

*Michael R. Wigley, AIA, LEED AP  
Randy B. Duplechain, P.E.  
Charles R. Woodward, Jr., LS  
W. Zachary Crouch, P.E.  
Michael E. Wheedleton, AIA  
Jason P. Loar, P.E.  
Ring W. Lardner, P.E.  
Gerald G. Friedel, P.E.*

July 16, 2014

Sussex County Community  
Development & Housing Department  
Sussex County Administrative Office  
West Complex Building  
Georgetown, DE 19947

Attn: Mr. Brad Whaley

Re: Foundation Plan to Raise Buildings  
Mallard Lakes, Island Units  
Sussex County, Delaware  
DBF #2398A003.A01

Dear Mr. Whaley:

Davis, Bowen Friedel, Inc. has completed construction documents for lifting and re-supporting of Island Buildings 24, 25, 26 and 27 for the above referenced project. The buildings are deemed structurally sound and capable of being lifted for the purpose of constructing new foundations, elevating the finished floor above the Base Flood Elevation of 7.0 NAVD88. The buildings will be disconnected from their supports and lifted using a unified hydraulic jacking system.

The buildings are currently supported on driven timber pilings with main girders bolted directly to the piling or with bolted straps to resist uplift forces. The buildings are proposed to be raised approximately 6 feet, making the finished floor elevation 9.0 NAVD88. This also places the lowest structural member just above the BFE of 7.0 NAVD88. Three alternatives were evaluated for the new foundation system; 1) Splice the existing timber piles with additional piles; 2) Install new spread footings and concrete block walls; 3) Cut off existing piling below grade and install concrete pile caps with new concrete block walls and piers.

Splicing of timber piles is not a recommended practice where all piles would have to be spliced. Organic bearing soils near the surface and high groundwater table will not allow the use of spread footings. Therefore the third option was selected for this project. Soil borings were performed to assist in the development of the foundation system. The existing piles will be cut off below grade. Uplift anchors will be bolted to each pile and a concrete pile cap will be poured on top of each pile. Reinforcing bars will be embedded in the concrete cap and into new

Mr. Brad Whaley  
Sussex County Community Development  
July 16, 2014  
Page 2

reinforce concrete block masonry piers and walls. Helical piles will be installed to provide additional support of the masonry walls. The masonry walls will provide the main wind force resisting system for the building foundation. The design wind speed is 125 MPH. Reinforced concrete masonry piers will be installed at the same location as the existing piles. New galvanized steel anchors will be embedded into the new reinforced concrete masonry piers and walls. The girders will be bolted to the steel anchors to resist uplift.

This option allows the existing deep foundation, driven piles, to remain in service. It provides a continuous mechanical connection from the pile to the existing girders. It provides reinforced concrete masonry shear walls to resist lateral forces. All construction can occur within the footprint of the building avoiding impact to wetlands.

Should you have any questions please do not hesitate to contact me.

Sincerely,  
DAVIS, BOWEN & FRIEDEL, INC.

A handwritten signature in black ink that reads "Andrew E. Welch". The signature is written in a cursive, flowing style.

Andrew E. Welch, P.E.  
Associate

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