

February 3, 2025

CNB Construction
777 West Cherokee Street
Catoosa, Oklahoma 74015

Attn: Mr. Jesse Gates | Project Manager
cc: Mr. Kevin Ogle, P.E.

Subject: **ADDENDUM #1**
Geotechnical Consultation Services
Will Rogers Birthplace Ranch
Oologah, Oklahoma
Building & Earth Project No: TU240148

Dear Mr. Gates:

Our referenced report included recommendations for conventionally reinforced slab-on-grade supported on at least 4 feet of approved low plasticity structural fill.

Per your conversation with Rodrigo, we understand that consideration is given to using a post-tension slab foundation instead of a conventionally reinforced slab-on-grade for the caretaker building. The following recommendations can be considered for this project when using a post-tensioned slab foundation.

Placement of low plasticity structural fill is not required when using a post-tensioned slab foundation; however, the building pad should be prepared and evaluated following the recommendations presented in Section 4.5 (page 14) of our geotechnical report TU240148, dated October 1, 2024.

Perimeter footings, edge turndowns and stiffening beams of post-tensioned slab foundations are anticipated to bear in stiff to very stiff residual clay soils, new structural fill, or a combination of these materials. Perimeter footings should bear at least 2 feet below the finished exterior grade. Footings and stiffening beams can be dimensioned using a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf). A modulus of subgrade reaction of 125 pci can be used for post-tensioned slabs supported on moisture conditioned and recompacted residual clays or structural fill.

PT slabs should be designed by a professional engineer experienced with expansive soil conditions and PT slab design and construction techniques. Post-tensioned foundation systems may be designed using the procedures detailed in “Design of Post-Tensioned Slabs-on-Ground”, Post Tensioning Institute publication PTI DC10.1-08 (3rd edition with 2008 Supplement), using the design parameter values presented in the following table.

Design Parameter	Parameter Value
Thornthwaite Moisture Index (Oologah, OK)	+19
Moisture Active Zone Depth	8 feet
Equilibrium Soil Suction	3.44 pF
Wettest Soil Suction	3.0 pF
Driest Soil Suction	4.5 pF
Edge Moisture Variation Distance (e_m), Center Lift	8.1 feet
Edge Moisture Variation Distance (e_m), Edge Lift	4.9 feet
Differential Soil Movement (y_m), Center Lift	-1.5 inches
Differential Soil Movement (y_m), Edge Lift	0.7 inches

Post-tensioned Slab-on-Ground Design Parameter Values

The estimated y_m and e_m values provided above are based on soil moisture conditions that are controlled by climate alone. Differential swell can be influenced by other non-climatic conditions that are unpredictable, such as pre-construction and post-construction vegetation cover, drainage conditions, local water sources (downspouts, irrigation, plumbing leaks, etc.) The PT slab designer should provide additional comments relative to the influence of non-climatic moisture conditions on PT slab performance.

Utility lines should be designed to accommodate a potential differential soil movement of 1.5-inch where they penetrate building perimeter walls. In addition, differential vertical movements should be anticipated for sidewalks and driveways abutting buildings.

We appreciate providing geotechnical consultation services for the referenced project in Oologah, Oklahoma. Unless specifically revised in this addendum, the geotechnical recommendations presented in the referenced geotechnical reports remain valid. Please do not hesitate to contact us should you or others have any questions or concerns.

Respectfully Submitted,
BUILDING & EARTH SCIENCES, INC.
Certificate of Authorization #3975, Expires 6/30/2026



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