Dreux A. Seghers, P.E., LLC
Consulting Civil Engineer
166 Nixon Street, Biloxi, MS 39530
(228) 324-5771

September 5, 2025

Mr. Yuri Petrini
1606 Beach Boulevard
Biloxi, MS 39531

Re:	Residential Property – Construction Evaluation
Homeowner:	Mr. and Mrs. Yuri Petrini
Subject:	Report of Findings

Dear Mr. Petrini:

You and your wife have recently constructed a new house located at 1606 Beach Blvd in Biloxi, MS. As part of the construction, there is an elevated structural steel pool deck at the south (front) side of the residence. The pool deck was constructed after the home and has a separate foundation and the framing is structurally independent from the residence. The as-built pool deck plans provided of the construction were prepared and sealed by Mr. Terry Moran, PE and I do not intend to assume any design responsibility for said project. For purposes of discussion, the residence is assumed to face south.

From our discussions, you have indicated that you are currently under a "Stop-Work Order" issued by the City of Biloxi. Therefore, I was retained to evaluate the construction of the concrete and steel pool deck and address comments from the City of Biloxi through their attorney concerning presumed construction defects. As discussed, I am not acting as an expert witness but as an independent third-party engineer. I performed the assessment of the subject property on Saturday August 30, 2025 at approximately 9 am. During the assessment, I observed the exterior of the pool deck including the partial footings, columns, beams, composite concrete deck, pool deck CMU walls and pool shell. I also measured the east beam under the proposed pool location for any deflection. In addition, I observed surplus helical piles and extension shafts at your warehouse located at 287 Bohn St., Biloxi, MS.

The condition of the pool deck was photographically documented and some photographs included in this report are representative of my observations during the assessment but do not necessarily show all conditions that may have existed. And some photographs were provided by either the construction supervisor or the homeowner. Not all photographs are included in the report but are maintained at my office. This report is a visual, non-destructive evaluation of the property and as such this report is limited to visibly evident conditions. If additional information becomes available, I reserve the right to revise my conclusions.

Some Findings of Note

1. The pool deck is structurally independent of the main house.

2. The pool deck uses two different foundation supports. One support type consisting of a steel-reinforced concrete pile cap for the large pool loads. And a second helical pile support type for the other deck loads.

3. The steel HSS column and beam frame for the pool deck is welded together at all joints providing a rigid joint connection or a moment frame. This design type is more resistant to bending than a bolted or pinned joint connection frame.

4. The HSS steel columns are all filled with high-strength concrete which allows the columns to withstand great loads and resist buckling more effectively.

5. Ther upper pool deck consists of a composite metal pan and steel-reinforced concrete deck system which provides a rigid diaphragm to the moment frame mentioned above. This provides greater resistance to lateral bending.

6. I did not find any visual evidence that the steel HSS columns were not generally centered over the helical pilings or the concrete pile caps.

7. I did not find deflection in the pool deck beam that I measured. In fact, I found the beam to have camber or an upward bow (negative deflection).

8. I did not find any visual evidence that the concrete pile caps for the helical pilings were less than 24” x 24” x 24”.

Discussion

The pool deck, as constructed, is an elevated steel-framed structure on a hybrid foundation. The frame consists of 8’ square galvanized HSS (Hollow Structural Section) which comprises the columns and beams. The wall thickness of the steel members is 5/8” thick. The deck is intended to support a pool and also a deck for persons and furniture. The foundations for each area are designed and constructed differently. The pool framing consists of four (4) HSS columns bearing on 4’ x 4’ x 4’ steel-reinforced concrete footings and the remaining deck columns (five steel HSS columns) are supported primarily by steel helical piles welded to the vertical columns. The foundation is also connected with steel-reinforced concrete grade beams to provide additional support from adjacent foundation elements. The steel columns and platform beams are continuously welded at all connections creating a moment frame which is a structural system that is rigidly connected at the joints to resist bending forces. Additionally, the deck columns are filled with concrete thereby increasing the strength and stiffness allowing greater axial loads and to more effectively resist buckling. The deck is then capped with a composite steel reinforced concrete deck. The deck is generally comprised of corrugated steel formwork pans which are mechanically secured to the HSS deck beams. Then reinforcing steel was placed in a grid which became embedded within a four-inch concrete section.

This composite concrete deck system provides a rigid structural diaphragm, where the steel and concrete work together to resist forces.

