



November 9, 2015

Mr. Eric Stumph, P.E.
TALBERT & BRIGHT
4810 Shelley Drive
Wilmington, North Carolina 28405

Re: Addendum to Subsurface Investigation Report Dated 10/30/15
Clarification of Seismic Design Considerations
Terminal Improvements
Fayetteville Regional Airport
Fayetteville, North Carolina
GeoTechnologies Project No. 1-15-0630-EA

Gentlemen:

This report is an addendum to the subsurface investigation report dated October 30, 2015, with the purpose of clarifying seismic site evaluation procedures and the ways in which seismic site class will affect the design procedure.

The seismic site class of "D" reported in the subsurface report was determined using ReMi analysis. ReMi determines a shear wave velocity profile for the soils, after which the average shear wave velocity of the upper 100 feet determines the seismic site class. Several of our borings encountered a stratum of very loose sands approximately 5 feet in thickness, typically between elevations 155 and 160 feet. These sands are potentially liquefiable under seismic loading; as such, the seismic site class is technically an "F". Based on recent conversations with Steve Fleming of Fleming & Associates, it is our understanding that with a seismic site class "D", the seismic design category for the structures is a "C". A provision in the building code allows for the use of a seismic site class determined in the absence of liquefaction if the structure has a fundamental period of vibration of 0.50 seconds or less.

If the structures will have a fundamental period of vibration of 0.50 seconds or less, then the design seismic site class may be taken as a "D", the seismic design category will be a "C", and mitigation of liquefaction will be at the owners discretion. If the structures will have a fundamental period of vibration of greater than 0.50 seconds, then a site specific analysis must be performed to determine the design response spectrum. The design response spectrum would then be used to determine the seismic design category. Based on a review of the building code and past correspondence with personnel at the Department of Insurance, mitigation of liquefaction is mandatory for structures in Seismic Design Categories D, E, and F.

The return period for the design earthquake event is approximately 2,500 years, or 2 percent in 50 years. If the fundamental period of vibration of the structures results in the allowance of a seismic site class D and seismic design category C, or if a site specific analysis results in a design category C, the owner will have to decide if the cost of liquefaction mitigation, which is often very high, is worth it to prevent

potential damage during a seismic event given the estimated risk of the design event and the anticipated lifespan of the structures. We understand that the existing structures are supported by shallow foundations, likely over similar soil profiles, and it is unlikely that any form of liquefaction mitigation was performed under these structures.

GeoTechnologies, Inc. appreciates the opportunity to be of service on this phase of the project. Please contact us if you have any questions concerning this letter or if we may be of additional service on this or other projects.

Sincerely,

GeoTechnologies, Inc.



Conrad E. Harris, P.E.
NC Reg. No. 39768

