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February 3, 2014

Mr. Tom DeDonato
Brickyard Ridge, LLC
10257 NE 64th Street
Kirkland, Washington 98033

Supplemental Slope Stability Letter
Brickyard Ridge Residential Development
Woodinville, Washington
RN File No. 2800-001A

Dear Mr. DeDonato:

This letter presents our supplemental slope stability evaluation of the Brickyard Ridge Residential Development project, located at the intersection of 154th Avenue and Woodinville–Duvall Road in Woodinville. The project-site includes King County tax parcels 3244500135, 1126059156, and 1126059152. We have previously prepared a Revised Geotechnical Engineering Report for the site, dated December 12, 2013. The report presented definitions and recommendations regarding landslide hazard areas and landslide hazard areas to be altered and eliminated.

The steep slope areas to be altered are shown on Figure 1. We included two cross-sections to represent the conditions in steep slope areas A, B, C, D and E.

We analyzed global stability using a computer program known as XSTABL, version 5.2. XSTABL is a two-dimensional, limit-equilibrium, slope stability program. The sections were analyzed using the Modified Bishops method of slices. XSTABL generates random potential failure surfaces and determines their corresponding factors of safety with respect to failure. The factor of safety is defined as the ratio of the internal soil strength divided by the gravity driving forces that cause failure. By generating a large number of random surfaces, the factor of safety can be obtained as the lowest number calculated.

The site is underlain by glacially consolidated soils. The test pit logs are included in our geotechnical report. Based on the geologic environment of the materials encountered, relatively high strengths could be used, although our model used more conservative values. Proposed conditions were used to model Cross-Section A-A' and existing conditions were used to model Cross-Section B-B'. The parameters and results are shown in Figures 2 and 4. Factors of safety against deep-seated failures under static conditions were above 1.5 for Cross-Sections A-A' and B-B'.

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We evaluated the slope stability for seismic conditions, using a pseudostatic analysis with a horizontal peak seismic coefficient of 0.34g. A reduction to 50 percent of peak values was used to determine the average acceleration in accordance with the 2012 Washington State Geotechnical Design Manual. This correlates to a design input horizontal coefficient of 0.17g.

We used the static soil parameters in our seismic evaluation. We expect that for short intervals of dynamic forces, such as those created in a seismic event, the cohesion within the subsurface soils will be greater than the long-term internal resisting forces. We have used a small portion of the cohesion in the dynamic analysis. Therefore we consider the dynamic results to be conservative. The parameters and results are shown in Figures 3 and 5. Factors of safety against deep-seated failures under seismic loading were above 1.2 for Cross-Sections A-A' and B-B'.

The factors of safety are greater than the minimum required factors of safety in the City of Woodinville Code WMC 21.24.310. Therefore, in our opinion the site is stable and can be developed as planned provided the recommendations in our geotechnical report are followed.

We appreciate the opportunity to be of service to you. If there are any questions concerning this letter or if we can provide additional services, please call.

Sincerely,

Robinson Noble, Inc.

