



22 September 2008

Mr. John G. Mahoney
Antrim Construction, Inc.
1635 Chestnut Street, Suite A
Livermore, California 94551

Subject: **RECOMMENDATIONS FOR BACKFILL OF EXCAVATION**
Commercial Service Building
461 McGraw Avenue
Livermore, California
Project No. JH-773

Dear Mr. Mahoney;

As requested, we have observed the soil conditions for the excavation at the subject site. The purpose of this observation was to recommend sloping of the side walls for safe entry into the excavation whereby shoring would not be required. The recommendations are based on an observation of actual site conditions and a review the our geotechnical study dated 24 May 2006, Reference No. JB-619.

Our representative observed the side walls of existing excavation on 22 September 2008. The upper 4 to 5 feet of soil consisted of native soil of a dark brown silty clay. Underlying these soils, a light brown silty clay was encountered to a depth of about 25 feet below existing grade. In several areas of the excavation, a shelf area was incorporated in the excavation. The shelf areas were located in different areas of the excavation and at about 15 to 20 feet below existing grade. We understand that the existing excavation has been in this state for least a month maybe 2 months. The side walls are in tact and no sloughing was observed. The excavation is about 150 feet in length and is up to 50 feet wide. We understand that during the week of 22 September 2008, the area will be backfilled with excavation spoils and soil stockpile at the subject site. It is expected to have the excavation backfilled in a weeks time. Groundwater was observed to be pumped from the excavation. Currently, a small stream of water is migrating back into the excavation. The groundwater is being pumped from the excavation.

We reviewed sections *"Sloping and Benching - 1926 Subpart P App B"* and *"Requirements for protective systems. - 1926.652"* of the Occupational Safety & Health Administration (OSHA) guidelines.

Based on our representatives' observation of the soil conditions and a review of the OSHA guidelines, it is our opinion that the upper 4 to 5 feet, which is the more dark silty clay material, shall be sloped back at 1:1 ratio (horizontal to vertical). The underlying soil material may be kept at its current condition which is a vertical wall. We do recommend

that our representative monitor the walls of the excavation on a periodic basis. Provided the recommendations are followed, personnel may enter the excavation for placing geotextile fabric and placing compacted fill. Should the conditions of the excavation change, supplemental recommendations will be provided. We understand that our personnel will be on-site during the backfill operations and will monitor the side wall conditions.

A copy of this letter will need to be posted at the jobsite during excavation and while entering the excavation according to OSHA requirements Section 1926.652(b)(4)(iii).

Limitations

Our services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers practicing in this geographical area at the time this report was prepared. No other representation, express or implied, and no warranty or guarantee is included or intended as to the professional opinions or recommendations provided. We do not guarantee construction, nor do we assume the contractor's primary responsibility to produce a completed project conforming to the project plans and specifications.

Respectfully submitted
KORBMACHER ENGINEERING, INC.



Bruno Korbmacher, PE

Copies to: Addressee (1 e-mail)