

Geotechnical Engineering-Testing, Inc.

PROFESSIONAL ENGINEERS

Geotechnical Evaluations - Geosciences - Construction Materials - Pavement Management

April 26, 2021

Mobile Area Water and Sewer Service c/o
Jacobs Engineering Group, Inc.
Gainesville, FL

Attn: David Carr, P.E.

Via Email: david.carr10@jacobs.com

Re: Geotechnical Report- Addendum #2
Dewatering Facility and Other Improvements at the C.C. Williams Wastewater Treatment Plant
in Mobile, AL (GET Project #19-198)

Gentlemen:

Geotechnical Engineering-Testing, Inc. (GET) is pleased to submit this addendum to our geotechnical report dated December 4, 2019 and to the first addendum dated July 10, 2020 for the proposed Dewatering Building at the C.C. Williams Waste Water Treatment Facility in Mobile, Alabama. Per your request, this addendum is being prepared to address modifications to the project design and design criteria that have been made since the dates of the original report and first addendum.

When preparing the original report and the first addendum, it was our understanding based upon the design criteria provided to us that the tolerable differential settlement of the planned Dewatering Building was approximately 0.5 inch. Because of this tight tolerance, deep foundations were recommended for supporting the structure. We now understand that tolerable differential settlement of the building is on the order of a few inches. Because of this change in tolerable settlement, it is our opinion that shallow foundations are a viable option for supporting the planned Dewatering Building. Thus, the recommendations below supersede the recommendations presented in our previous report and addendum.

We understand that the current design includes preloading the entire building area to a height of approximately 18 ft above the existing ground line creating a uniform load of about 2100 pounds per square ft, psf. We have utilized this 2100 psf load and Schmertmann's method and estimated about 3.5 inches of immediate settlement resulting from the preload program. Based upon the measurements made during the Test Preload Program, it is anticipated that slightly more than 1 inch of rebound will occur when the preload soils are removed.

While the planned preload will reduce the overall and differential settlement of the foundations to some degree, it is anticipated that up to 2 inches of settlement (immediate and long-term creep) may still occur as a result of the structure loads. We understand from the project design team that this is within the tolerable limits of the structure. The analyses performed have been primarily based on analyses of the larger foundations loaded to 1500 psf. Settlement of smaller foundations and/or foundations with lower loading will be less than the foundations analyzed.

We recommend that the foundations, as shown in the plans provided to us on April 22, 2021, bear at a depth of at least 2.5 ft below the final adjacent grade. At this depth and with the foundation widths shown on the plans, allowable soil bearing pressures will be at least 1500 psf.

Prior to the construction of the planned preload, we recommend the following site preparation be performed:

- Within the Dewatering Building footprint, and extending at least 5 ft outside the footprint, existing foundation piles (remaining from the demolition of the administration building) should be cut off at least 5 ft below the design foundation bearing elevation. The excavation required for cutting off the piles shall be backfilled with select soils that consist of inorganic sand with no more than 20 percent by weight passing a #200 sieve and with a plasticity index, PI, no more than 6. The select soils should be placed in 8-inch thick loose layers, and each layer should be compacted with a heavy vibratory compactor to at least 100 percent of standard Proctor density (SPD) (ASTM D 698) or to the satisfaction of the geotechnical engineer. Each layer of backfill soil should be tested before placement of the succeeding lift.
- Beneath all planned foundation locations, the insitu materials shall be excavated to a depth of at least 2 ft below the design bearing elevation and to a width at least 5 ft wider than the footing (2.5 ft on each side of the foundation location). The bottom of the excavation should be compacted to 100 percent of SPD or to the satisfaction of the geotechnical engineer. Backfill material specifications and placement specifications should be in accordance with the previous paragraph.
- All other areas beneath the slabs on grade (outside planned foundation locations), insitu soils shall be excavated to a depth at least 3 ft below ground surface. This overexcavation should extend 5 ft outside the planned building perimeter. The bottom of the excavation should be compacted to 100 percent of SPD or to the satisfaction of the geotechnical engineer. Backfill material specifications and placement specifications should be in accordance with the previous paragraph.

Since it is expected that that preload soils will be utilized for structural fill in other areas of the project, we recommend that the material meet the specifications of select soils stated above. The preload soils should be placed in about 1 ft thick layers and should be tracked in with a bulldozer until firm.

It should be noted that much of the loose sands within the upper 5 ft, that are to be undercut, generally meet the requirements of select soils. These materials may be used as backfill if tested and meeting requirements for select soils. However, it might expedite the construction process if offsite borrow is used in the Dewatering Building area. Excavated insitu materials may be utilized to fill the sedimentation tank that is to be demolished.


We have reviewed the project site preparation and foundation plans provided to us on April 22, 2021 and, in our opinion, they are in substantial agreement with the above recommendations.

It should be noted that the settlement estimates provided in this addendum do not account for any effects of future external vibrations that may occur within close proximity to the structure. As noted in the Test Preload Program report dated April 22, 2021, the density of the deeper loose sand soils does not improve by placing a static load at the surface. However, these soils will densify and consolidate should they be subjected to future external vibrations.

Please call Curt Doyle, P.E. if you have any questions regarding this report.

Sincerely,

GEOTECHNICAL ENGINEERING-TESTING, INC.


Curt Doyle, P.E.
Principal Engineer
Alabama License No. 25733
Date: 4/26/2021

