

October 7, 2008

Mr. Seth Carson
Bluefeather Design
P.O. Box 415
Laramie, WY 82073

Re: Addendum to 0001-01-0090-99 (Basement Recs)
Proposed Residence off FM 949
Colorado County, Texas
Project No: 08-0525

Dear Mr. Carson:

It is our understanding that the residential site investigated in 1999 (Project No. : 0001-01-0090-99) was never constructed and that new owners now wish to build their residence which includes a basement. The topography of the site is such that there is an elevation difference across the site of approximately three (3) feet. The proposed residence is situated such that the front of the residence is three (3) feet higher in elevation than the rear of the residence, according to Mr. Carson.

The soil data obtained in 1999 indicates hard or dense sand with gravel at the surface which is underlain by hard clay with gravel at a depth of two (2) feet below existing ground surface. The hard clay, with color variations extends to the limit of exploration at fifteen (15) feet below existing ground surface. The unconfined compression tests indicate high strength varying from 1.81 tons per square foot (tsf) to 2.36 tsf within the zone explored. In addition, the pocket penetrometer readings taken during drilling indicate a reading of 4.5+ throughout the soil exploration, also indicating a high strength. The borings were dry on completion of drilling.

The average wet unit weight of the soil is 129 pounds per square feet (psf) which will result in a resultant force per linear foot of 5,224.5 pounds per linear foot (plf) for a wall nine feet high acting three feet from the base of the wall. The soil will have a Coefficient of Active pressure (Ka) of 0.5.

The performance of the foundation system for the proposed residence will not only be dependent upon the quality of construction, but also upon the stability of the moisture content of the near surface soils. Therefore, Gessner Engineering highly recommends that site drainage be developed so that ponding of surface runoff near the structure does not occur. Accumulation of water near the structure foundation may cause significant moisture variations in the soils adjacent to the foundation, thus increasing the potential for structural distress.



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Special care should be taken to insure that underground utilities do not develop leaks with time. Post construction expansion of the clayey soils placed around the exterior of a residence for final grading can cause a condition to arise in which moisture becomes trapped against the structure. Therefore, it is imperative that proper grading around the structure with suitable materials be used to avoid this condition. General fill for final grading adjacent to and extending five (5) feet beyond the foundation shall have a Plasticity Index of thirty (30) or less.

The upper portion of utility excavations should be backfilled with properly compacted clay soils to minimize infiltration of surface water. A clay "plug" should be provided in the trench on the exterior of the building to prevent water from gaining access along the trench to the subgrade beneath the structure. A minimum of five (5) percent slope is recommended within the first ten (10) feet of the proposed structure. If it is not feasible to slope away from the building, Gessner Engineering recommends providing a drain at the base of the wall with a gravity fed outlet. The drain pipe should be surrounded by a permeable material such as gravel and/or sand in order to work properly and alleviate water building up against the wall.

Gessner Engineering would be pleased to have the opportunity to review any structural wall designs based on these geotechnical recommendations.

It has been a pleasure to provide you this information. If I can be of further assistance to you with this situation please contact me.

Sincerely,
GESSNER ENGINEERING


Philip N. Buchanan, Ph.D., P.E.


Melissa P. Thomas, P.E.

