

May 15, 2023

Ms. Marquessa Moore  
City of Forest Park  
803 Forest Parkway  
Forest Park, GA 30297

RE: Starr Park Indoor Pool - Soils and Building Foundation Investigation

Dear Ms. Moore:

In response to your request, Engineered Systems & Services (ESS), along with our subconsultants, United Consulting and Smiley Structural Engineering, have completed an investigation of the soils and foundation that support the building structure for the Starr Park Indoor Pool. You will find an executive summary of our report below and a full report of findings from the geotechnical and structural engineers that evaluated the facility. Our summary of findings are as follows:

ACTIONS TAKEN

1. Reviewed original design drawings and project documentation.
2. Participated in multiple conference calls and site visits to gather data and to discuss findings with the City of Forest Park.
3. Coordinated investigative activities with the pool's design-build contractor, United Pools, who is performing design and construction services for the pool renovation.
4. Requested complete drainage of the pool in preparation for inspecting all pool surfaces.
5. Conducted inspections of the pool's visible structure and surfaces.
6. Conducted low pressure (gravity) testing of piping for the main pool drain and supply water following lowering of the pool's water level. We monitored the water holding integrity of the pool's main drain over multiple weeks.
7. In coordination with United Pools, we conducted a potholing investigation of a suspected pipe leak beneath the pool deck on the west side of the pool.
8. We conducted two additional rounds of inspections by geotechnical and structural engineers to examine the progress of each phase of planned excavations for pool expansion. We examined supporting soil and surrounding visible structures to determine whether such excavations could pose a risk to the building foundation's integrity.
  - a. United Consulting, the geotechnical engineer for the project, conducted inspections for soils that support the building foundation.
  - b. Smiley Structural Engineers conducted structural engineering inspections for the building structure to determine whether any evidence of structural damage was present.

## FINDINGS

1. The main pool drain was not a source of significant leakage.
2. The pool basin did not have slab penetrations or cracks that could permit significant leakage.
3. The building structure and soil that support the structure are in good condition. No adverse findings were reported upon inspection. (See attached reports by the United Consulting and Smiley Structural Engineering.) Excavations that are planned by United Pools to facilitate expansion of the pool's footprint, as currently presented, should not pose any threat to the integrity of the building structure. No further action is required unless the planned footprint or depth of the pool is altered.
4. An active leak was found after excavating a suspected pipe leakage site beneath the pool deck. The leak that was found beneath the deck slab did not create any visible damage to the building structure and should not pose a risk to the building's foundation. Leaking water appears to have flowed beneath the pool basin, via a gravel bed, to subsurface ground water beyond the building footprint. No further action is required. See detailed reports from the geotechnical and structural engineers attached.
5. Roof drain leaders are broken in multiple locations around the building. Most of the connecting piping is light gauge corrugated HDPE that may be easily damaged. Currently, piping breaks allow storm water to erode soil near the building's exterior foundation on the south and east sides of the building. This flow could eventually compromise the building's foundation.

## RECOMMENDATIONS

1. Allow United Pools to replace all existing piping pool recirculation piping with new PVC piping.
2. Allow United Pools to complete construction of the pool expansion as planned.
3. Under a separate contract, address leakage of storm water near the building's foundation by replacing broken storm drain leaders on the south and east sides of the entire building.

Please let me know if you have questions.

Best regards,



**Jonathan L. Rucker, PE, LEED AP**  
**Principal**  
**Engineered Systems & Services, LLC**  
2950 Horizon Park Drive  
Suite B  
Suwanee, GA 30024

Attachments: Geotechnical Engineering Report  
Structural Engineering Report

cc: Mr. Arthur Geeter



UNITED  
CONSULTING

# LETTER REPORT

**For Mr. Jonathan Rucker, PE,  
LEEP, AP  
Engineered Systems &  
Services, Inc.**

Letter Report of Geotechnical  
Evaluation  
Starr Park Indoor Pool  
Forest Park, Georgia



