

GT-001626

*LaVielle Geotechnical, P.C.*

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2900 NE 132nd Ave

2313 NE Alameda  
Portland, Oregon 97212  
(503) 287-0511, Fax 282-7671

June 17, 1999

Our ref: 99-1033.008

Richard Brown Architects AIA LLP  
239 NW 13th Avenue, Rm. 305  
Portland, Oregon 97209

RE: GEOTECHNICAL ENGINEERING REPORT  
PROPOSED NEW LECTURE HALL AND PARKING LOT  
WESTERN STATES CHIROPRACTIC COLLEGE  
2900 NE 132nd  
PORTLAND, OREGON

Dear Mark:

We are pleased to present the results of our geotechnical report for a proposed new lecture hall and parking area at the Western States Chiropractic College, in Portland, Oregon. We have proceeded with this evaluation based on your verbal authorization.

#### Project Description

It is our understanding that the proposed project will consist of construction of a new lecture hall and parking area. We expect the project to include relatively light to moderate foundation loads.

#### Site Description

The site is located at 2900 NE 132nd in Portland, Oregon. The proposed areas designated for the new lecture hall and parking are level grassed lawn. The area appears well drained and undisturbed by past development.

#### Subsurface Conditions

A series of backhoe excavated test pits were completed to evaluate the soil conditions at the site. The site soils consist of 4 feet of Clayey Silt over Gravelly Sandy Silt. The site soils are mapped and published in the Oregon Department of Geology and Mineral Industries (DOGAMI) Open File report 0-90-2, Earthquake Hazard Geology Maps of the Portland Metropolitan Area, Oregon by Ian Madin.

00-145778  
4/23/00

## Conclusions and Recommendations

The site is suitable for development and can generally be developed as planned. The Clayey Silt or the Sandy Silt soils are expected to be adequate to support structures with shallow conventional isolated or continuous spread footings. Foundations may also be founded on structural fill founded on the above mentioned soils, and compacted to at least 95% of ASTM D-1557. Foundations should not be founded in the very soft Topsoil unit. Spread footings should be designed based on the following recommended values.

### Maximum Allowable Bearing Pressures:

2000 psf.	Medium Stiff, Brown Clayey Silt
3,500 psf	Medium Dense, Brown, Sandy Silt
2000 psf.	Compacted Fill (95% of ASTM:D-1557) founded on above-mentioned soil.

Unsuitable Topsoil Unit (uppermost 6 to 12 inches of soil onsite)

These values may be increased by 1/3 for short-term wind and seismic loading.

### Minimum Footing Embedment:

12 inches below adjacent grades

### Lateral Load Resistance:

#### Ultimate Passive Resistance:

Medium Stiff Silt:	400 pcf, Equivalent Fluid
Medium Dense:	500 pcf Equivalent Fluid
Coefficient of Friction:	0.3

Note: The values for lateral load resistance do not include any factor of safety. The top foot of depth should be neglected in design computations of the passive capacity unless the soil is confined beneath a pavement or slab.

### Estimated Settlement:

Total Settlement:	3/4 inches
Differential Settlement:	1/2 inch

## Seismic

The project site has been assigned to a seismic zone 3 with a Zone factor of 0.30 in the Uniform Building Code (UBC). Based on the subsurface conditions at the site and review of the 1997 edition of the UBC, we recommend using a  $S_D$  soil type evaluate the seismic design of the structures.

A site-specific seismic study, which would provide details of the site potential risks, has not been completed for this site. Based on our experience there is a low risk to no risk that a strong seismic might induce liquefaction.

## Stormwater Infiltration

The field-testing completed in our test pits found the following percolation rates for the site soils.

Medium Stiff Clayey Silt:	0 to 4 feet	3 inches per hour
Medium Dense Sandy Silt	4 to 10 feet	1 inch per hour

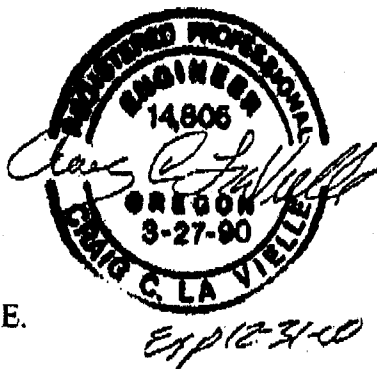
## Closure

This report has been prepared exclusively for the use of Richard Brown Architects, AIA and their consultants or designates for specific application to this project alone. Our services have been executed in accordance with generally accepted engineering practices in this area at the time this report was prepared.