Mr. Petrini was present during the assessment and provided information as to the construction. Additional information was provided through phone conversations with Mr. Andrew Harwell who was the on-site daily project supervisor.

Prior to or during the site assessment, I reviewed the following documents:

Letter by J. Henry Ros of Currie Johnson and Myers, PA dated August 13, 2025

As-Built Pool Deck drawing prepared by Terry Moran dated July 30, 2025

As-Built Design Report MS Steel Deck, ETABS Software Analysis dated July 7, 2025 and sealed and signed by Terry Moran, PE dated July 7, 2025

As-Built Structural Analysis of MS Steel Pool Deck – 1606 Beach Blvd., prepared by Noor Mohammed (structural Engineer) and supervised by Terry Moran, PE dated

Pool Specification drawing, model Tunis I-C11, from iGUi Pools dated June 5, 2024

Photographs and videos supplied by the Homeowner (various)

Photographs supplied by the Mr. Andrew Harwell, project supervisor (various)

The alleged construction deficiency comments from the City of Biloxi, as submitted by their attorneys (Currie Johnson and Myers, PA),
are as follows:

- Piles not centered under column
- Piles not embedded in pile cap (top at same elevation as base of col.)
- Pile cap thickness less than 24" thick; No reinforcement info
- No base plate info on drawings
- Base plate not centered under columns
- Anchor bolts not on drawings
- No CMU/reinforcement on drawings; No CNXN to conc. slab shown
- Visual deflection of beams
- A concrete slab was poured beneath the deck without an inspection, concealing the footings and preventing further ability to inspect for compliance.

I will address the above comments individually.

1. <u>Piles not centered under column</u>

From this statement, I assume that this refers to the helical pile positions under the HSS steel columns. From my review of the as-built drawings and photographs, I observed that the 8” square HSS columns were welded to the standard 12” square helical pile cap plate that are supplied with the helical piles. The steel top plate is part of a proprietary system that includes a receiving cup or sleeve located directly in the center of the bottom of the steel plate. Therefore, the plate will be centered directly on top of the helical pile shaft. From my review of the construction photos, I was able to observe that the HSS columns were welded to the 12” square plates and generally centered within the plate. Of note, I did observe that the columns were slightly off center on the plate but still located over the helical pile shaft. This off-center condition is called eccentric loading and I asked Mr. Petrini to analyze this condition using ETABS software. I was provided this

2. Piles not embedded in pile cap (top at same elevation as base of col.)

I am assuming this is referring to the helical piles. The connection method is common and goes as follows:

A. Pile Installation:

Helical piles are installed by screwing them into the ground to the required depth based on the desired torque. Additional shafts can be added to the top of the helical pile to achieve the depth.

B. Bracket Placement:

The bracket type plate is then attached to the top of the helical pile shaft. The plate can be bolted or welded to the shaft

C. Load Transfer:

The column's load is transferred to the bracket and then to the helical pile shaft and its bearing plates, which in turn distribute the load into the soil.

D. Stability:

The bracket's design and connection to the pile cap or footing ensure that the system can resist both compression from the column and uplift forces.

In addition to the helical pile and top plate, the top of the helical pile was embedded in a steel-reinforced concrete footing to provide additional load transfer and lateral support. There is also a grade beam that structurally connects the adjacent pile cap. From my review, the helical pile installation is in accordance with generally acceptable installation methods. And according to the structural analysis software, the helical piles provide acceptable load resistance.

3. Pile cap thickness less than 24” thick; No reinforcement info

I was unable to verify that the pile caps were less than 24". From my review of the photographs, I saw that the concrete pile caps were visually 24" square and 24" deep. Additionally, there is a 4" cap or topping slab on top of the cap.

4. No base plate info on drawings

   No comment offered as the plates are proprietary to the helical pilings.

5. Base plate not centered under columns

   From my review, I was unable to find where the columns did not get installed (welded) generally near the center of the base plate. I did find some small offset (eccentricity) with the columns to the base plate which appeared to be less than 2" in either the N-S or E-W direction. However, the helical pile shaft and top plate are embedded in concrete providing resistance to potential bending from an eccentric load. Further a structural analysis was performed using ETABS structural software and determined that the eccentric loading was safe.

6. Anchor bolts not on drawings

   No comment offered on the absence of anchor bolts on the drawings. However, I did visually observe that there are 5/8" anchor bolts installed on approximately 16" centers at the base of the CMU pool wall on the upper deck.

