August 4, 2015

ADDENDUM No. 3

Questions from pre-bid meeting:

1. What is the irrigation controller lead time?
   Response: 3 weeks from the date of the purchase order is placed. Contractor shall verify with supplier at the time of placing the order.

2. How long is the Landscape maintenance period?
   Response: 90 days, per Landscape Planting Section 329000-3.11-A.

3. Does contractor need to import soil?
   Response: yes, refer to Note #7 under SOILS in Sheet L1.2. See bid form & attached grading form. (Grading plan by JKA provided as reference only).

4. Does the contractor need to excavate the soil? There is no grading plan provided
   Response: soil excavation shall be required for tree placement and shrub placement. Contractor shall bid an excavation amount of 20 cubic yards not related to planting operations. See updated bid for and grading plan. Excavated soil material to be used as base fill elsewhere on project site. No off-hauling of soil is anticipated.

   How does one prepare the ground / soil for shrubs?
   Response: refer to Detail #3 & #4 in sheet L3.1.

5. Is there a soil report? Can you provide?
   Response: District to provide soil report.

6. Where does contractor store excess soil?
   Response: If required, excess soil may be placed on the north side of the campus at an existing stockpile. Stockpile soils which are disturbed or placed shall have erosion control binder placed on all disturbed areas. See sheet L1.2 for binder mix.

7. Should the site fencing and bathroom facilities be included in the bid?
   Response: Site fencing and bathroom facilities shall be included in the bid.
8. Are there any testing requirement? Any inspection required?

Response: This is a non-DSA project, no inspection is required. The irrigation testing requirement shall follow Irrigation System Section 328400-3.05-B.

REQUESTS FOR INFORMATION

RFI Questions emailed to buyer:

1. Question: Bid set drawing have no grading plan but in front of west entrance at Allied Health Building. It was much lower than finish grade. bidder only bring top soil at tree well and scarified 6” at finish grade provided by previous contractor? Or how much contractor bring soil from other site of Merritt.

Response: See attached grading plans and specifications by Wood Rodgers. (provided as reference).

Contractor shall provide a base bid suitable to import and equally place on-site 500 cubic yards of Import Fill Soil suitable for planting per the specifications within all planter areas. The 500 cubic yards of Import Fill Soil is in addition to soil required for all planting operations. All import soil required for planting backfill operations shall be included as part of the base bid.

Contractor shall also include pricing in base bid to import and place 150 cubic yards of stockpile soil to all proposed ‘gravel’ areas.

Stockpile Soil is soil located onsite.

Contractor shall provide unit cost pricing per cubic yard for Import Fill Soil and import Stockpile Soil is excess soil currently located on the campus per question #7 above.

The District shall provide an existing survey of all existing conditions and updated grading plans after the award of bid.

The District shall increase or decrease the final contract amount based upon updated grading plans issued after the award of bid based upon unit pricing listed within the bid form.

2. What’s the Quantities on the following blank Items on the Plant List: *QA, AG, YG in Drawing Plan L2.1

Response: QA quantity is 1, AG quantity is 1. Missing quantity for YG not found on plans. See sheet L2.1

3. What plant is AB in Drawing Plan L2.1 and how much does it cost??

Response: AB is Abutilon hybridum ‘Bella Red.’ Cost shall be determined by contractor.
PLAN/SPECIFICATION REVISIONS

PLANS:

1. Sheet L1.2, Soils, note #7 revised to read:
   “Contractor shall provide imported topsoil and scarify the soil for all planting areas per detail #1 to #4 in Sheet L3.1 and per specification section 329000.”

2. Sheet L3.1 Detail #1 Tree Staking Detail:
   a. Plant pit modified to specify 24” deep and 8’ square in size; scarify 12” below 24” depth.
   b. Note to modify to read: “Scarify sides of the plant and 12” below plant pit”.

3. Sheet L3.1 Detail #2 Tree Planting on Slope Detail:
   a. Plant pit modified to specify 24” deep and 8’ square in size; scarify 12” below 24” depth.
   b. Note to modify to read: “Scarify sides and 12” below bottom of plant pit”.

4. Sheet L3.1 Detail #3 Shrub Planting Detail:
   a. Note modified to read: “Plant pit, 3X container width scarify edges of pit”.
   b. Note modified to read: “Tamped imported topsoil”.

5. Sheet L3.1 Detail #4 Shrub Planting on Slope Detail:
   a. Note modified to read: “Plant pit, 3X container width scarify edges of pit”.
   b. Note modified to read: “Tamped imported topsoil”.

6. Sheet L3.1 Detail #7 Metal Header Detail:
   a. Detail title modified to read: “HEADER”.

7. Sheet L3.1 Detail #8 Gravel Mulch Detail:
   a. Section – On Slope modified to read: “Section – On Slope exceeding 4:1.”

8. Grading Plans are provided for reference. See response to RFI#1. Contractor shall provide import soils and implement all grading as shown on grading plans. All drainage, drains, hardscape, stairs, and ramps are now existing and not within the scope of work.

9. Sheet 3.1 Detail #9 Granite Seatpad in Gravel Mulch Detail:
   a. Granite seat pad revised to 18” depth buried 2” below FG

**Note:** Revised plans can be found at the District website and are not part of this email.

http://web.peralta.edu/purchasing/documents-list-of-current-bids-rfps-and-rfqs/
SPECIFICATIONS:

1. Landscape Planting Section 32 9000, 3.03 SHRUBS AND TREES-B Excavation:
   a. Delete paragraph 2, 3 and 4.
   b. Paragraph 2 to read: “See details for excavation and import soil dimensions”

2. Landscape Planting Section 32 9000, 3.03 SHRUBS AND TREES-C Plants in Containers:
   a. Paragraph 5 to read: "Use import soil mix only for backfill. Backfill pit with soil mix in 6" layers and water each layer thoroughly to settle soil. The filled pit shall be flush with surrounding grade when complete.

3. Added Earthwork Section 31 0000

GENERAL NOTES:

1. Allied Health and Science building shall be occupied at the time of landscape construction. Contractor shall provide fencing and access as noted on General Note #6 page L1.1
Merritt College Science Building Landscape Improvements

DOCUMENT 00 4113

BID FORM

TO THE BOARD OF TRUSTEES OF THE PERALTA COMMUNITY COLLEGE DISTRICT

THIS BID IS SUBMITTED BY:

____________________________________________________________________________________

(Firm/Company Name)

Re: Merritt College Science Building Landscape Improvements at 12500 Campus Drive, Oakland, CA 94619, Project No. 2353, Bid No. 14-15/43

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with THE PERALTA COMMUNITY COLLEGE DISTRICT in the form included in the Contract Documents, Document 00 5200 (Agreement), to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Sum and within the Contract Time indicated in this Bid and in accordance with all other terms and conditions of the Contract Documents.