for BAG

Barbara A. Gallagher, PE
Senior Project Engineer

RICK B. POWELL
STATE OF WASHINGTON
30530
REGISTERED
PROFESSIONAL ENGINEER

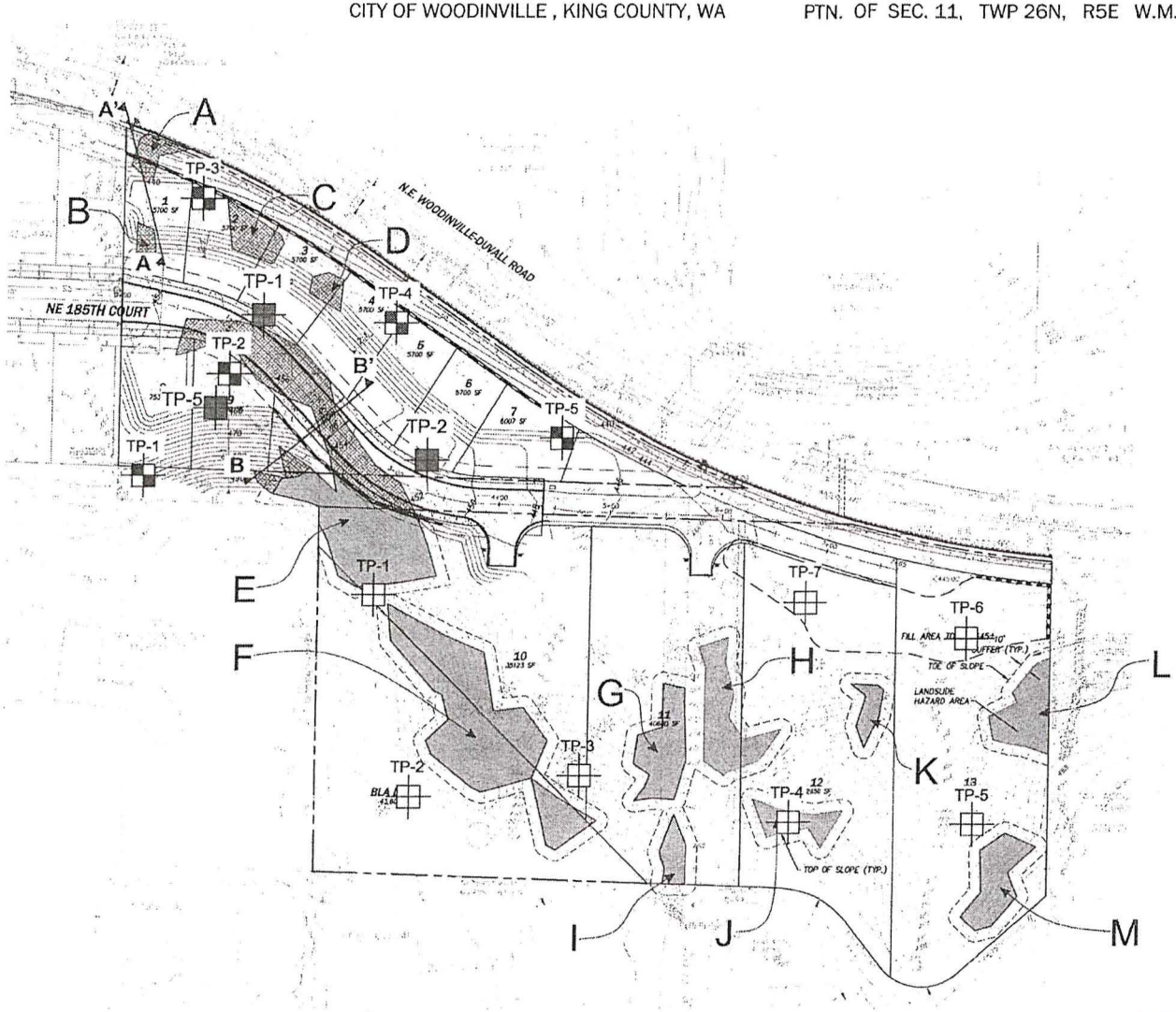
2/3/2014

Rick B. Powell, PE
Principal Engineer

BAG:RBP:am

Five Figures

CITY OF WOODINVILLE , KING COUNTY, WA PTN. OF SEC. 11, TWP 26N, R5E W.M.



LEGEND

LANDSLIDE HAZARD AREAS (SEE NOTE)

LANDSLIDE HAZARD AREAS TO BE ALTERED

NOTE:
THE LANDSLIDE HAZARD AREAS SHOWN ON THIS PLAN REPRESENT LANDSLIDE HAZARD AREAS MEETING THE SLOPE CRITERIA AS DESCRIBED IN WAC 21.24.230(2)(V), BASED ON ANALYSIS OF THE TOPOGRAPHIC SURFACE PROVIDED BY THE PROJECT SURVEYOR. SPECIFIC AREAS ARE PROPOSED TO BE ALTERED AND ELIMINATED AS SUMMARIZED IN THE GEOTECHNICAL REPORT PREPARED BY ROBINSON NOBLE.

