

On Solid Footing: Turning Setbacks Into Solutions With a Full-Service Approach

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When complicated soil conditions, a global pandemic, and inspection errors threatened to derail the completion of a \$30 million, state-of-the-art senior living facility in Plainsboro, New Jersey, it was an ability to respond immediately with full-service engineering and inspection expertise that allowed the project to finish on schedule and within budget.

Maplewood at Princeton successfully opened recently, but at times, the fate of this project was on shaky ground – literally and figuratively.

Initially, French & Parrello Associates (FPA) provided Site Engineering, Survey, Landscape Architecture, Environmental, and Geotechnical Engineering. Not long after the project's groundbreaking, however, complications arose with construction progress becoming a concern and FPA was retained to return the project to the approved timeline. FPA ultimately provided full-time special inspections and overall construction inspection.

Soil Condition, Weather Challenges, and Poor Planning

During design, FPA's geotechnical engineers identified that the in-situ soils at the project site contained significant amounts of fine-grained material, making them difficult to work with when wet. These difficulties would only increase in colder winter



temperatures. As such, FPA recommended removing and replacing the loose surficial soils within the building footprint to allow for proper support of the building's slab-on-grade. This earthwork, however, was not properly conducted.



At the owner's request, FPA performed a fresh assessment of the construction activities. During a site visit to observe the disturbed ground improvement work, it was clear to FPA's staff, and corroborated by the project's structural engineer,



that the project was not going to achieve adequate subgrade for the proposed foundations. FPA's Hector Rios, PE, Senior Geotechnical Engineer, observed that the previously improved subgrade was disturbed by weather and construction equipment, resulting in an inability to support the proposed building. At this point, the owner contracted FPA to provide Resident Engineering Services to oversee all construction and inspection efforts.

“The biggest challenges encountered during that period were mostly related to the saturation of the site due to inclement weather,” explained Rios. “Stormwater runoff was not controlled and often would find its way to the subgrade areas, ponding in the footing trenches and significantly softening the soils. With proper oversight, this would have been avoided.”

According to FPA Geotechnical Engineer Robert Knotz, PE, this demonstrated the importance of Special Inspections.

“Some people in the industry consider Special Inspections as a ‘rubber stamp,’” said Knotz, who has more than 15 years of experience. “Often, inspectors lack the experience or qualifications necessary to provide the type of knowledge and service FPA is able to provide. The result of bad inspection services is poor work quality. At times, inspectors provide simply a ‘pass or fail’ but do not provide guidance on what to do to remediate the situation or prevent issues in the future. Our level of inspection is extremely thorough. Our project managers are trained to continually communicate with our inspectors and the owner to ensure the best possible outcome and the highest quality of work.”

Soon after, FPA was engaged by the owner to provide full-

time oversight of the construction activities where earthwork solutions were developed in a timely and cost-conscious manner. Construction pads were installed in critical areas of the site and work was phased to limit the disturbance of the subgrade soils. The project then progressed during the cold and wet season without interruption.

“We would look ahead at the weather and properly plan the extent of trench excavations for footings to limit exposure to stormwater,” Knotz said. “These are the types of things that provide value to the project with guidance to the owner and the construction manager.”

Added Rios, “The critical lesson is that even during the most extreme weather conditions, projects can effectively progress with minimal cost implications if proper earthwork planning is implemented at the onset of construction.”

COVID Presents New Challenges

With the project running smoothly, a new threat emerged -- a global pandemic. As the world struggled with the growing health crisis, construction projects across the country came to a halt. Mandatory shutdowns affected active job sites, as well as local government entities and their employees themselves, which created major coordination issues. Maplewood at Princeton, with its designation as a residence for seniors, was granted permission to continue construction.

“The question became who is going to perform the inspections on a job when COVID-19 was just beginning,” said Andrew French, PE, Chief Operating Officer and Director of Land Development Services at FPA. “The Township was shut down,





so its inspectors were not performing inspections as usual. However, being a full-service firm, we were able to perform the required inspection work while following COVID-19 safety precautions.”