2. Bidder accepts all of the terms and conditions of the Contract Documents, Document 00 1113 (Notice Inviting Bids), and Document 00 2113 (Instructions to Bidders), including, without limitation, those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for 60 Days after the day of Bid opening, unless there is a bid protest, then 90 days after the day of bid opening.

3. In submitting this Bid, Bidder represents that Bidder has examined all of the Contract Documents, performed all necessary Pre-Bid investigations, received the Pre-Bid conference minutes (if any), and received the following Addenda:

<table>
<thead>
<tr>
<th>Addendum Number</th>
<th>ADDENDUM DATE</th>
<th>Signature of Bidder</th>
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</thead>
<tbody>
<tr>
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</tbody>
</table>

4. Based on the foregoing, Bidder proposes and agrees to fully perform the Work within the time stated and in strict accordance with the Contract Documents for the following sums of money listed in the following Schedule of Bid Prices:
**SCHEDULE OF BID PRICES**

All Bid items, including lump sums and unit prices, must be filled in completely. Bid items are described in Section 01 1100 (Summary of Work). Quote in figures only, unless words are specifically requested.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>ESTIMATED QUANTITY</th>
<th>UNIT</th>
<th>UNIT PRICE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Allowance for unforeseen conditions (authorized by Owner, following Change Order Procedure)</td>
<td>XXXX</td>
<td>Allowance</td>
<td>$35,000</td>
<td>$35,000</td>
</tr>
<tr>
<td>2.</td>
<td>Alternate #1 Import fill soil</td>
<td>1</td>
<td>CYD</td>
<td>$</td>
<td>XXXX</td>
</tr>
<tr>
<td>3.</td>
<td>Alternate #2 Stockpile soil</td>
<td>1</td>
<td>CYD</td>
<td>$</td>
<td>XXXX</td>
</tr>
<tr>
<td>4.</td>
<td>All Work of Contract Documents other than Work separately provided for under other Bid items</td>
<td></td>
<td></td>
<td>XXXX</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>TOTAL BID PRICE</strong></td>
<td><strong>$</strong></td>
</tr>
</tbody>
</table>

Total Bid Price:

_______________________________________________________________________________

(Words)

5. Subcontractors for work included in all Bid items are listed on Document 00 4330 (Subcontractors List) submitted herewith.

6. The undersigned Bidder understands that Owner reserves the right to reject this Bid.

7. If written notice of the acceptance of this Bid, hereinafter referred to as Notice of Award, is mailed or delivered to the undersigned Bidder within the time described in Paragraph 2 of this Document 00 4113 or at any other time thereafter before it is withdrawn, the undersigned Bidder will execute and deliver the documents required by Document 00 2113 (Instructions to Bidders) within the times specified therein.

8. Notice of Award or request for additional information may be addressed to the undersigned Bidder at the address set forth below.

9. The undersigned Bidder herewith encloses cash, a cashier’s check, or certified check of or on a responsible bank in the United States, or a corporate surety bond furnished by a surety authorized to do a surety business in the State of California, in form specified in Document 00 2113 (Instructions to Bidders), in the amount of ten percent (10%) of the Total Bid Price and made payable to **THE PERALTA COMMUNITY COLLEGE DISTRICT**.

10. The undersigned Bidder agrees to commence Work under the Contract Documents on the date established in Document 00 7200 (General Conditions) and to complete all Work within the time specified in Document 00 5200 (Agreement).

11. The undersigned Bidder agrees that, in accordance with Document 00 7200 (General Conditions), liquidated damages for failure to complete all Work in the Contract within the time specified in Document 00 5200 (Agreement) shall be as set forth in Document 00 5200.
12. The names of all persons interested in the foregoing Bid as principals are:

**IMPORTANT NOTICE:** If Bidder or other interested person is a corporation, give the legal name of corporation, state where incorporated, and names of president and secretary thereof; if a partnership, give name of the firm and names of all individual co-partners composing the firm; if Bidder or other interested person is an individual, give first and last names in full.

**NAME OF BIDDER:** ___________________________________________________________________

licensed in accordance with an act for the registration of Contractors, and with license number:_____________________________________ Expiration: __________________.

_____________________________________________  (Principal)

_____________________________________________  (Principal)

_____________________________________________  (Principal)

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

___________________________________________ (Signature of Bidder)

**NOTE:** If Bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If Bidder is a partnership, set forth the name of the firm together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

**Business Address:**

________________________________________________________

________________________________________________________

________________________________________________________

**Contractor’s Representative(s):**

__________________________________________  (Name/Title)

__________________________________________  (Name/Title)

__________________________________________  (Name/Title)

**Officers Authorized to Sign Contracts**

__________________________________________  (Name/Title)
(Name/Title)

__________________________________________

(Name/Title)

Telephone Number(s):    __________________________________________

(Area Code)  (Number)

__________________________________________

(Area Code)  (Number)

Fax Number(s):     __________________________________________

(Area Code)  (Number)

__________________________________________

(Area Code)  (Number)

Date of Bid:     __________________________________________

END OF DOCUMENT
Merritt College Science Building Landscape Improvements  

SECTION 01 1100  

SUMMARY OF WORK  

PART 1 – GENERAL  

1.01 SUMMARY  
A. Section includes Summary of Work and Work Restrictions including:  
1. List of Sections  
2. Work Covered By Contract Documents  
3. Bid Item, Allowances and Alternates  
4. Work Days and Hours  
5. Contractor Use of Site  