We appreciate this opportunity to be of service. Please call if you have any questions or require additional information.

Sincerely,

*LaVIELLE GEOTECHNICAL, P.C.*



Craig C. LaVielle, P.E.  
Principal

**SUMMARY TEST PIT LOGS**

Depth (ft.)	Soil Classification	99-1033.008
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Test Pit No. 1

0.0 - 0.5	Very Soft, brown, Clayey Silt, ML-CL (Topsoil)
0.5 - 4.0	Medium Stiff, Brown, Clayey Silt, CL (300 to 400 in-lbs.)
4.0 - 10.0	Medium Dense, Brown, Gravelly Sandy Silt,

Test pit was terminated at a depth of 10.0 feet. Seepage was not encountered.

Test Pit No. 2

0.0 - 0.5	Very Soft, brown, Clayey Silt, ML-CL (Topsoil)
0.5 - 4.0	Medium Stiff, Brown, Clayey Silt, CL (300 to 400 in-lbs.)
4.0 - 10.0	Medium Dense, Brown, Gravelly Sandy Silt,

Test pit was terminated at a depth of 10.0 feet. Seepage was not encountered.

Test Pit No. 3

0.0 - 0.5	Very Soft, brown, Clayey Silt, ML-CL (Topsoil)
0.5 - 4.0	Medium Stiff, Brown, Clayey Silt, CL (300 to 400 in-lbs.)
4.0 - 10.0	Medium Dense, Brown, Gravelly Sandy Silt,

Test pit was terminated at a depth of 10.0 feet. Seepage was not encountered.

Test Pit No. 4

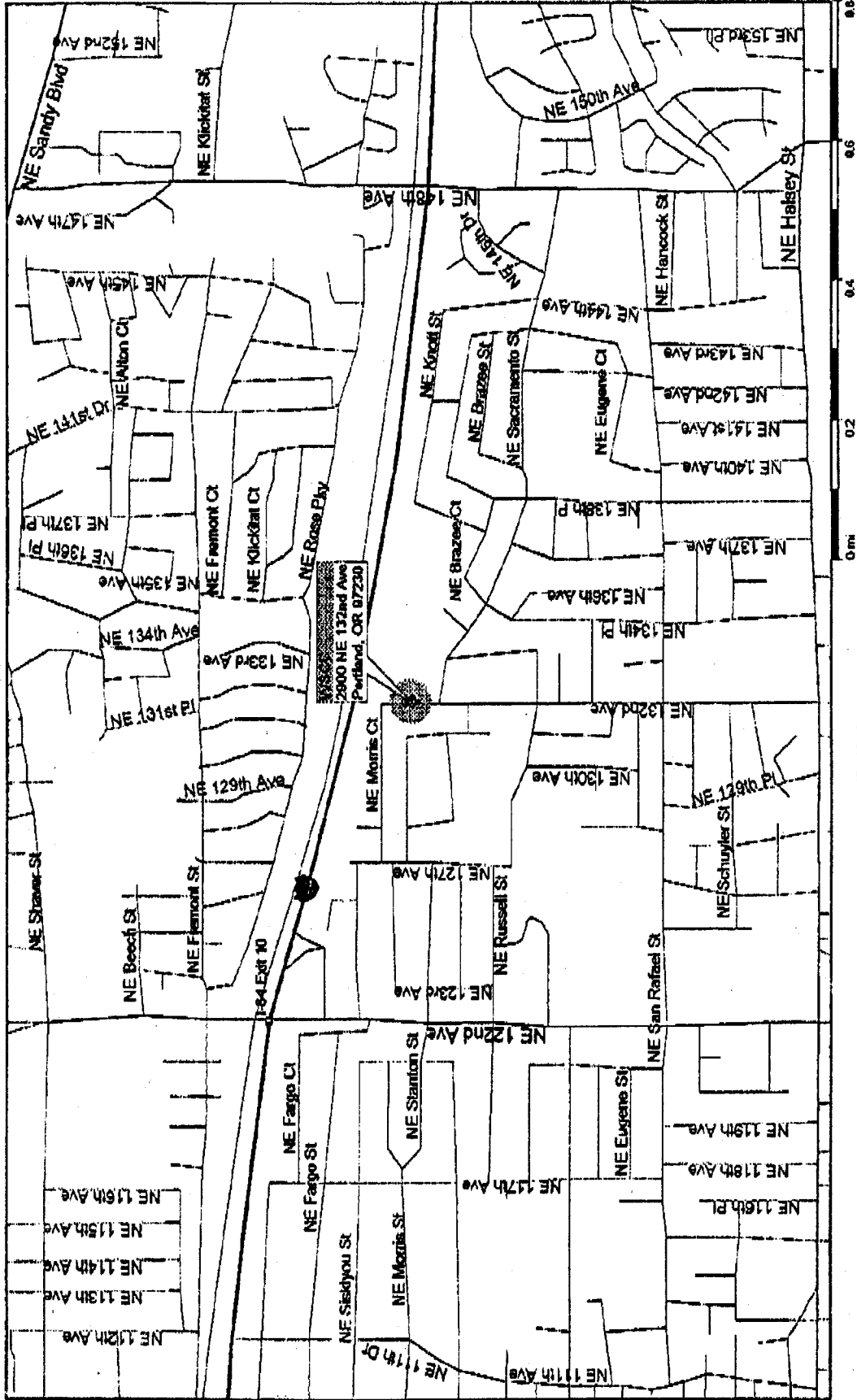
0.0 - 0.5            Very Soft, brown, Clayey Silt, ML-CL (Topsoil)

