

TECHNICAL MEMORANDUM

Date: January 27, 2023
Revised August 10, 2023

From: Daniel C. Stanfill, P.E. and Richard P. McCormick, P.G.

To: Mr. Michael Garau, P.E.

Subject: Existing Geotechnical Conditions Technical Memorandum
SR 408 CAPACITY IMPROVEMENTS
FROM KIRKMAN ROAD TO CHURCH STREET PD&E STUDY
CFX 408-174
GEC Project No. 5202GE

Based on TWO 3 under Contract Number 001844 dated September 22, 2022, Geotechnical and Environmental Consultants, Inc. (GEC) is pleased to present this Existing Geotechnical Conditions Memorandum for the CFX SR 408 Capacity Improvements from Kirkman Road to Church Street PD&E study. GEC has reviewed available documents, the USGS Quadrangle Map, the NRCS Orange County Soil Survey and current plans to prepare this Memorandum. The attached **Figure 1** shows the USGS Quadrangle Map and NRCS Soil Survey for the project location. The following observations are noted.

- Natural ground surface topography varies from +80 to +100 feet NGVD in the project area (see **Figure 1**).
- Land use is primarily commercial.
- Near surface soils are primarily poorly drained sand soils. Candler-Urban sand (7) is present at the project beginning at Kirkman Road and is classified as a well-drained upland soil.
- Organic muck soils (Samsula Muck (40) and Hontoon muck (19)) are present in the central portion of the project.
- The muck soils were likely removed for the original SR 408 construction.
- An area of Arents is located immediately east of Kirkman Road.
- Groundwater depth varies based on topography but is generally within 5 feet of natural grade.
- Review of available plans indicate the bridges were originally supported on 18-inch precast piles extending 50 to 80 feet below natural grade.
- Piles for the widening that was performed about 15 years ago utilized steel HP piles extending 65 to 115 feet below natural grade.

- Geotechnical considerations include exploration for highly compressible organic muck soils, evaluation of variable groundwater conditions and deep Standard Penetration Test (SPT) borings for bridge foundation design.
- Bridges should be supported on a deep driven pile substructure due to Karst environment and likely high Factored Loads required.
- Dry stormwater ponds may be feasible depending on pond location, the presence of the clay confining layer and groundwater levels.

USE OF THIS MEMORANDUM

GEC has prepared this memorandum for the exclusive use of our client, The Balmoral Group, Kimley-Horn, and CFX and for application to our client’s project. GEC will not be held responsible for any other party’s interpretation or use of this report’s data or recommendations without our written authorization.

GEC has performed the services described in this report in a manner consistent with that level of care and skill ordinarily exercised by members of our profession currently practicing in Central Florida. No other representation is made or implied in this document.

The conclusions and recommendations should be disregarded if the final project design differs from the project description in this report. If such changes are contemplated, GEC should be retained to review the new plans to assess the applicability of this report in light of proposed changes.

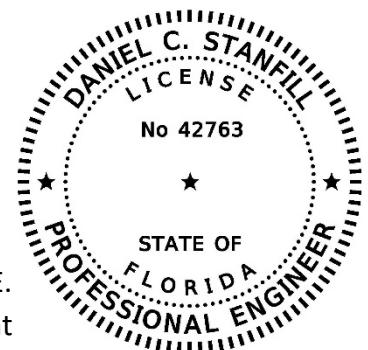
We appreciate the opportunity to work with The Balmoral Group, Kimley-Horn and CFX on this project. If you have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