May 8, 2023  
Revised May 9, 2023

Mr. Jonathan Rucker, PE, LEED AP  
**Engineered Systems & Services, Inc.**  
2950 Horizon Park Drive  
Suite B  
Suwanee, Georgia 30024

Via Email: [jrucker@essengineers.com](mailto:jrucker@essengineers.com)

RE: Letter Report of Geotechnical Evaluation  
**Starr Park Indoor Pool**  
Forest Park, Georgia  
Project No. ESSEN-23-GA-07217-01

Dear Mr. Rucker:

This letter report is to summarize United Consulting's observations, findings, and recommendations regarding the potential for leaks of the pool piping to have compromised existing building foundations or the pool itself. It has been revised to correct typographical errors in the text and attached photographic log. We understand that the water level in the pool has been dropping to about 2-3 feet below full level without adding additional water. No obvious signs of fractures, punctures, etc. in the bottom of the pool had been identified and no obvious signs of settlement, cracking, etc. had been observed at the ground surface around the pool. We understand that the footprint of the existing pool will be enlarged, all piping will be replaced, and the pool and surrounding areas resurfaced.

Our first site visit was on February 17, 2023. At the time of that visit the existing concrete slab between the west side of the pool and the existing adjacent building wall had been removed, as shown on Photos 1 and 2 in the attached Photograph Log. No soft or wet areas were observed with the exception of a localized area adjacent to a return inlet towards the northwest corner of the pool. This location is shown on attached Figure 1 (Pool Diagram) and on Photo 3. The contractor had dug an approximate 3 foot-deep excavation at the location and exposed an existing 1 ½ inch PVC return pipe, as shown on Photos 4 and 5. The pool operator turned on the pool pump and water was observed leaking from the piping. The water rapidly dissipated into what is suspected to be a gravel layer below the pool. No void or other signs of erosion were observed in the area of the leak. And no other signs leaks were observed in the pool area. No obvious signs of subsidence such as cracking, tilting, etc. were observed in the pool slabs or in the adjacent structure.

During our February visit, we were informed that about 4 foot-deep excavations would be needed adjacent to the west and north sides of the pool to widen the pool. The structural engineer requested guidance for protection of foundations for the existing structures. We suggested that a 1H:1V planes extending down and away from the bottom of the existing building foundations not intersect the excavation faces, and if such planes did intersect the excavation faces that shoring be used.

During this visit, we also observed wetness on the lower portion of the east below grade wall for an equipment building southeast of the pool, as shown in Photo 6. Based on our observations it did not appear that the wetness was associated with the pool leaks. We subsequently observed that the exterior ground surface above the wall was somewhat depressed and that there was an existing gutter down drain in this area (Photo 7). We suggested that the area outside the wall be repaired so stormwater flows away from the wall instead of ponding. We also suggested that the down drain be evaluated to determine if there may be a leak. At the end of the February visit, it was agreed that United Consulting would make another site visit once the excavations for widening the pool had been completed so that an additional evaluation of any potential leaks, voids or other signs of subsurface erosion could be made.

United Consulting returned for a second site visit on May 1, 2023. At this time excavations had been completed along the west and north sides of the pool (Photos 8 through 10). All exposed soils were firm and no signs of leaks, voids or other subsurface erosion were observed. We were also informed by the structural engineer that a 1H:1V plane extending down from the existing foundations did not intersect the excavation face. The contractor also reconfirmed that all pool piping would be removed and replaced.

During the May visit, we again observed the exterior ground surface outside the east below grade wall of the equipment building where wetness had been observed during the February visit (Photo 11). The area was unchanged. We also observed the adjacent gutter down drain to the north was damaged and that there was an associated depression at that location (Photo 12). Based on those observations, we recommended that a roofing/gutter specialist be consulted to evaluate all of the building gutters and down drains for potential leaks and repairs.

