May 5, 2010
Project No. 401294021

Mr. Jeffrey Kingston
Chabot-Las Positas Community College District
5020 Franklin Drive
Pleasanton, California 94588

Subject: Addendum to Geotechnical Report
Science Technology Building, Phase II
Las Positas Community College
Livermore, California

Reference: Ninyo & Moore, 2009, Geologic Hazards Assessment and Geotechnical Evaluation, Science Technology Phase II, Las Positas Community College, Livermore, California, Project No. 401294018, dated June 12.

Dear Mr. Kingston:

Following consultation with the design team members, Ninyo & Moore has prepared this addendum letter to clarify recommendations presented in the referenced 2009 geotechnical report concerning remedial grading to mitigate expansive soils for the Science Technology Building, Phase II. In addition, we understand that retaining walls will be incorporated in the proposed design and the blotter sand layer may be omitted from the moisture vapor retarding system under slabs. The following presents clarification to our recommendations for remedial grading to mitigate expansive soils at building and transformer pads, and provides supplemental recommendations for retaining walls and for moisture vapor retarding systems without a blotter sand layer.

EARTHWORK

As recommended in the referenced report, due to the expansive nature of the near-surface soils, remedial grading should be performed to create a zone of material with low expansion potential below slabs and exterior flatwork. The remedial grading may consist of removing the existing soil and replacing it with select import fill or treating the existing soil with lime to reduce the expansion characteristic of the soil. The zone of low expansion potential should extend to 3 feet below building slabs and 2 feet below exterior flatwork. The zone of low expansion potential under footings and thickened edges should extend to 3 feet below the bottom of the adjacent slab. Footings may bear on prepared subgrade consisting of untreated native soil at 3 feet below the bottom of the adjacent slab. The lateral extent of the zone of the material with low expansion potential beyond the footprint should be equivalent to the depth of the low expansion zone below perimeter footings. For example, the zone of low expansion potential should extend to 1 foot outside the footprint for footings bearing 2 feet below grade and 2 feet below bottom of slab. The zone of low expansion potential need not extend below the footings or beyond the foundation perimeter where the perimeter footings bear 3 feet below the bottom of slab. To reduce the potential for differential movement of the transformer pad due to expansive soils, the zone of material with low expansion potential under the transformer pad may be extended to 3 feet below the bottom of slab. Recommendations for subgrade preparation, import fill characteristics, lime treatment, and compaction are presented in the referenced geotechnical report.

RETAINING WALLS

We understand that the proposed improvements may include short retaining walls within the landscaping areas of the project site. As previously discussed, the near surface soils on site are potentially expansive. Expansive soils can generate relatively large active earth pressures. These pressures may be reduced by removing the soil within the zone of influence behind the wall (above a plane rising up and away from the heel of the wall footing) and backfilling with select structural fill consistent with the criteria in Table 5 from our geotechnical report or native soil treated with lime as discussed in Section 9.1.7 of our geotechnical report.

Walls backfilled with untreated native soil should be designed for an active, equivalent-fluid, lateral earth pressure of 120 pcf for a yielding wall retaining level ground. Restrained walls retaining level ground that are backfilled with untreated native soils should be designed for an at-rest, equivalent-fluid, lateral earth pressure of 120 pcf.

Walls backfilled with select structural fill or native soil treated with lime should be designed for an active, equivalent-fluid, lateral earth pressure of 39 pcf for a yielding wall retaining level ground. Restrained walls retaining level ground that are backfilled with select structural fill or native soil treated with lime should be designed for an at-rest, equivalent-fluid, lateral earth pressure of 66 pcf.

Seismic earth pressures may be neglected for short walls retaining 12 vertical feet of soil or less. Drainage consisting of a subdrain or weep holes should be constructed behind walls to reduce potential hydrostatic pressures. Wall backfill should be compacted in accordance with the recommendations in our report using hand-held or small, walk-behind compaction equipment to reduce potential surcharge pressures on the wall.

Walls on level ground may be designed for a passive, equivalent-fluid, lateral earth pressure of 350 pcf and a friction coefficient of 0.35 for lateral resistance. The recommended value of passive equivalent fluid pressure does not include a factor of safety. Passive earth pressure should be neglected to a depth of 12 inches below grade unless the soil is confined by an overlying pavement or slab.

MOISTURE VAPOR RETARDER

The migration of moisture through slabs underlying enclosed spaces or overlain by moisture sensitive floor coverings should be inhibited by providing a moisture vapor retarding system between the subgrade soils and the bottom of slabs. The referenced geotechnical report presented recommendations for a moisture vapor retarding system that consist of a 15-mil thick plastic membrane over a 4-inch thick capillary break layer of ¾-inch crushed rock with a 2-inch thick blotter sand layer over the plastic membrane. We understand that the blotter sand layer may be omitted. If the blotter sand layer is omitted, to reduce the potential for slab curling and cracking, an appropriate concrete mix with low shrinkage characteristics and a low water-to-cementitious-materials ratio should be specified. In addition, the concrete should be delivered and placed in accordance with American Society for Testing and Materials (ASTM) standard C94 with attention to concrete temperature and elapsed time from batching at placement, and the slab should be cured in accordance with American Concrete Institute (ACI) Manual of Concrete Practice (Sections 302.1, 305, or 306, as appropriate). Prior to placement of concrete, the plastic membrane should checked for perforations or other damage. The damaged membrane should be replaced or repaired with mastic or polyethylene tape before concrete placement.

We appreciate the opportunity to be of continued service to Las Positas Community College for development of the Science Technology, Phase II project.

Sincerely,
NINYO & MOORE

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