1.02 WORK COVERED BY CONTRACT DOCUMENTS  
A. Work comprises of the construction of Owner’s Merritt College Science Building Landscape Improvements project, located at, 12500 Campus Drive, Oakland, CA 94619. The Work includes, without limitation, all planting, irrigation, site furnishing, accessories and concrete work, as described in the Construction Documents prepared by Gates & Associates.  
B. The Work of this Contract comprises construction of all the Work indicated, described in the Specifications, or otherwise required by the Contract Documents. Unless provided otherwise in the Contract Documents, all risk of loss to Work covered by Contract Documents shall rest with Contractor until Final Acceptance of the Work. Cost of maintenance of systems and equipment prior to Final Acceptance will be considered as included in prices Bid and no direct or additional payment will be made therefore.  
C. For all Bid items, furnish and install all Work, including connections to existing systems, indicated and described in Specifications and all other Contract Documents. Work and requirements applicable to each individual Bid item, or unit of Work, shall be deemed incorporated into the description of each Bid item (whether Lump Sum or Unit Price). Any Bid item may be deleted from the Work and Contract Sum, in total or in part, prior to or after award of Contract without compensation in any form or adjustment of other Bid items or prices therefore.  
D. Allowance Work shall be done as Change Orders and as specified in Section 01 2600 (Modification Procedures). Identify Allowance Items (See Document 00 4000 [Bid Form]) work on the Progress Schedules and on Applications for Payment. The Amount given on Document 00 4000 (Bid Form) under each Allowance Item is the sum of money set aside for each Allowance Item. These amounts shall be included in the Contract Sum on the Bid Form. If the cost of Work done under any Allowance Item is less than the amount given on the Bid Form under that Allowance Item, the Contract Sum shall be reduced by the difference between the amount given in the Bid Form and the cost of Work actually done.  

1.03 BID ITEMS, ALLOWANCES AND ALTERNATES  
A. Descriptions of Lump Sum Items (listed by Bid item numbers):  
   Bid item 4 - All planting, irrigation, site furnishing, accessories and concrete work as described in construction documents.  
B. Bid Alternates (listed by Bid item numbers):  
   Bid Item 2 & 3 – Soil price per cubic yard to be added or subtracted from project per owner.
C. Bid Allowances (listed by Bid item numbers):
   **Bid Item 1** – Allowance for unforeseen conditions.
   (Refer to specification section 01 20 00 Measurement and Payment paragraph 1.03D Allowance Items.)

1.04 WORK DAYS AND HOURS
   A. Work Days and hours: See paragraph B and C.
   B. Work at the Site on weekends, holidays, or other than normal business hours is permitted with approval by Owner.
   C. Any activity, especially demolition that produces loud disruptive noise shall not be performed between the hours of 8am and 8pm on Monday-Friday. Contractor shall consult with Campus and District staff prior to commencement of potential disruptive noise activities. All other work can be performed during normal working hours. In addition, the Peralta Community College District, including the Laney Campus, transitions to a four day work week from June 9th to August 1st (Monday through Thursday). There are no academic classes or staff working on this series of eight Fridays and the contractor can perform any type of work during the day on these dates. Daytime Saturday and Sunday work is acceptable with permission by the District. Early morning demolition work and cleanup must be completed prior to 8 am.

1.05 CONTRACTOR USE OF SITE
   A. Confine operations at Site to areas permitted by Contract Documents, permits, ordinances, and laws. Do not unreasonably encumber Site with materials or equipment.
   B. Assume full responsibility for protection and safekeeping of products stored on premises. Move any stored products that interfere with operations of Owner or other contractor.
   C. Coordinate parking, storage, staging, and Work areas with Owner. Owner will provide a storage area for Contractor’s equipment and materials. Do not store construction materials in the dripline of any tree.
   D. Prior to commencement of Work or excavation, Contractor and Owner shall jointly survey the area adjacent to the Project area making permanent note and record of such existing damage such as cracks, sags or other similar damage. This record shall serve as a basis for determination of subsequent damage to structures, conditions or other existing improvements due to Contractor’s operations. All parties making the survey shall sign the official record of existing damage. Cracks, sags or damage of any nature to the adjacent Project area, not noted in the original survey but subsequently noted, shall be reported immediately to Owner.
   E. The Contractor shall follow all city ordinances in force during the duration of this Contract.
   F. It is essential that the Contractor perform the Work with as little interference and disturbance as possible to the surrounding neighborhood.
   G. When suspect materials, outside the scope of Work, are encountered during the Work or restoration process, the Contractor shall immediately contact the Project Manager for evaluation and approval of the methods for dealing with the material.

PART 2 – PRODUCTS- NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION
SECTION 31 00 00
EARTHWORK

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Removal, stockpile and placement of topsoil and subsoil.

1.1.2. Excavation, including as required for foundations, slabs-on-grade, paving, and landscaping.

1.1.3. Fill and backfilling to required elevations.

1.1.4. Consolidation and compaction.

1.1.5. Site Contouring.

1.2. REFERENCES

1.2.1. Geotechnical Report: As identified in Section 00 31 32.

1.2.2. State of California, Department of Transportation (CalTrans), Standard Specifications.

1.2.3. ASTM C136 - Method for Sieve Analysis of Fine and Course Aggregates.

1.2.4. ASTM D1556 - Test Method for Density of Soil in Place by the Sand - Cone Method.

1.2.5. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).

1.2.6. ASTM D 2922 - Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.2.7. ASTM D 3017 - Moisture Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

1.3. PROJECT RECORD DOCUMENTS

1.3.1. Submit documents under provisions of Section 01 77 19.

1.3.2. Accurately record location of utilities remaining, rerouted utilities, new utilities by horizontal dimensions, elevations or inverts, and slope gradients.

1.4. PROTECTION

1.4.1. Protect trees, shrubs, lawns, rock outcropping, and other features remaining as portion of final landscaping.

1.4.2. Protect benchmarks, existing structures, fences, roads, sidewalks, paving and curbs.

1.4.3. Protect above or below grade utilities, which are to remain.
1.5. PUBLIC AGENCY STANDARDS

1.5.1. Perform all earthwork and related structures and devices indicated as public agency standards in accordance with the standard plans and specifications of that agency.

2. PART 2 - PRODUCTS

2.1. STRUCTURAL FILL MATERIAL

2.1.1. On-Site Fill Materials:

2.1.1.1. On site, granular, low-expansive fill material free of vegetation, organic material, debris and other deleterious material, and complying with the following criteria.

2.1.1.1.1. Project Geotechnical Report

2.1.1.2. Grading:

2.1.1.2.1. Limit maximum dimension of rock to 4 inches in any dimension at all fills, unless otherwise approved by Geotechnical Engineer.

2.1.1.2.2. Limit maximum dimension of rock to 1 inch in any dimension at all fills located in landscaped areas within 12 inches of surface.

2.1.1.2.3. Provide soil fill with no more than 30 percent passing the #200 sieve.

2.1.1.2.4. Provide soil fill with minimum 40 percent by weight material smaller than 3/4 inch.

2.1.1.3. Expansion Index: Classified as "Very Low", with a maximum value of 20 per ASTM D 4829 and in accordance with Section 1802A.3.2, Part 2, Title 24, CCR.