LEGEND

TP-1 Number and Approximate Location of 2013 Test Pit

TP-1 Number and Approximate Location of 2006 Test Pit

TP-1 Number and Approximate Location of 2004 Test Pit

A A' Approximate Location of Cross Section

0 100 200

Approximate Scale 1" = 100'

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Note: Basemap taken from "Brickyard Ridge Plat Slope Analysis Exhibit" prepared by CPJH Consultants dated 12/05/13.

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Figure 1
Site Plan
Brickyard Ridge, LLC: Brickyard Ridge

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Brickyard Ridge-Cross Section A-A'

10 most critical surfaces, MINIMUM BISHOP FOS = 1.907

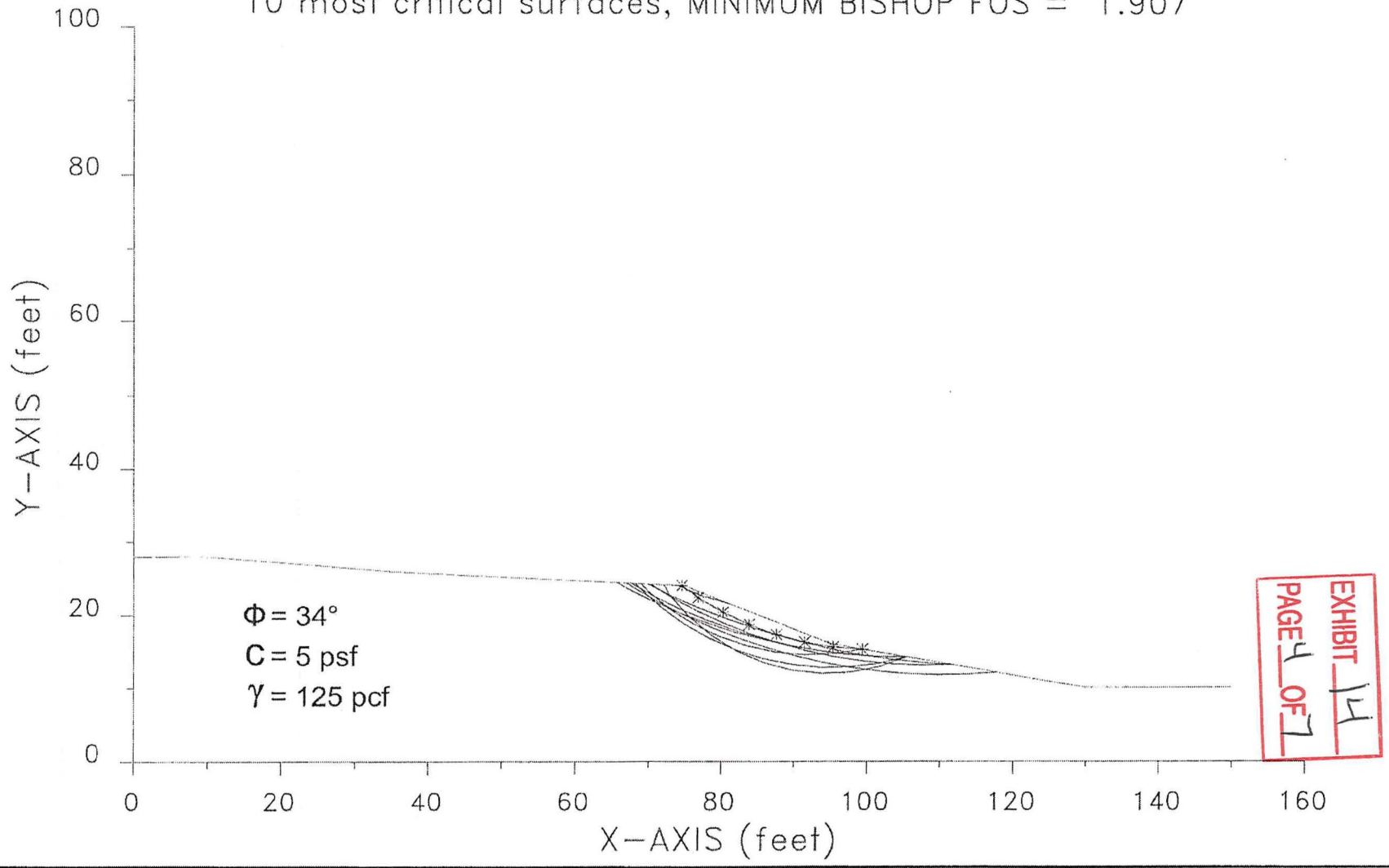