Working with the local construction code official, FPA performed the necessary building inspections, allowing the project to progress. “The Township was comfortable with FPA performing the building inspections based on our previous experience there,” French said. “We have been working in Plainsboro for a number of years. We have a good relationship with the Township built on trust and communication.”

Plainsboro Township and Maplewood at Princeton agreed to accept reports from FPA for the building inspections.

And this trust afforded to FPA from Plainsboro was not insignificant. Jake Dudley, who performed many of the construction inspections on the Maplewood project, explained that Plainsboro entrusted FPA’s staff to be their eyes and ears. “I think our relationship with the Township on previous work in that area, gave us the leg up.”

“This shows the advantage that FPA has that other inspection companies don’t,” French said. “Having professional engineers and multidiscipline services in-house gave us the ability to keep the project moving at a critical stage of construction.”

Final Obstacles

In speaking about the value that FPA brought to the project, Nick Gullusci, the Owner’s Representative and Project Manager,

stated that, “FPA was able to shepherd us along with the contractor, in terms of making some better decisions as to how we went about the installation of different materials, so that was very helpful.” Gullusci added that the decision to make significant changes to the landscape design work was another challenge that FPA Landscape Architect, Sarah Rebar Bisaha, LLA, PP, was able to expertly tackle.

“Midway through construction, Maplewood expressed a desire to revisit the landscape design of three outdoor spaces to provide a better variety of sitting and gathering spaces for different user groups and mobility levels while enhancing the environment around them,” explained Rebar Bisaha.

“Ultimately, we were able to create these spaces, featuring such amenities as decorative pavement, landscape lighting, planters, four-season landscaping, and water features. Each of the three spaces offer a different experience but provide comfort and an overall sense of serenity.”

However, even this phase of the project wasn’t without its own set of obstacles. The same soil conditions that presented challenges to earlier construction efforts also required specific design considerations for the landscaping throughout the campus. “Not only did we put an emphasis on choosing the right plant materials that would mature to a size that fits and complements the variety of areas at Maplewood, but we had to make sure that the soil would perk, or absorb water, so that the plants would thrive,” explained Rebar Bisaha. “In some cases, this involved amending planting areas with additional depth and drainage features.”

And yet, there were still other issues to navigate. “How do you make your vision happen when your phase of the project



is nearing the end of the construction timeline, the budget is becoming increasingly tight, and the supply chain is four months behind?” Rebar Bisaha asked. Since the landscape vision included specific features where substitutions would not work, the FPA landscape architectural team had to work extra hard with suppliers to make it happen.


“In the end, FPA was able to come through,” Gullusci agreed, stating “the courtyards and landscaping for the project turned out great” and are a breathtaking feature of the now-finished Maplewood Assisted Living Facility.

On Solid Footing

During construction, Maplewood Assisted Living Facility encountered challenges that, when combined, threatened the overall successful completion of this multi-million-dollar project. Challenging soil conditions, inclement weather, construction impacts, inspection company issues, and delays presented by the COVID-19 pandemic created a grim scenario. However, FPA, with its multidiscipline construction inspectors and in-house knowledge provided the proper planning and execution to advance the project and mitigate these challenges.



“FPA established sincere, open, and direct communications with the management of Maplewood, from the first day on site,” Rios said.

Added Dudley, “This resulted in better practices. And a true strength is our responsiveness to the client. We are able to provide recommendations immediately to people in the field and get answers back to the owners and our clients rapidly.” 



About the Article

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Celebrating over 48 years of engineering and consulting excellence with over 170 professionals across multiple office locations throughout the Northeast and Mid-Atlantic, French & Parrello Associates provides innovative and effective multidiscipline engineering design and environmental services for clients in both the public and private sectors. Visit www.fpaengineers.com.

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