2.1.1.4. Hazardous Materials: Provide certification based on test data that soil materials pass Phase 1 and Phase 2 testing per ASTM E 1527 and all additional federal, state or local regulations, including California DTSC regulations.

2.1.1.5. Obtain approval of Geotechnical Engineer of all fill materials prior to placing.

2.1.2. Import Soils

2.1.2.1. Comply with criteria specified in 2.1.1 above, and the following additional requirements.

2.1.2.2. Expansion Index: Classified as "Very Low", with a maximum value of 20 per ASTM D 4829 and in accordance with Section 1802A.3.2, Part 2, Title 24, CCR.

2.1.2.3. Sulphate Content: Limit to maximum 1,000 PPM and as approved by Geotechnical Engineer.
2.1.2.4. Electrical Resistivity: Minimum value in excess of 2,000 ohm cm when saturated with distilled water, in accordance with California Test Method 643 or soil resistivity box procedure per ASTM G 57.

2.1.2.5. Agricultural Suitability: Obtain approval of Architect of all fill materials used in landscaped areas prior to placing, including providing soil test/analysis results.

2.1.2.6. Obtain approval of Geotechnical Engineer of all imported fill materials prior to delivery on site.

2.1.3. Topsoil: Defined as the upper 4 inches of on-site material, after completion of clearing operations specified in Section 31 12 00.

2.1.4. Concrete: Lean concrete, with a compressive strength of 1000 psi as approved by Geotechnical Engineer. Placed by mechanical means per CBC 1803A.6.

2.2. PERMEABLE FILL MATERIAL

2.2.1. Permeable Backfill at Retaining Walls:

2.2.1.1. Characteristics: Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, or organic matter.

2.2.1.2. Graded within the following limits:

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT PASSING</th>
</tr>
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<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>90 to 100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>40 to 100</td>
</tr>
<tr>
<td>No. 4</td>
<td>25 to 40</td>
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<tr>
<td>No. 8</td>
<td>18 to 33</td>
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<tr>
<td>No. 30</td>
<td>5 to 15</td>
</tr>
<tr>
<td>No. 50</td>
<td>0 to 7</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 to 3</td>
</tr>
</tbody>
</table>

2.2.1.3. Provide material with sand equivalent exceeding 75.

2.3. BIC-TREATMENT SOIL MIX

2.3.1. Bioretention soil shall achieve a long-term, in-place infiltration rate of at least 5 inches per hour. Bioretention soil shall also support vigorous plant growth.

2.3.2. Bioretention Soil shall be a mixture of fine sand, and compost, measured on a volume basis: 60%-70% Sand, 30%-40% Compost

2.3.3. The Contractor must submit to the municipality for approval:

2.3.3.1. A sample of mixed bioretention soil.

2.3.3.2. Certification from the soil supplier or an accredited laboratory that the Bioretention Soil meets the requirements of this guideline specification.

2.3.3.3. Grain size analysis results of the fine sand component performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.
2.3.3.4. Quality analysis results for compost performed in accordance with Seal of Testing Assurance (STA) standards, as specified in Section 1.4.

2.3.3.5. Organic content test results of mixed Bioretention Soil. Organic content test shall be performed in accordance with the STA Seal of Testing Assurance by the US Composting Council.

2.3.3.6. Grain size analysis results of compost component performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.

2.3.3.7. A description of the equipment and methods used to mix the sand and compost to produce Bioretention Soil.

2.3.3.8. Provide the following information about the testing laboratory(ies) name of laboratory(ies) including: contact person(s), address(es), phone contact(s), e-mail address(es), qualifications of laboratory(ies), and personnel including date of current certification by STA, ASTM, or approved equal.

2.3.4. Sand for Bioretention Soil

2.3.4.1. Sand shall be free of wood, waste, coating such as clay, stone dust, carbonate, etc., or any other deleterious material. All aggregate passing the No. 200 sieve size shall be non-plastic.

2.3.4.2. Sand for Bioretention Soils shall be analyzed by an accredited lab using #200, #100, #40, #30, #16, #8, #4, and 3/8 inch sieves (ASTM D 422 or as approved by municipality), and meet the following gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing (by weight)</th>
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<tbody>
<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>90</td>
</tr>
<tr>
<td>No. 8</td>
<td>70</td>
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<td>No. 16</td>
<td>40</td>
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<tr>
<td>No. 200</td>
<td>0</td>
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</table>

Note: all sands complying with ASTM C33 for fine aggregate comply with the above gradation requirements.

2.3.5. Composted Material
2.3.5.1. Compost shall be a well decomposed, stable, weed free organic matter source derived from waste materials including yard debris, wood wastes or other organic materials not including manure or biosolids meeting the standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program (a compost testing and information disclosure program).

2.3.5.2. Compost Quality Analysis: Before delivery of the soil, the supplier shall submit a copy of lab analysis performed by a laboratory that is enrolled in the US Composting Council’s Compost Analysis Proficiency (CAP) program and using approved Test Methods for the Evaluation of Composting and Compost (TMECC). The lab report shall verify:

2.3.5.2.1. Feedstock Materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.

2.3.5.2.2. Organic Matter Content: 35% - 75% by dry wt.

2.3.5.2.3. Carbon and Nitrogen Ratio: C:N < 25:1 and C:N >15:1

2.3.5.2.4. Maturity/Stability: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable. In addition any one of the following is required to indicate stability:

2.3.5.2.4.1. Oxygen Test < 1.3 O2 /unit TS /hr

2.3.5.2.4.2. Specific oxy. Test < 1.5 O2 / unit BVS /

2.3.5.2.4.3. Respiration test < 8 C / unit VS / day

2.3.5.2.4.4. Dewar test < 20 Temp. rise (°C) e.

2.3.5.2.4.5. Solvita® > 5 Index value

2.3.5.2.5. Toxicity: any one of the following measures is sufficient to indicate non-toxicity.

2.3.5.2.5.1. NH4+: NO3-N < 3

2.3.5.2.5.2. Ammonium < 500 ppm, dry basis

2.3.5.2.5.3. Seed Germination > 80% of control

2.3.5.2.5.4. Plant Trials > 80% of control

2.3.5.2.5.5. Solvita® > 5 Index value

2.3.5.2.6. Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.