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Figure 2

Brickyard Ridge, LLC: Brickyard Ridge

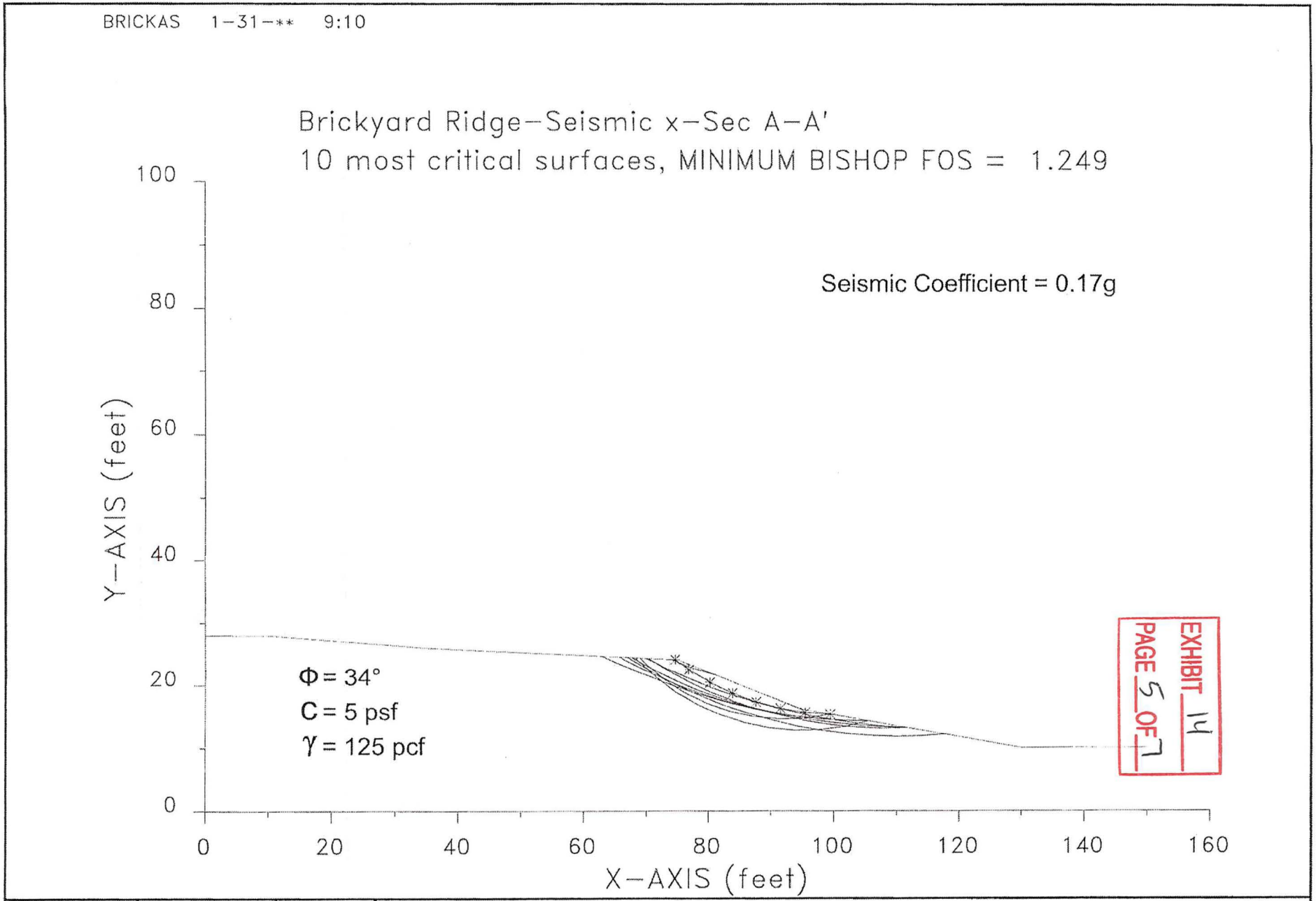

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Figure 3

Brickyard Ridge, LLC: Brickyard Ridge

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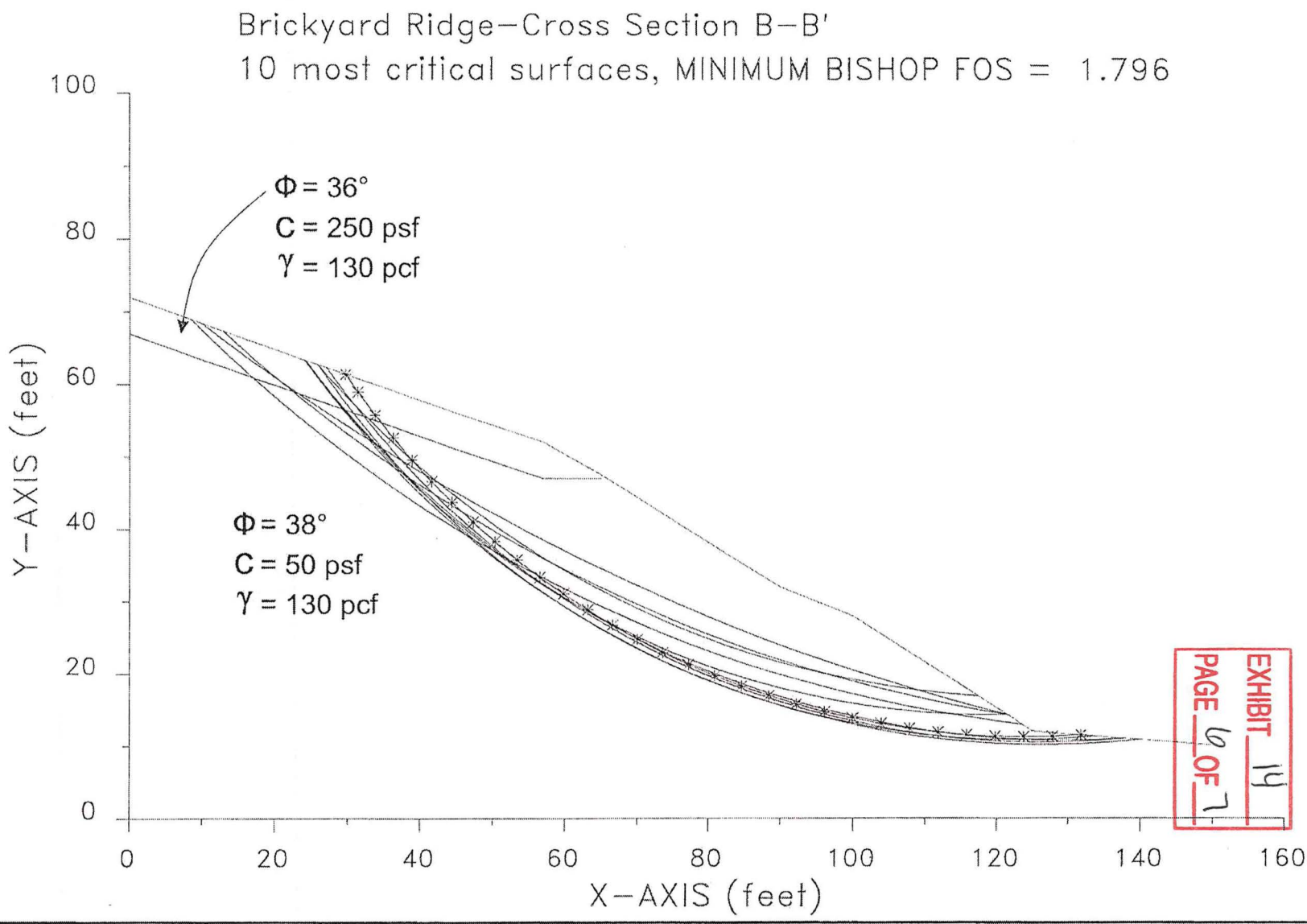