0.5 - 4.0            Medium Stiff, Brown, Clayey Silt, CL (300 to 400 in-lbs.)

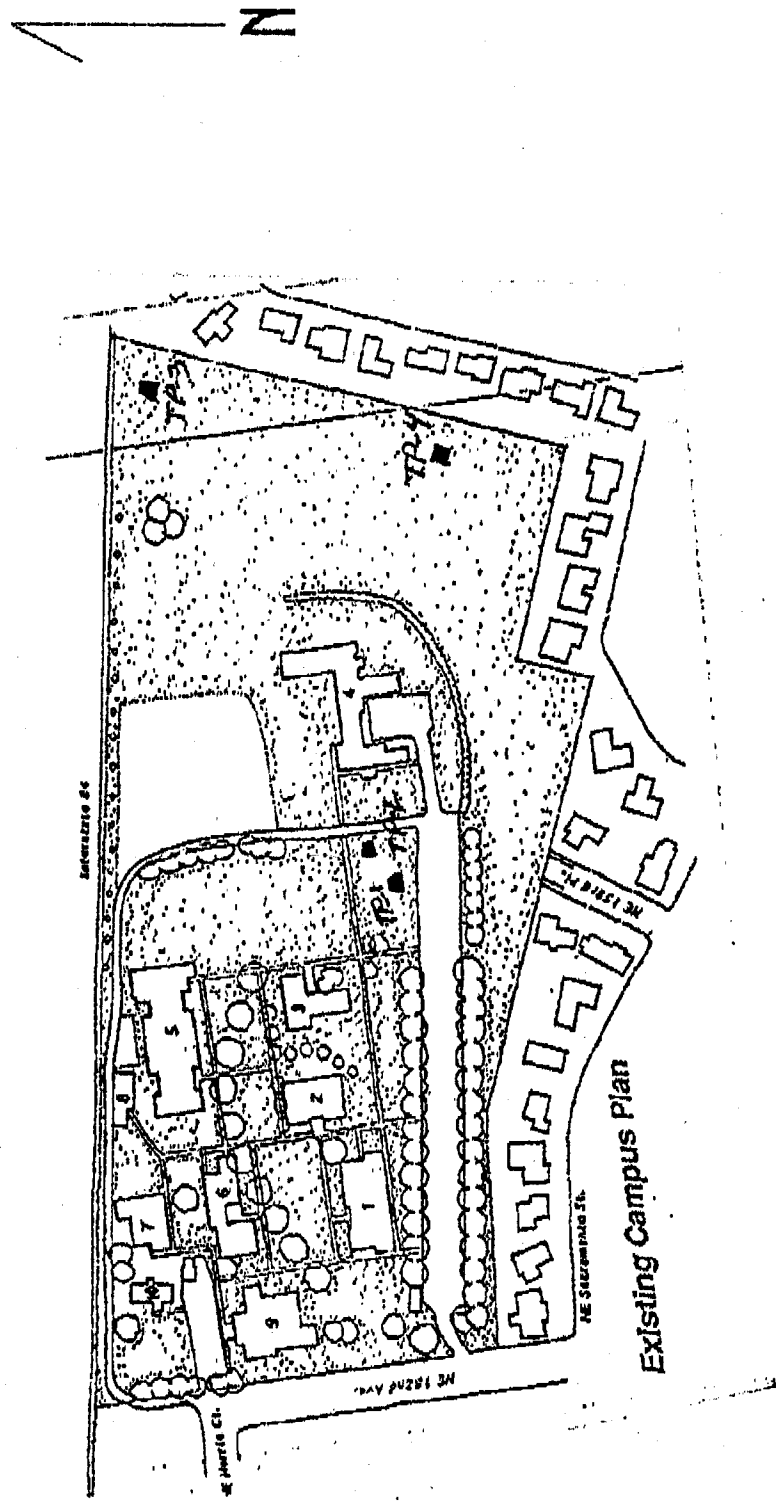
4.0 - 10.0           Medium Dense, Brown, Gravelly Sandy Silt,