2.3.5.2.6.1. Total Nitrogen content 0.9% or above preferred.

2.3.5.2.6.2. Boron: Total shall be <80 ppm; Soluble shall be <2.5ppm
2.3.5.2.7. Salinity: Must be reported; < 6.0 mmhos/cm

2.3.5.2.8. pH shall be between 6.5 and 8. May vary with plant species.

2.3.5.3. Compost for Bioretention Soil Texture

2.3.5.3.1. Compost for Bioretention Soils shall be analyzed by an accredited lab using #200, 1/4 inch, 1/2 inch, and 1 inch sieves (ASTM D 422 or as approved by municipality), and meet the following gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing (by weight)</th>
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<tbody>
<tr>
<td></td>
<td>Min</td>
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<tr>
<td>1 inch</td>
<td>99</td>
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<tr>
<td>1/2 inch</td>
<td>90</td>
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<tr>
<td>1/4 inch</td>
<td>40</td>
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<tr>
<td>No. 200</td>
<td>2</td>
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</tbody>
</table>

2.3.5.3.2. Bulk density: shall be between 500 and 1100 dry lbs/cubic yard

2.3.5.3.3. Moisture Content shall be between 30% - 55% of dry solids.

2.3.5.3.4. Inerts: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 1 % by weight or volume.

2.3.5.3.5. Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.

2.3.5.3.6. Select Pathogens: Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram.

2.3.5.3.7. Trace Contaminants Metals (Lead, Mercury, Etc.) Product must meet US EPA, 40 CFR 503 regulations.

2.4. DESIGN CRITERIA

2.4.1. General

2.4.1.1. All public improvements shall be constructed per the referenced standards, the improvement drawings, and as specified in this section.

2.4.1.2. Where criteria shown on drawings or specified in this specification exceed that of the referenced standards, the more stringent criteria shall apply.
3. **PART 3 - EXECUTION**

3.1. **SURFACE CONDITIONS**

3.1.1. Inspection

3.1.1.1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

3.1.1.2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3.1.1.2.1. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.1.1.2.2. Identify required lines, levels, contours, and datum.

3.1.1.2.3. Identify known utilities. Stake and flag locations.

3.1.1.2.4. Maintain and protect existing utilities remaining which pass through work area.

3.1.1.2.5. Verify fill materials to be reused are acceptable to Geotechnical engineer.

3.1.1.2.6. Prior to placement of fill material, verify scarification and compaction of excavated surface is complete.

3.1.1.3. In the event of discrepancy, immediately notify the Architect.

3.1.1.4. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.1.2. Preparation

3.1.2.1. Provide all staking and field engineering required to implement the work as shown on the drawings.

3.1.2.2. Protect all stakes and benchmarks. Replace all stakes and benchmarks damaged during the course of construction at no cost to Owner.

3.1.2.3. Set grade stakes using instrument technology, at 50 foot grid interval at areas with gradients greater than 2 percent.

3.1.2.4. Set grade stakes, using instrument technology, at 25 foot grid interval at areas with gradients less than 2 percent.

3.1.2.5. Provide all equipment of such type, function and design as required to achieve specified values. Where necessary, provide rubber tired and vibratory sheepfoot compaction equipment.

3.1.3. When the Geotechnical Engineer determines existing soils in excavated areas do not provide sufficient bearing capacity or are otherwise unacceptable, remove such soils as necessary to expose soils with adequate capacity and characteristics, as approved by the Geotechnical Engineer.
3.2.  TOPSOIL EXCAVATION

3.2.1.  After completion of clearing and grubbing, remove existing topsoil in excavated areas of work and where fill is to be placed on existing grade. Remove topsoil to depth of 4 inches. Stockpile on site for spreading at landscaped areas.

3.2.2.  Stockpile topsoil to depth not exceeding 4 feet with 1:2 slope banks. Cover and protect from erosion.

3.3.  SUBSOIL EXCAVATION

3.3.1.  Excavate soil in work areas under this contract as specified in this Section.

3.3.1.1.  Stockpile excavated material for reuse. Segregate material complying with specified criteria as suitable for re-use as compacted structural fill.

3.3.1.2.  Where approved by Geotechnical Engineer, on-site material that does not comply with structural fill criteria may be used for earthwork that does not support structures or paving.

3.3.1.3.  After completion of grading, remove unsuitable and excess soils from site in conformance with the regulations of jurisdictional authority.

3.3.2.  Excavate subsoil required to accommodate building foundation, slabs-on-grade, paving, landscaped areas, site contouring and site structures.

3.3.2.1.  Excavate to sub-grade elevation as required to accommodate spreading of previously removed topsoil in upper 4 inches.

3.3.3.  Grade top perimeter of excavation to prevent surface water from draining into, or eroding excavation.

3.3.4.  Grade surfaces to provide positive drainage and prevent water ponding, prevent drainage onto adjoining properties and to implement the work.

3.3.4.1.  Provide all field engineering and layout to construct work as shown on drawings, including establishing final grades, slope transitions, drainage paths and swales, and related engineering work.

3.3.4.2.  Construct all drainage courses, swales, toes and tops of slopes, and related earthwork operations necessary to maintaining drainage and access as shown on drawings or required by jurisdictional authority.

3.3.4.3.  Conform to Storm Water Pollution Protection Plan procedures and methods as shown on current SWPPP. Update plan as required. See Section 01 57 23.

3.3.5.  Excavate areas as follows:

3.3.5.1.  Structures, including all buildings, canopy structures, concrete seating, retaining walls and isolated footings

3.3.5.1.1.  Per Geotechnical Report

3.3.5.2.  All landscaped areas per Section 32 90 00.

3.3.5.3.  Asphalt and Concrete Paving Areas.
3.3.5.3.1. Per the Project Geotechnical Report.

3.3.5.4. Utilize excavation methods adjacent to existing structures that prevent the loss of material from beneath foundations, including concrete underpinning where required.

3.3.5.5. Prior to scarification and compaction, obtain Geotechnical Engineer review and acceptance of excavated surface, and remove additional materials as required.

3.4. COMPACTION OF EXCAVATED SURFACES

3.4.1. Prepare areas designated to receive subsequent fill and backfill materials, Portland cement or asphaltic concrete paving as follows:

3.4.1.1. Scarify subgrade to a depth of 6 inches.

3.4.1.2. Water, mix and aerate as necessary to moisture condition within 1 percent minimum to 3 percent maximum optimum moisture content.

