November 16, 2007
TWEI Nos. 06.13.322 & 07.13.158

Mr. David R. Kubala, P.E.
TCB
5757 Woodway, Suite 101 West
Houston, Texas 77057

Reference: Bunker Hill Road Improvements
And Bridge Replacement Project
Interstate 10 to Long Point Road
Houston, Texas

Dear Mr. Kubala:

Tolunay-Wong Engineers, Inc. (TWEI) previously performed a geotechnical study and supplemental study for the referenced project located in Houston, Texas (Key Map 490 B and 450 X) (TWEI Project Nos. 06.13.322 and 07.13.158). TWEI's study scope was to explore soil and ground water conditions within the project site to formulate geotechnical design recommendations and construction guidelines for the referenced project. TWEI also performed, under separate cover, Phase I and Phase II ESA's. A fault study was not part of TWEI's scope of work and therefore was not performed by TWEI. Based on information provided by TCB, the fault study would be performed by others.

TWEI was not provided the results of the fault study and is not aware of the exact location(s) where the fault crosses the project site, nor the location(s) and size(s) of the hazard band(s). A formal review of the fault study should be performed, but, this task was outside the scope of services for this project. The purpose of this letter is to provide generalized information when considering faulting in the Houston area. These comments should not be considered specific for the project site. A formal review should be performed when the fault movement and hazard band(s) is clearly identified with respect to the project alignment.

All facilities, including pavements, utilities, and bridge structures located within the hazard band should be designed considering the possible movements of the fault, both horizontal and vertical. Rigid paving was requested and presented in TWEI's Final Report dated October 31, 2007 for the Bunker Hill Road Improvement and Bridge Replacement Project. Depending on recommendations from the site specific Fault Study Report, rigid paving can often times be used within the "hazard band", however additional maintenance should be anticipated. Maintenance may include asphalt overlays, removal and replacement of panels, and slab jacking. As an alternative to the proposed rigid paving, a flexible paving section could be considered and is frequently used on roadways in the area of a fault zone to provide a more effective means of maintaining grade should movement of the fault cause distress in the pavement. Asphalt

pavement can be "leveled up" and overlaid more easily than concrete pavement. Asphalt paving design was not included in the project scope of work.

Utilities will be installed along Bunker Hill Road between the Interstate 10 frontage road and Long Point Road. Additionally, utilities will be installed along short segments of Westview Road and Long Point Road. The utilities may cross the fault. Typically, utilities crossing faults should be as near perpendicular to the fault as practicable. Utilities and surface drainage should be designed considering the impact of the fault movement on the grades of the flowlines. If practicable, utilities should flow toward the downthrown side of the fault or should be graded so that the fault movement will not reverse the gradient. Other specific considerations to the design of the utilities should be outlined in the site specific Fault Study Report.

Either box culverts or a bridge will be considered for the ditch crossing. If box culverts are used and movements occur, pavement can be "leveled up" and overlaid as addressed above. Foundations should not be located on the fault. Adjustable mechanisms may be considered to adjust potential elevation differences between adjacent bridge units.

We trust the information provided herein meets your current needs. A formal review of the fault and hazard band(s) should be performed prior to construction. Should you have any questions regarding our recommendations or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
TOLUNAY-WONG ENGINEERS, INC.

Jenell S. Strachan

Jenell S. Strachan, P.E.

Zeki A. Tolunay, P.E.