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Figure 4

Brickyard Ridge, LLC: Brickyard Ridge

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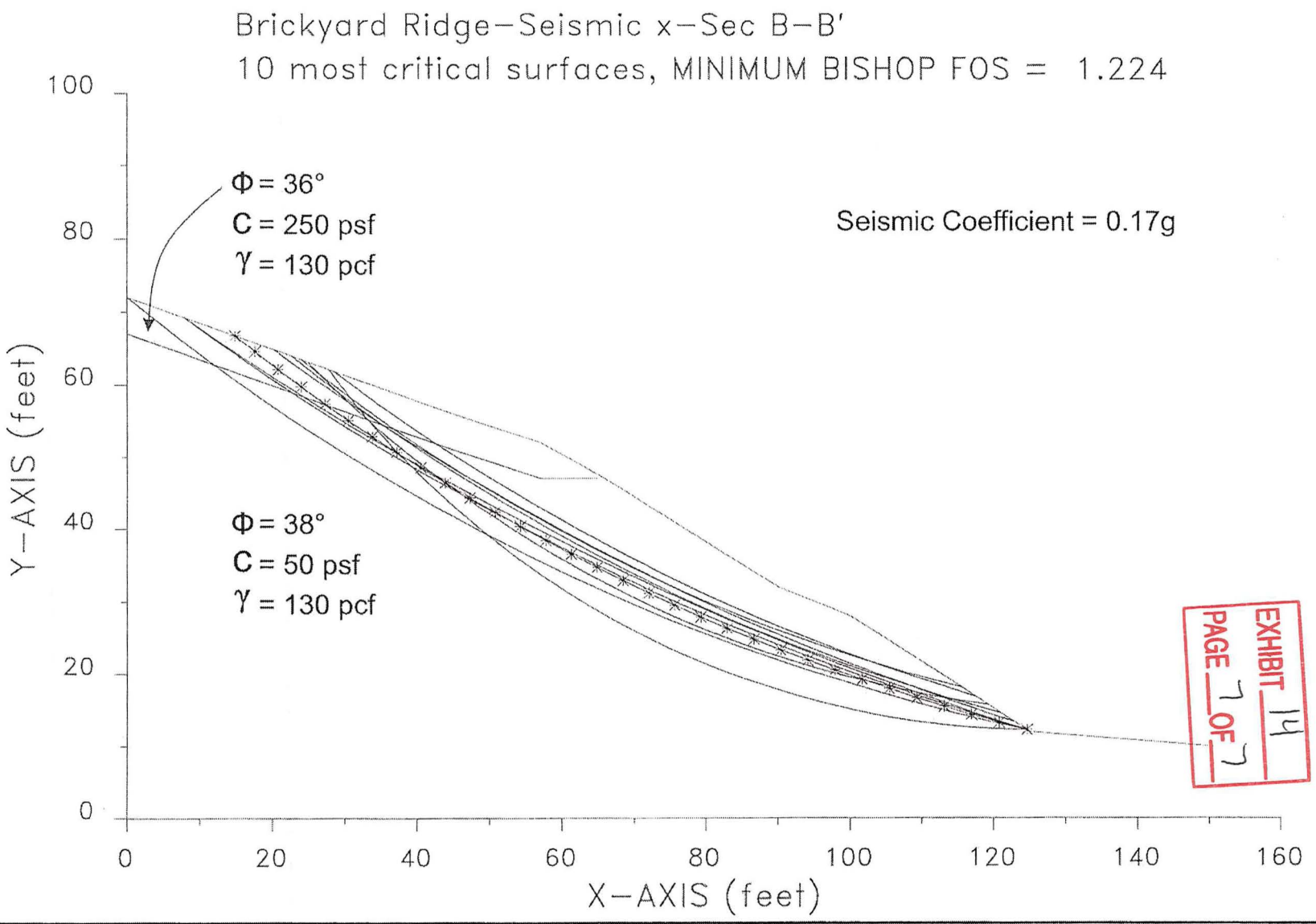

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Figure 5

Brickyard Ridge, LLC: Brickyard Ridge