3.4.1.3. Compact to a relative compaction of 90 percent based on ASTM D 1557.

3.4.1.4. Compact the top 6-inches to a relative compaction of 95 percent at paving areas based on ASTM D 1557.

3.4.2. Prepare areas designated to receive landscaping as follows:

3.4.2.1. Scarify subgrade to a depth of 6 inches.

3.4.2.2. Water, mix and aerate as necessary to moisture condition within 1 percent minimum to 3 percent maximum optimum moisture content.

3.4.2.3. Compact to a relative compaction of 85 percent based on ASTM D 1557.

3.5. FILL PLACEMENT

3.5.1. Place fill with specified materials at locations as scheduled below.

3.5.1.1. Provide all cribbing, shoring, and sheathing required to perform work. Comply with all applicable regulations for design, installation, maintenance and removal of such construction products, including obtaining any required permits.

3.5.2. Do not place fill over porous, wet, or spongy subgrade.

3.5.3. Systematically backfill to allow maximum time for natural settlement.

3.5.4. Place and compact materials in continuous layers not exceeding 6 inches compacted depth using methods which do not disturb or damage foundations, perimeter drainage and waterproofing systems, or utilities in trenches.

3.5.5. Rock encountered may be broken into material complying with fill characteristics, at Contractors option. Otherwise remove all rock exceeding fill dimensions from site.
3.5.6. Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted soil fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper. Rock larger than 12 inches in maximum dimension shall not be placed beneath permanent structures.

3.5.7. Compact all fill material as scheduled in this Section per ASTM D 1557.

3.5.8. Overfill all slope banks and compact. After compaction, trim to grade and contour as shown on drawings.

3.5.9. Where occurs, place fill concurrently on both sides of foundation elements in maximum 6 inch compacted layers. Compact to 90 percent of maximum density per ASTM D 1557 with mechanical tampers per Article 3.3.4 above.

3.5.10. Compaction by flooding or jetting is prohibited.

3.5.11. Maintain moisture content of fill materials to within 2 percent of optimum and as required to attain required compaction density.

3.5.12. Slope grade as shown on drawings.

3.5.13. Make grade changes gradual, blending slope into level areas. After completion of grading operation, proof roll earthwork areas. Repair low or spongy spots developed during rolling operation.

3.5.14. Extend compacted fill to design surfaces of slopes and compact surface.

3.5.15. Remove all excess soils and dispose off site in a legal manner.

3.5.16. Provide all fill material required to achieve grades, slopes and contours as shown on drawings at no additional expense to Owner.

3.5.17. Lean concrete placed where footings will bear shall be placed by mechanical means and per CBC 1803A.6

3.6. FIELD QUALITY CONTROL

3.6.1. Geotechnical Engineer shall verify the suitability of soil materials.

3.6.2. Field inspection and testing will be performed under provisions of Section 01 45 29, and conducted by the Owners Geotechnical Engineer.

3.6.3. Perform earthwork under the continuous observation of the Owner’s Geotechnical Engineer. Earthwork fill operations shall comply with the requirements of Part 2, Title 24, CCR.

3.6.4. Tests and analysis of fill material will be performed in accordance with ASTM D1557.

3.6.4.1. The Geotechnical Engineer will review and approve all fill materials, including on-site materials and imported materials.

3.6.4.2. The Geotechnical Engineer will submit reports to the Architect, DSA, and Engineer, comparing results of testing with the requirements of this section and documenting location and scope of tested materials.
3.6.5. Compaction testing will be performed in accordance with ASTM D1556 or other referenced methods.

3.6.6. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.7. TOLERANCES

3.7.1. Final elevations shall comply with grades as shown on drawings.

3.7.2. Lawn or unimproved areas: Plus or minus 1 inch.

3.7.3. Walks: Plus or minus 1 inch.

3.7.4. Pavement: Plus or minus 1/2 inch.

3.8. PROTECTION

3.8.1. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.

3.9. FILL SCHEDULE

3.9.1. Structures.

3.9.1.1. Place approved fill material, placed to depth as necessary to achieve required subgrade elevations.

3.9.1.2. The uppermost 6 inches of fill material below footings shall be specified structural non-expansive fill material.

3.9.1.3. The uppermost 6 inches of fill below base course at building slabs-on-grade shall be specified structural non-expansive fill material.

3.9.1.4. Compact to 90 percent relative compaction.

3.9.2. Site Contouring areas:

3.9.2.1. Place fill materials as required to achieve site grades and profiles as shown on drawings and as required for drainage.

3.9.2.2. In landscaped areas, place stockpiled topsoil as the final 4 inches of fill.

3.9.2.3. Compact to 85 percent relative compaction.

3.9.3. Paving Areas.

3.9.3.1. Place approved fill material, placed to depth as necessary to achieve required subgrade elevations.

3.9.3.2. The uppermost 12 inches of fill below base course at paving areas shall be specified structural non-expansive fill material.

3.9.3.3. Compact upper 6 inches to 95 percent relative compaction, and 90 percent for remainder.

3.9.4. Fill to Correct Over-excavation:
3.9.4.1. Concrete as specified or fill material as directed by, and at the discretion of, the Geotechnical Engineer.

END OF SECTION
GEOTECHNICAL STUDY
PROPOSED NEW ALLIED HEALTH BUILDING
MERRITT COLLEGE CAMPUS
12500 CAMPUS DRIVE – OAKLAND, CA

Prepared For:

Peralta Community College District
Department of General Services
333 East Eighth Street
Oakland, California 94606

Attention: Atheria Smith
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</table>
October 26, 2009
Job No. V128AA

Peralta Community College District
Department of General Services
333 East Eighth Street
Oakland, California 94606

Attention: Atheria Smith

Re: Geotechnical Study
   Proposed New Allied Health Building
   Merritt College Campus
   12500 Campus Drive – Oakland, CA

As authorized, we have conducted a study of the soil and rock conditions at the site of the proposed new Allied Health Building at the Merritt College campus in Oakland.

The accompanying report presents our geotechnical recommendations for the project along with the results of the field and laboratory work upon which the recommendations are based.

We are available to review the report with you at your convenience.

Very truly yours,

JENSEN - VAN LIENDEN ASSOCIATES, INC.

Geoffrey Van Lienden
G. E. #853
GEOTECHNICAL STUDY
PROPOSED NEW ALLIED HEALTH BUILDING
MERRITT COLLEGE CAMPUS
12500 CAMPUS DRIVE – OAKLAND, CA

SCOPE
As authorized, we have conducted a study of the soil and rock conditions at the site of the proposed new Allied Health Building on the Merritt College campus. This report summarizes our geotechnical recommendations for the project and presents the results of the field and laboratory work upon which they were based. Recommendations in the report are given for building foundations, retaining walls, site grading and subgrade preparation beneath slab-on-grade floors, and general recommendations for the project.