In summary, based on our February 17, 2023 and May 1, 2023 site visits, outside of the localized leak near the north west return inlet, we did not observe any evidence of additional leaks or associated conditions that pose imminent threats to the existing building foundations or to the pool itself. Because our observations were limited to those areas exposed in the excavations for this project, there is a risk that there could be undetected areas of existing subsurface erosion that could cause future issues. However, because all of the pool system piping will be removed and replaced, we don't believe that risk is relatively low.

This Letter Report is for the exclusive use of **Engineered Systems & Services, Inc.** and may only be applied to this specific project. Our results have been prepared using generally accepted standards of Geotechnical Engineering practice in the State of

Georgia. No other warranty is expressed or implied. Our firm is not responsible for conclusions, opinions or recommendations of others. The right to rely upon this report and the data within may not be assigned without UNITED CONSULTING'S written permission.

We appreciate the opportunity to assist you with this project. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

**UNITED CONSULTING**

Michael A. Kemp, P.E.

**Senior Geotechnical Engineer**



Christopher L. Roberds, P.G.

**Senior Executive Vice President**

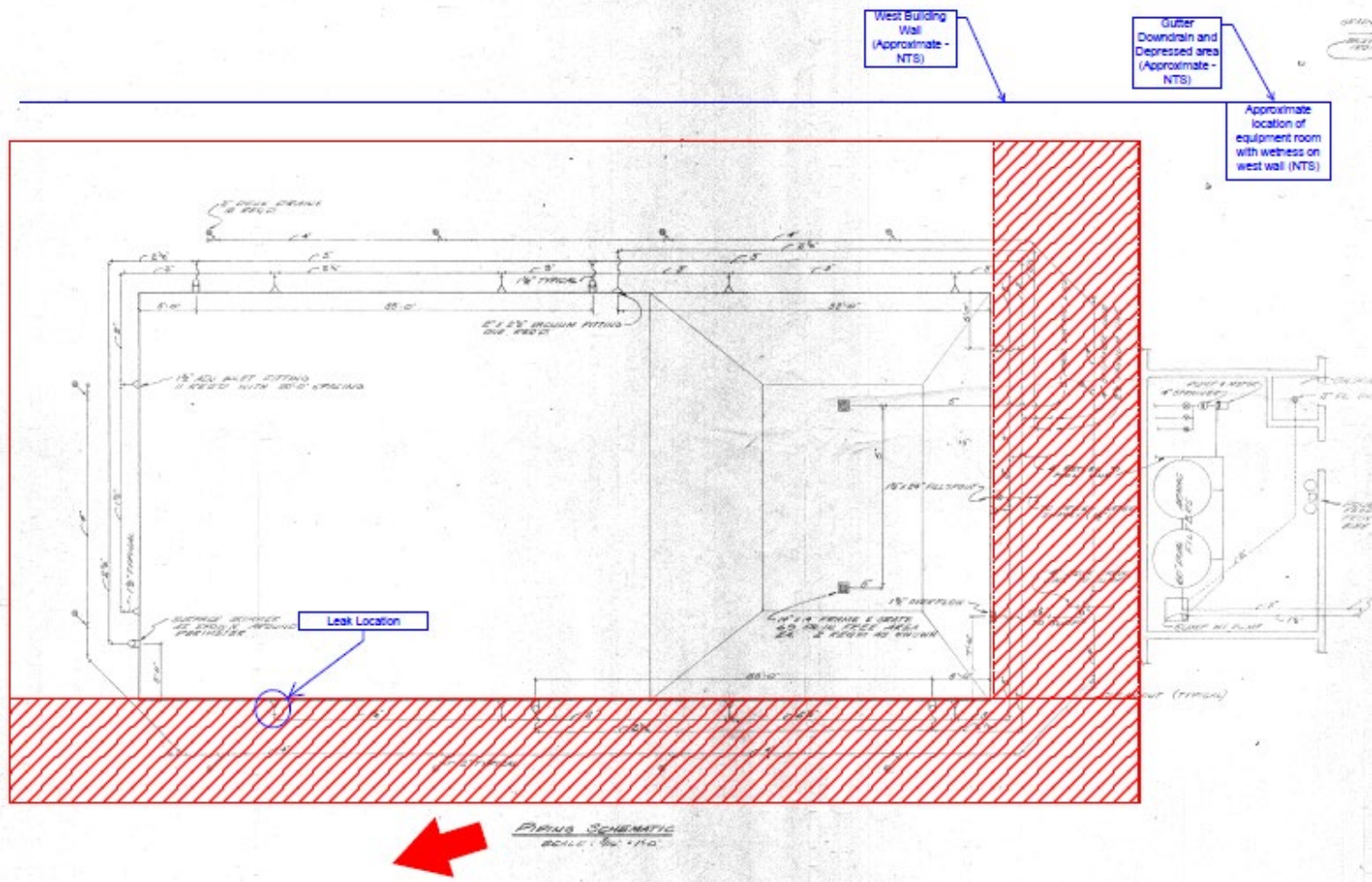
MAK/CLR/nj


Attachments: Figure 1 – Pool Diagram  
Photograph Log (17)

<http://ucblade10/sites/ESSEN-23-GA-07217-01> – Letter Report

## ATTACHMENTS

Figure 1 – Pool Diagram  
Photographic Log (17)