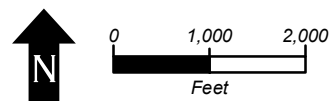
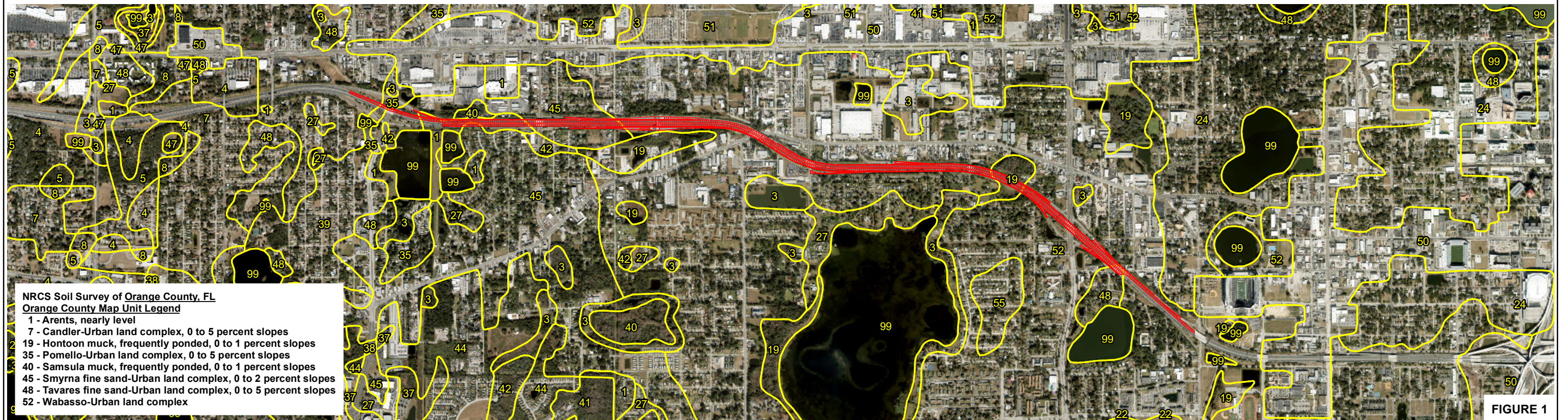
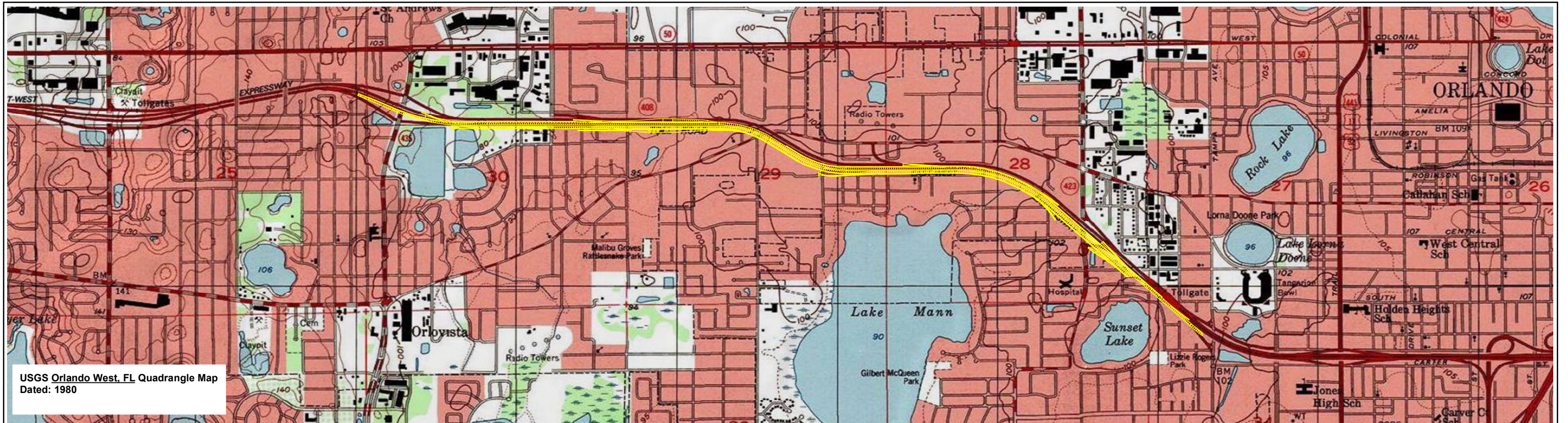
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This Report has been digitally signed and sealed by Daniel C. Stanfill, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

ATTACHMENTS



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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 408	ORANGE	408-174

**USGS QUADRANGLE AND
NRCS SOIL SURVEY MAPS**

SHEET
NO.