PROJECT DESCRIPTION
The project will involve the construction of one or two new buildings on a currently unimproved portion of the school’s campus. The buildings will be built near the top of and along the eastern flank of a gradually sloping hillside. The area of the site is located south of Building L. We understand that the new building(s) will be two to three stories in height and it is anticipated that slab-on-grade lower floors would be used. Some grading will be required. Retaining walls may also be necessary.

STUDY METHODS
To study the site, we drilled 10 test borings at the approximate locations shown on the attached Site Plan, Figure 1. The borings were drilled using truck-mounted equipment and extended to depths ranging between 2-1/2 and 17-1/2 feet. All of the borings were terminated due to refusal in dense rhyolite bedrock.

Our principal engineer in the field classified the subsurface conditions encountered in the borings. Boring logs were prepared on the basis of these classifications. The final boring logs presented on Figures 2 through 11 represent the field logs with occasional editing on the basis of laboratory tests and an examination of recovered samples by the engineering staff.
Reasonably undisturbed samples were recovered from the borings and brought to the laboratory. Both a modified California sampler and a standard penetration sampler were used. Tests were performed on the samples to determine the strength, density and moisture content of the various materials. The results of these tests are shown, along with the resistance to penetration of the sampler, at the corresponding sample locations on the logs of borings.

Plasticity tests and hydrometer analyses were performed on selected samples. These tests are used to estimate the expansion potential of the tested soil and are also a guide to other engineering properties. The results of these tests are presented on the Plasticity Charts, Figures 12a and 12b.

As part of our study, we reviewed available geologic publications relating to the site. We also reviewed geotechnical studies, which had been made for previous investigations at the Merritt College campus in the vicinity of this site. All of these reports and references are presented in the attached Bibliography.

A geologic hazards investigation has been conducted concurrently with this study. The geologic hazards investigation has been issued under separate cover. Michael Carey, Certified Engineering Geologist, directed the geologic aspects of the investigation.

**SITE AND SOIL CONDITIONS**

Most of the site is unimproved. There are some landscaped areas on the upper part (western side) of the site. The unimproved portions of the site support a sparse growth of wild grass.

Our borings revealed that the site is underlain by very dense red brown to orange brown, weathered, rhyolite bedrock. In some cases, the bedrock has weathered to a consistency similar to a dense sandy gravel. This is typical of rhyolite bedrock in this area.

We encountered what appeared to be up to 3 feet of fill overlying the bedrock in some of the borings. The fill was found on the upper part of the site (Borings 1 and 2). In most borings, the bedrock was encountered at the ground surface.

No groundwater was encountered in any of the borings at the time of drilling. Groundwater levels fluctuate seasonally and annually and are generally higher during the
winter months. Water will probably collect within the near surface soils and flow through fractures in the bedrock during periods of heavy rain or irrigation. All of the borings were filled with cement grout immediately after the drilling had been completed.

Geologic maps indicate that the site is within the Leona Rhyolite Formation. This is consistent with the findings of our test borings. Rhyolite exposures are visible in cut slopes at a number of locations near the site.

The nearest reportedly active earthquake fault to this site is the Hayward Fault. A trace of the Hayward Fault has been mapped approximately 1.3 kilometers to the southwest. The site is not located in an Alquist-Priolo Earthquake Rupture Zone. Hazard Zones have been recently established by the California Department of Conservation for landsliding during an earthquake and also for liquefaction potential. This site is not included within any of these hazard zones. We did not observe any landsliding on the site and no landslides have been shown on this site in any of the geologic publications that we reviewed.

CONCLUSIONS

The entire site is underlain by dense, weathered, rhyolite bedrock, with very thin natural soil cover. The rhyolite is non-expansive and will provide good support for building foundations and retaining walls.

We did not encounter groundwater within our borings. All of the borings were terminated because of refusal in dense bedrock. In our opinion, the potential for liquefaction at this site is nil. The site is also not vulnerable to landsliding (under either static or seismic conditions) due to the gradual slopes and the high strength of the underlying bedrock materials.

Specific recommendations are given below:

RECOMMENDATIONS

1. Grading

All grading should be done under the direct observation of the geotechnical engineer and in accordance with the attached Guide Specifications for Engineered Fills. Prior to commencing the grading, the site should be stripped to remove any organic material such as grass, weeds or landscape vegetation. Existing fills in
structural areas should also be excavated. The stripped materials can be stockpiled for later use in landscape areas but none of the stripped materials should be used in engineered fills.

Excavations can then be made to the planned subgrade elevations. In general, soils from the site should produce a high quality structural fill material.

In areas where fills are to be placed on slopes (5 horizontal to 1 vertical or steeper), excavations should be made to form a key and level benches in the dense bedrock below the fill. In general, the key and benches should extend to a minimum depth of 2 feet below the existing grade. The keyway should be at least 10 feet wide (or the minimum width of the compaction equipment), whichever is wider. In all areas, the exposed surfaces should be scarified to a minimum depth of 6 inches, brought to a moisture content that will permit proper compaction, and compacted to a minimum degree of compaction of 90% (ASTM D1557).

Fills can then be placed on the prepared surfaces in thin layers (6 to 8 inches in uncompacted thickness). The fill should be brought to a moisture content that will permit proper compaction and compacted to a minimum degree of compaction of 90%. In general, on-site, excavated soils should be suitable for use as fill.

Cut and fill slopes can be constructed at inclinations that are no steeper than 2 horizontal to 1 vertical. Where fill slopes are built, the slopes should be overbuilt by a foot or two and then trimmed back to form a hard and well-compacted surface.

The dense bedrock that underlies the site may prove difficult to excavate. The grading contractor should be prepared to use heavy equipment if deep excavations are required. A detailed analysis of the excavatability of the bedrock is beyond our current scope of work.

2. **Foundations**
   a. **Spread Footings**
      The building and other improvements can be supported on spread footing type foundations. The footings should extend to a minimum depth of 18
inches below the lowest adjacent finished grade. Where footings are constructed near slopes, they should be deepened in accordance to the criteria presented on Figure 13.

Footings can be supported within cuts and/or well-compacted fills. The footings can be designed for an allowable soil pressure of 2000 psf for dead load, 3000 psf for combined dead plus live load, and 4000 for all loads including wind or seismic. These pressures are based on the assumption that the footings will be built within fills and are conservative for footings in bedrock.

