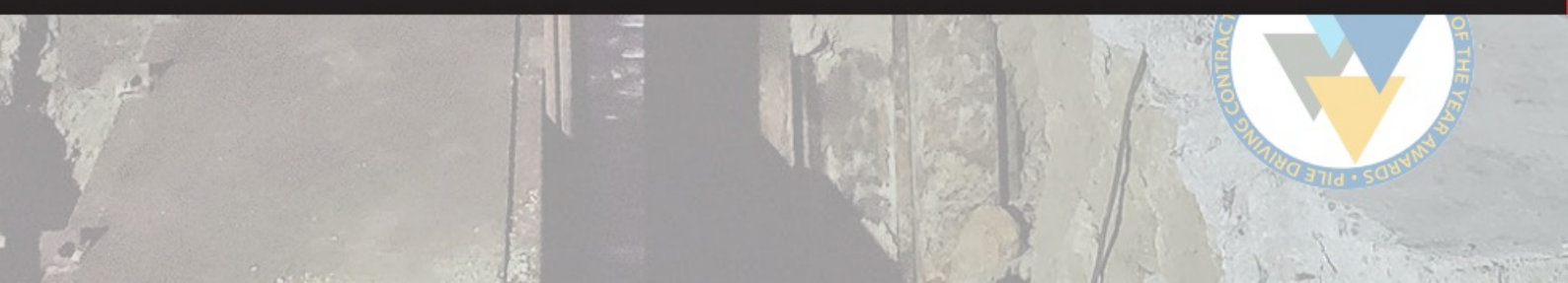
PILEDRIVER

PDCA



MATSON MILL MULTIFAMILY

The DIPs were installed using an excavator and modified jackhammer

GeoConstructors earned a PDCA Project of the Year Award in the category of Land: Less than $5 Million

By Larry Moore, GeoConstructors

GeoConstructors was contracted to provide ground improvement for a 5-story multifamily condominium in Conshohocken, Pa. The plan was to use Geopier Grouted Rammed Aggregate (GIP) piers bearing on the weathered rock stratum that varied in depth from 20 to 34 feet throughout the footprint of the proposed structure. During Phase III of the installation, it was discovered that the weathered rock stratum in some areas was much deeper than 34 feet. With subsequent trades starting on site, a quick solution was needed to extend the ground improvement to much deeper depths. GeoConstructors suggested the use of grouted ductile iron piles (DIPs) as ground improvement.

Adaptability to site conditions

With the depth to rock unknown but significantly deeper than expected, a product was needed that could easily vary in depth. DIPs provided by fellow PDCA member, DuroTerra, allowed GeoConstructors to easily vary the installation lengths by adding additional pipes using DuroTerra's plug and drive joint system. The plug and drive joint system eliminated the need for field welding

Photos: Courtesy of GeoConstructors

CONDOMINIUM

An overview of the expected versus actual rock depth at the site

DIP drive set up

DIP completed drive

and splicing, resulting in efficient driving times and adaptability to the varying depths to weathered rock. A conical grout shoe was added to the tip of the DIPs to facilitate grouting both the interior and exterior of the DIPs, resulting in a "friction DIP." The "friction DIPs" would mimic the ground improvement performance of the previously installed rigid inclusion while also supporting the relatively high loads.

Load test results of the DIPs proved that the DIPs were performing similarly to the previously installed rigid inclusions that were supporting adjacent footings. This allowed the DIPs to be used as ground improvement, therefore minimizing impacts or changes to the work of follow-on trades.

Rapid response

Once the problem was identified and the DIPs were determined to be the best approach forward, the goal was to perform the work with minimal schedule impacts. Geo-Technology Associates (GTA),

Continued on page 66

Congratulations to GeoStructures, Inc.
for a 2022 PDCA Project of the Year Award!

Project Type:	An International Shipping Facility
Project Needs:	Cost effective deep foundation
Challenges:	• Overhead height restrictions • Low vibration requirement • Tight site access
Solution:	End-Bearing Ductile Iron Piles
Geotechnical Contractor:	GeoStructures, Inc.

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DUCTILE *IRON PILES*

MODULAR, FAST AND LOW-VIBRATION DRIVEN PILES

A proven, cost-effective pile solution to support foundation loads in problematic soil conditions.

SOLUTIONS FOR:

- Limited overhead clearance
- Constrained work sites
- Low vibration requirements
- Variable ground conditions

BENEFITS:

- Rapid installation reduces project schedules
- Typical cost savings of 20-40%
- Alternative to drilled micropiles, helical piles and other systems
- Addresses variable bearing depths and reduces waste with Plug & Drive connection
- Proven experience for over 30 years

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FOR MORE INFORMATION OR PROJECT FEASIBILITY EVALUATIONS

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A DIP being driven into the ground

With the depth to rock unknown but significantly deeper than expected, a product was needed that could easily vary in depth.

a fellow PDCA member and geotechnical engineer for the project, assisted with quick mobilization of an air-track rig to help define the areas that would require DIPs and the approximate depths to weathered rock. Concrete and masonry work had already started onsite, and the steel erection could not be delayed. DuroTerra's ability to deliver materials to the site in less than two days allowed installation of the revised solution to begin quickly. The DIPs were installed with a medium-sized excavator and a modified jackhammer. All pipes were in five-meter sections, which made shipping, navigating around the job site and hoisting for installation a very easy process. From approval to the start of installation was less than week.

Economical solution

DIPs provided a quick solution along with a cheaper alternative to micropiles or traditional driven steel or pipe pile. Along with its easy install, there was minimal waste using the DIP system. With the plug and drive system, any leftover portion from the previous DIP was used to start the next pile. ▼