



MEMORANDUM

Date: May 7, 2019

To: Khurshid Hoda, Village of Orland Park

Cc: Gary Couch, Village of Orland Park

From: Mike Famiglietti, P.E.

Re: Geotech & Engineering Summary
John Humphrey Sports Complex Improvements

V3 and the Village of Orland Park are in receipt of a geotechnical report prepared by Testing Service Corporation (TSC) entitled "Report of Soils Exploration – Baseball Fields and Park Improvements, John Humphrey Sports Complex", dated April 9, 2019. Please refer to this report for detailed information.

This memorandum is generated to provide a short summary of the findings identified in the TSC report and recommendations for V3's final engineering drawings.

SITE CONDITIONS SUMMARY

- 1) Miscellaneous fill material was identified throughout the sports complex. Some of the borings indicate loose, organic fill and buried topsoil that will require removal and replacement and/or disking and drying during the mass grading operation. The majority of these areas can be addressed through typical grading operations and will not require specialty mitigation measures for completion of the proposed improvements.
- 2) Groundwater was encountered at depths ranging from 5.5 feet to as deep as 17.0 feet below existing ground surface.
- 3) Field 3 – very soft and wet peat was encountered in the outfield that will require consideration.
- 4) Field 3 – peat was encountered at depths ranging from approximately 8 feet to 13 feet below existing ground surface and extending to 22 to 27 feet below existing ground surface.
- 5) The existing conditions of Field 3 show significant grade differential from the outfield to home plate. The timeframe over which this perceived settlement has occurred has not been confirmed. Typically, the majority of settlement occurs shortly after the load is imparted on the soft soils and a decreasing amount of settlement is experienced over time. Remediation options as identified in the TSC report are summarized herein.



PEAT MITIGATION OPTIONS

1) No Additional Fill on Field 3

- a. Long term annual settlement of 1/8" to 1/4"
- b. Not a practical solution due to slopes that are required to provide adequate drainage. Some fill is needed on Field 3.

2) Raising Grade on Field 3

- a. Estimated settlement under 1-3 feet of new fill; 3" to 6" over the first five years.
- b. Additional long-term settlement at a rate on the order of ¼" per year

3) Remove and Replace Peat Material in Field 3

- a. Water was encountered at depths varying from 5 to 17 feet below existing ground surface
- b. Excavation to remove peat would require excavation to extend 27 feet below existing ground surface
- c. The logistics for removing buried peat to these depths would require significant dewatering, staging areas, truck access provisions and over excavation to account for slough of subsurface materials during excavation.
- d. Settlement would not be expected to exceed 1-2 inches if all work was achieved per recommendations.
- e. Cost of the excavation and removal is estimated to exceed \$1.5M for disposal of peat material at an off-site location.

4) Controlled Stiffness Columns in Field 3

- a. Specialty Contractor installation (deep foundation contractors).
- b. Most common application of this installation is structure support. TSC has limited completed project experience for performance evaluation of ground support applications.
- c. Ground support requires excavation and removal of upper 3-5 feet of material and replacement with a combination of rock and geogrid to create a load platform to transfer loading to the columns
- d. Settlement expectations with proper installation are estimated at 1-2 inches.
- e. The cost varies significantly based on specific site conditions, earthwork constraints and spacing of columns. Estimated cost \$1.0M.



V3 Recommendations

The mitigation method selected to address the peat underlying field 3 will have a significant impact on the overall improvement plan. Based on the information summarized herein and in the TSC Report of Soils Exploration, it is V3's recommendation to leave the peat in place and mitigate future settlement through grading and drainage improvements. This does include the addition of fill material on Field 3.

It should be noted and understood clearly that the only method of sufficiently eliminating future settlement is to completely remove the peat and soft soils and replace with compacted aggregate and suitable fill soils. V3's recommendation is based on a value analysis on cost of mitigation versus the potential risk and future impact.

Summary of Preliminary Engineering:

- Additional fill placed in Field 3 – To achieve proper slopes, the home plate area will be lowered and some additional fill is required in the outfield to achieve proper ground slope and drainage.
- Storm Sewer and Underdrain – adequate drainage will be important not only for normal play of the ball fields, but also as a means of avoiding additional groundwater introduced to Field 3 and further affecting settlement of peat. Underdrain has been designed for all fields leading to an outfall in the existing stormwater basin.
- Asphalt Removal/Replacement & Concrete Curb – some curbing has been added in the plaza area to accommodate elevation changes needed for proper design. Asphalt will be removed and replaced as required by the grading plan.

Costs Implications:

- Off-Site Disposal of Excess Soil – \$210,000
 - Due to the effort of limiting fill in the Field 3 outfield, the overall grading plan generates excess soil that requires disposal off site.
 - Approximately 7,000 CY of material
 - This cost may be significantly reduced if the Village provides a disposal location close to the John Humphrey Sports Complex.
- Underdrain Installation - \$65,000
 - Installation of underdrain in all ball fields
 - Multi-flow underdrain for the football field is already included in the base contract scope and therefore not part of this cost.
 - Additional underdrain can be installed at a rate of \$35/LF
- Asphalt Removal and Replacement with Curb - \$60,000
 - Due to site grading, additional plaza asphalt will be impacted by new elevations.
 - Concrete curb is being proposed at grade transitions



- Irrigation Upgrades - \$33,000
 - New pump and controls
 - New isolation valves
 - Inclusion of high-speed sprinkler heads
 - Additional sprinkler zones
 - Quick coupler water source

Total Cost Implications: \$368,000

Project Schedule & Status

Preliminary engineering drawings have been generated consistent with the scope of work described herein. Prior to advancing the drawings to final engineering and issued for construction, the improvement plan and preliminary engineering will need to be approved by the Village. Construction documents will be issued within two weeks of Village approval.

A letter dated May 7 from the Metropolitan Water Reclamation District was received by the Village and requires a permit be issued from this agency. Further discussion will be required regarding this permit.

The overall construction schedule is anticipated to span a total of 3-months. The critical timeframe for completion is September in order to meet the seasonal window for seeding the ball fields. In order to meet this schedule work will need to commence as early as possible in June. The schedule may be further defined upon completion of final construction documents.

End of Memorandum