7. No CMU/reinforcement on drawings; No CNXN to conc. slab shown

   Adding to the comment of anchor bolts in item #6 above, there are threaded rods that are to be installed from the above-mentioned anchor bolts and will be located through the CMU cells and terminate at the top of the pool deck elevation to secure the lip of the pool to the CMU wall. Additionally, I did observe that the CMU cells are to be filled with a high-density structural foam.

8. Visual deflection of beams

   I am not sure which of the beams this comment is referring to, but I measured the deflection on the easternmost beam (running N-S) under the proposed pool. This beam would be one of two that would be under the largest loading condition. I used a self-levelling laser level to perform this task. From my measurements, I did not find any deflection in the beam. In fact, I found the opposite condition; The beam actually has a 7/8" camber (upwards bow) at the center of the beam span, which would be the point of maximum deflection. This was done without the pool being filled but my review of the structural analysis output from the ETABS software takes into account the pool being filled and showed an acceptable deflection.

9. A concrete slab was poured beneath the deck without an inspection, concealing the footings and preventing further ability to inspect for compliance.

This is not an engineering deficiency and I therefore offer no opinion other than to say I was told that the foundation was inspected and approved to pour.

Summary

The information and data stated above supports my assessment that the construction of the pool deck is constructed in accordance with generally acceptable design and construction techniques. Further from my review of the documents provided, it appears that the design is adequate to support the load proposed.

This report is limited to the items referenced above. It is not intended to confirm or refute any design assumptions made by the design engineer of record.

This report was prepared for the exclusive use of Yuri Petrini and is not intended for any other purpose. My report is based on information made available to me at this time. Should additional information become available, I reserve the right to determine the impact, if any, of the new information on my opinions and conclusions and to revise my opinions and conclusions if necessary and warranted by the discovery of additional information.

Sincerely,

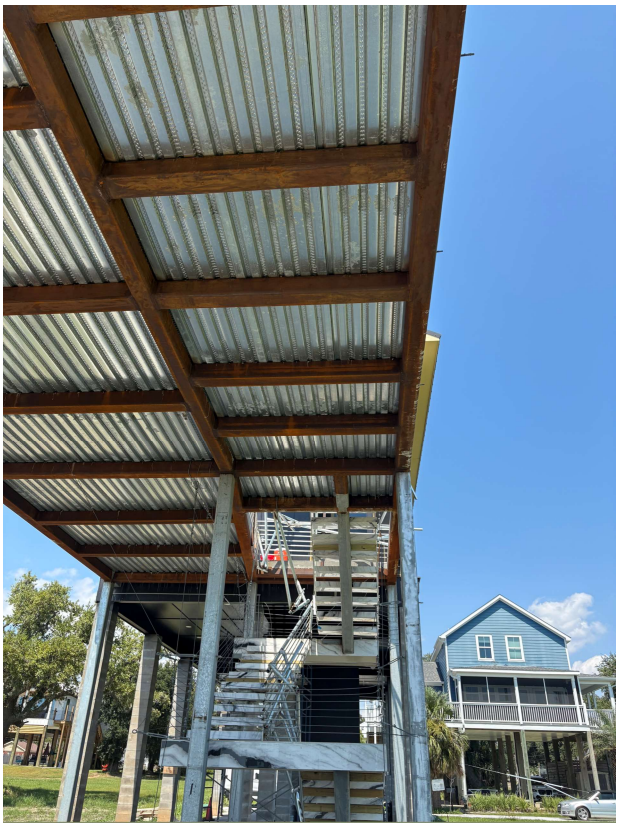
Dreux A. Seghers, P.E.
MS # 11888
Consulting Civil Engineer

Attachment
Photographs

ATTACHMENT A

Photographs

Front or south elevation showing the structural pool deck



View of Structural Decking showing columns, beams and concrete deck pan

View of Structural connection at columns to beams denoting a moment frame

View of top of helical pile shafts. Vertical and batter pile shafts shown

View of top of helical pile shafts with proprietary top plate for connection to columns

View of helical piles and shafts at the Bohn St warehouse

View of top of large footing under pool column showing embedded plate pedestal and grade beams

This is not an engineering deficiency and I therefore offer no opinion other than to say I was told that the foundation was inspected and approved to pour.

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