SCALE: NTS	PROJECT NO.: ESSEN-23-GA-07217-01	TITLE: POOL DIAGRAM	<b>FIG. 1</b>
PREPARED: MAK	CHECKED: CR      DATE: 05/08/2023	STARR PARK INDOOR POOL FOREST PARK, GEORGIA	
CLIENT: STARR PARK INDOOR POOL		UNITED CONSULTING 625 Holcomb Bridge Road, Norcross, GA 30071 Tel. 770/209-0029 FAX 770/582-2900 <a href="http://www.unitedconsulting.com">www.unitedconsulting.com</a>	





## Photographic Log

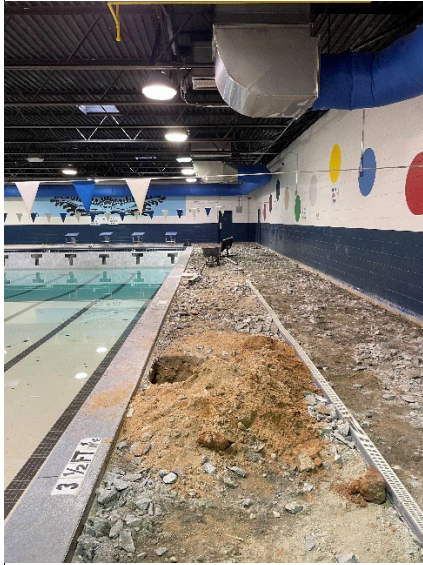


Photo 1: Demo area W of pool. View from N. 2/2023



Photo 2: Demo area W of pool. View from NE. 2/2023



Photo 3: Excavation at inlet pipe leak. View from N. 2/2023



Photo 4: Excavation at inlet pipe leak. View from W. 2/2023

## Photographic Log



Photo 5: Excavation at inlet pipe leak. View from S. 2/2023

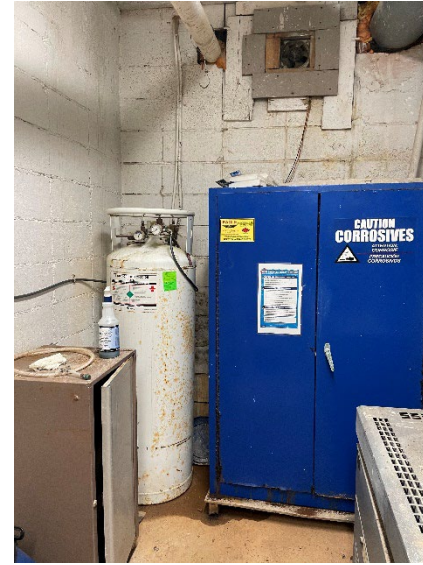


Photo 6: E. wall of equipment room. View from W. 2/2023



Photo 7: Exterior area E of equip room. View from E. 2/2023



Photo 8: Excavated area W of pool. View from N. 5/2023

## Photographic Log



Photo 9: Excavated area N of pool. View from W. 5/2023



Photo 10: Excavated area W and North of Pool. View from SE 5/2023



Photo 11: Area exterior to equip room. View from N. 5/2023



Photo 12: Down drain N of equip room. View from E. 5/2023

# Important Information about This

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

## Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

## A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

### **Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

### **Give Constructors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Environmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