Test pit was terminated at a depth of 10.0 feet. Seepage was not encountered.

Vicinity Plan, Figure 1  
 LaVIELLE GEOTECHNICAL, P.C.



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Site Plan, Figure 1  
 Western States Chiropractic College  
 2900 NE 132nd Avenue  
 Portland, Oregon

TP-4.

Indicates Approximate  
 Location of Test Pits

LaVielle Geotechnical P.C.

# **LaVIELLE GEOTECHNICAL P.C.**

2313 NE Alameda  
Portland, Oregon 97212  
(503) 287-0511, Fax 282-7671

June 19, 1999

Our ref:99-1033.008

Richard Brown Architects AIA LLP  
239 NW 13th Avenue, Rm. 305  
Portland, Oregon 97209

RE: DRIVEWAY AND PARKING LOT PAVEMENT DESIGN  
WESTERN STATES CHIROPRACTIC COLLEGE  
2900 NE 132nd  
PORTLAND, OREGON

Dear Richard:

In accordance with your request we present our pavement evaluation and design for the proposed expansion of the existing driveway and parking lot at Western States Chiropractic College. The traffic assumptions, the subgrade conditions, and the existing pavement sections have been evaluated and a recommended pavement section is presented below.

## **Traffic Assumptions**

Based assumed 3 truck deliveries per day to WSCC we have attempted estimate the traffic volumes that will use the proposed new driveway. It is our understanding that traffic to and from the WSCC will be approximately 6 truck trips with 3 axle trucks each day. A large volume of automobile traffic associated with the school will also use the entrance. We estimate estimated school traffic will be approximately 250 car trips per day. We have accounted for growth by using a 10 year design life and a 3 percent growth rate.

## **Existing Pavement Sections**

The existing AC pavement appears to be a 2" AC, with 6" 1-1/4 minus crushed. This section of pavement appears to be the newest and in general it is in marginal shape. We recommend the existing pavements be proof-rolled with a fully loaded 10 yard dump truck and any soft or deflection area be identified and over excavated and replaced with 1-1/4 minus crushed rock.



We recommend the existing truck delivery route and the parking lot pavements be sealed and overlaid with Standard Duty AC, Spec. 00745.14, 1991 Oregon SSHC.

Table 1: Overlay Summary

Existing Truck Delivery Routes: Overlay with 3" AC

Existing Car Parking Areas: Overlay with 2" AC

**New Pavements Areas:**

We recommend that prior to paving that the subgrade be proof-rolled with a fully loaded 10 yard dump truck and any soft or deflection area be identified and over excavated and replaced with 1-1/4 minus crushed rock. We recommend the following pavement sections be used in the proposed new parking lot and delivery routes.

Proposed New Parking Lot Area: 2" of AC,  
3" of 3/4" minus crushed,  
6" of 1-1/4 minus crushed.

Proposed New Truck Delivery Routes: 4" of AC,  
3" of 3/4" minus crushed,  
9" of 1-1/4 minus crushed

We are pleased to have this opportunity to work with you. If you have any questions or require additional information, please contact us.

Sincerely,

LaVIELLE GEOTECHNICAL, P.C.



Craig C. LaVieille, P.E.  
Principal

EXP 12-31-00