RUTHERFORD & CHEKENE

Memorandum

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To: Jo Beth Folger, SLAC

From: Gyimah Kasali and Weiyu Chen

Date: May 26, 2005

Project: SLAC **Job #:** 2003-043G4

Subject: Comments for JACOBS Review Comments

In response to the comments from K. Warnock of JACOBS, our comments are provided.

A. Retaining Structures

1. Design Lateral Earth Pressure:

   a. The dynamic earth pressure increment induced by an earthquake should be assumed to be 15H psf uniformly through the entire depth.

   b. The associated static earth pressure for top-restrained walls or cantilever site walls should be equal to an equivalent fluid pressure of 55 pcf when seismic earth pressure increment is considered.

   c. Passive pressure can be taken as a uniformly distributed pressure applied through the whole depth of the foundation buried in Ladera Sandstone. The design values for allowable passive pressure are listed in the Table below. Provide a minimum 2 feet embedment into competent rock.

Structures	Passive Pressure in Ladera Sandstone (ksf)
BTH & UH	10
CLOC, BDE, FEE & NEH	4

   d. Please refer to item E (BTH) for the suggested friction factor.

   e. The cohesion values are variable throughout the site. Generally, the cohesion values of intact rock samples derived from unconfined compression tests roughly fall into three groups with cohesions equal 2, 11, and 25 ksf depending on the rock quality (i.e. poor, medium, and good).

f. The sliding friction resistance can be combined with passive soil pressure to resist lateral forces.

g. As stated on Page 18, Volume 2, the design lateral earth pressures were for backfill with horizontal or level surface. For sloping backfill, the pressures will be higher.

B. Cut and Cover Structure

1. The passive pressure can be taken for entire height of buried structure only if structure is rigid enough to push into soil instead of the structure being deflected.

2.

a. If the adjacent CLOC footings are less than 1:1, the surcharge effects from the footings on the adjacent wall should be estimated using Boussinesq's charts (NAVFAC, 1982, page 7.2-74) and the effects on the below-grade experimental hall walls should be estimated using the equations in Figure 3, Page A3 in Volume 2.

b. Please provide the new plan showing the new location of CLOC. The applicability of recommendations in our geotechnical report will be reviewed after we receive the new plan. Revisions to applicable recommendations will be provided if necessary.

c. The intention of Figure 4 was to illustrate how footing should extend into Ladera Sandstone in an area where the building is underlain by engineered fill. If such a condition does not exist, ignore Figure 4.

C. Slab on Grade

We recommend that the modulus of vertical subgrades reaction, k_s, for slab bearing in Ladera Sandstone at tunnel invert elevation, be assumed to be as follows:

Structures	k_s in Ladera Sandstone (tcf)
BTH & UH	600
CLOC, BDE, FEE & NEH	400

For structural parametric studies, a range of k_s values, ranging from half to twice the recommended values should be considered.

D. 2001 CBC Seismic Design Parameters:

The correct values for 2001 CBC seismic design parameters are listed as follows:

Seismic Zone	4
Seismic Zone Factor, Z	0.40
Soil Profile Type	Sc
Seismic Coefficient, Ca	0.52
Seismic Coefficient, Cv	0.97
Near-Source Factor, Na	1.3
Near-Source Factor, Nv	1.73

E. BTH

1. Please refer to item A.1.c and item 3 below for the passive pressure and friction coefficient.
2. For BTH, allowable bearing pressure for Dead+Live loads can be assumed to be 15 ksf, and 20 ksf for Dead+Live+Wind or Seismic loads. The designer should however make allowance for placing lean concrete in footing excavation if necessary to reach competent rock.
3. A higher friction coefficient of 0.5 can be used instead of 0.4.

F. Construction

The Contractor can go steeper where harder rock is exposed.