### **Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance**

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



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May 10, 2023

Engineered Systems & Services Inc  
2950 Horizon Park Drive  
Suite B  
Suwanee, Ga 30024

Re: **Starr Park Pool – Foundation Evaluation.**  
SSE Project #: 23004

I am pleased to provide this letter detailing the findings from our site visits and providing our opinion on the ability of the existing structure to support the proposed renovation at the Forest Park Recreation & Parks Pool at 803 Forest Pkwy, Forest Park, GA 30297. For the purposes of this report the front of the building being viewed from Forest Parkway will be referred to as the North elevation.

I visited the above mentioned site initially on Jan 9th to review the structure around the pool area due to concern over a leak on the property. The owner had reported a leak in the pool, approximately 2-3 feet would drop daily. There was concern that this water being released was draining to the soils beneath or behind the foundation of the existing structure. There was also a proposed pool renovation mentioned and the surrounding structures, ie the western wall adjacent to the gym and northern wall adjacent to the hall way, were to be reviewed. There is a pump room on the south side of the pool, the pool wall is shared with the equipment room, See photos 1 and 2. The wall is comprised of CMU in a stack bond configuration. The wall shows some spalling but there are no immediate signs of distress in the wall. There are signs of corrosion from piping that was in the wall but there does not appear to be any water penetration through the southern pool wall. The eastern basement wall does show signs of water intrusion, See photo 3. There are drainage pipes on the outside of the wall at this location that may be contributing to water infiltrating the space. Although there is water coming into the space there does not appear to be any structural damage to the wall or foundation. The walls around the pool adjacent to the other spaces and the exterior walls appear to be in good condition with no signs of settlement due to any weakening of the foundation.

I revisited the site on February 17<sup>th</sup> to review the slab removal around the pool and observe the purported location of the pool leak, See photos 4 and 5. On the west side of the pool a section was excavated to expose a leaking pipe following activation of the pool's recirculation pump. The volume of water flow was too small to fill the excavation. When the system was shut down the water drained out, presumably beneath the pool. There is likely a gravel drainage layer below the pool based on typical construction practices of the 1960's. With absence of any structural foundation damage at or around the pool I concur that replacing all the piping during this renovation will relieve the leak issue and that the leak itself did not cause any structural damage regardless.

My last site visit to the site was on May 1<sup>st</sup> to review the excavation of the soil on the west and north side of the structure and to observe the surrounding structural walls and the soil conditions, See photo 6. The existing structure appears to be in the same condition and was not affected by the excavation. The soils also did not appear to show any signs of water infiltrating behind the pool on the west or north sides. Based upon my observations, the current pool excavation and planned modifications do not impose any risk of structural damage upon the existing adjacent walls, footings or other related structures for the building.

I am satisfied that the existing structure is sufficient to support the proposed renovation and that the excavation did not cause any foundation damage to the structure during construction. We appreciate you using Smiley Structural Engineering for structural expertise. Please do not hesitate to contact me with any questions or comments in this matter.

Sincerely,  
SMILEY STRUCTURAL ENGINEERING  
Shayah Smiley, PE  
Principal



**APPENDIX**



*Photo 1 Southern Pool Wall/Equipment Room Wall*



*Photo 3 Eastern Basement wall with water infiltration behind equipment*



*Photo 2 Southern Pool wall/Equipment Room Wall*



*Photo 4 Review of slab removal*



*Photo 5 Review of excavation at leak*



*Photo 6 Review of Pool expansion excavation*