There is some risk of differential settlement of the building foundations if the building transitions between excavations hard rock and thick fills. A common approach to address this problem is to overexcavate the bedrock areas to a depth of approximately 5 feet below the bottoms of the footings (possibly even deeper if very thick fills are planned) and then backfilling the entire area with engineered fill. This will create a situation in which all of the footings bear in fill.

Footings constructed in accordance with the criteria given in this section should experience future settlements of less than ½ inch. If more than 5 feet of fill is placed beneath the footings, the settlement can be estimated to be approximately 1% of the fill thickness at that location. Most of the settlement would occur within the first 5 years.

b. Drilled Piers

It may be necessary to use drilled pier foundations to resist uplift loads. Piers should be at least 18 inches in diameter and can be designed to resist uplift loads using a skin friction value of 500 psf. This is a value that assumes that the pier will be primarily supported in fill. The friction can be used below a depth of 3 feet below the finished ground surface. This is a conservative value and can be increased if the piers extend several feet into the bedrock. The value given above is for dead plus live loads. It can be increased by 33% to account for all loads including wind or seismic. A minimum pier length of 10 feet should be maintained.
3. Retaining walls
Retaining walls supporting level backslopes can be designed for an equivalent fluid pressure of 40 psf. If the backslope extends upward at an inclination of 2 horizontal to 1 vertical, the pressure should be increased to 60 psf. If the walls are tied back, or restrained from movement at the top, the pressures should be increased by another 25%.

The retaining walls should be designed to account for the additional horizontal loads that might be associated with an earthquake. For this site, it is recommended that the seismic increment be computed as a uniform pressure equal to 8H in psf (where H is equal to the height of the wall in feet at that location).

The retaining walls can be supported on spread footings designed in accordance with the criteria given above. For lateral resistance, a coefficient of friction of 0.35 can be used between the bottom of the footing and the underlying soil or rock. Passive pressure can be computed by assuming an equivalent fluid weighing 350 psf. The upper 18 inches of soil should be discounted in the passive pressure calculation.

4. Slab-on-grade Construction and Pavements
As mentioned above, the soil and rock at this site are composed of non-expansive materials. No special subgrade preparation treatment is necessary (beyond the grading procedures recommended in Section 1) for slabs-on-grade.

If slabs are to be constructed in areas where moisture migration and the resulting dampness in the slab would be undesirable, a moisture vapor retarder system should be used beneath the slab. A variety of treatments are available on the market today varying considerably in effectiveness and expense. A commonly used treatment consists of a few inches of open graded gravel (capillary rock) a moisture vapor proof membrane, and 1 or 2 inches of sand over the membrane. The use of the sand is a matter of debate among structural engineers.

Prelimnarily, it is suggested that asphalt pavements be designed using the assumption that the subgrade R-value will be 25. This should be verified by further testing.
5. CBC Geotechnical Seismic Design Parameters
   a. Mapped Values
      The site longitude and latitude are 37.7888 degrees west and 122.1654 degrees north, respectively (NAD 83).
      The site class is C.
      The estimated site short period spectral acceleration $S_S$ is 1.97g.
      The estimated site 1-second spectral acceleration $S_T$ is 0.77g.
      $F_a = 1.0$
      $F_v = 1.3$

   b. Site Specific Values
      A site-specific ground motion analysis has been conducted for this project.
      Based on our site-specific analyses, the ground motion values are as follows.
      $S_{DS} = 1.87g$
      $S_{MS} = 2.80g$
      $S_{MI} = 0.80g$
      $S_{MI} = 1.20g$

      The procedures used to develop these values are described in the Geologic Hazards Report.

6. Site Drainage
   Good drainage should be developed on the property. Water should be prevented from ponding near the building foundations or near the tops of slopes. Water should not be allowed to flow over the slopes in concentrated streams or channels. Water collected in downspouts and yard drains should be conveyed in tight line pipes to approved discharge facilities.
7. **Construction Observations and Review of Plans**

We recommend that the final building plans be submitted to our office for review. This will enable us to evaluate specifics of the construction and to make supplemental recommendations if necessary.

Structural grading and excavating for foundations should also be done under the direct observation of the soil engineer. These observations would be made to verify that the soil and rock conditions are those that were anticipated for the development of the design criteria, to determine that the foundations extend for the minimum recommended depth into supporting soil or rock, and to verify that fills are being compacted to meet the project specifications.
LIMITATIONS

The conclusions and opinions in this report are based on visual examinations of the property and on the subsurface exploration described in this report. While, in our opinion, this investigation adequately discloses the soil conditions across the site, the possibility exists that there are anomalies or changes in the soil conditions that were not discovered by this investigation. Should such items be discovered during construction, our office should be notified immediately so that any necessary supplemental recommendations can be made.

This study was not intended to disclose the locations of any existing utilities, septic tanks, leaching fields, or other buried structures. The contractor or other people working on this project should locate these items, if any.

This report was prepared to provide engineering opinions and recommendations only. It should not be construed to be any type of guarantee or insurance.
REFERENCES

ASCE STANDARD 7-05


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California Geological Survey (formerly California Division of Mines and Geology), 1996, California fault parameters; available on CGS Internet Site.


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Nilson, T.H., "Preliminary Photointerpretation Map of Landslide and Other Surficial Deposits of the Oakland East 7 1/2' Quadrangle, Contra Costa and Alameda Counties, California", USGS Open File Map 75-277-41


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Pradel, D., 1998, Procedure to evaluate earthquake-induced settlements to dry sandy soils: ASCE Journal of Geotechnical and Geoenvironmental Engineering. V. 124, p. 4. p3 364-368. [Note: This publication contains methods to simplify the procedures of Tokimatsu and Seed (1987)].

Seed, R.B. and Idriss, I.M., 1982, Ground motions and soil liquefaction during earthquakes, Earthquake Engineering research Institute, Oakland, California, 134 p.

State of California, 2/14/03, Seismic Hazard Zones, Oakland East and Part of Las Trampas Ridge Quadrangles

State of California, 2/14/03, Seismic Hazard Zones, Oakland West Quadrangle.


Cross Section
(Figure 5 in
Geologic Hazards
Report)

Approx Location of Test Boring

Approx Scale 1" = 100'

Jensen – Van Lienden
Associates, Inc.

Site Plan
Boring Locations

Date 10/09  Figure 1  Job No. V128AA
Sample Number | Diameter (in.) | Blows/foot | Dry Density (pcf) | Moisture Content (%) | Unconfined Compressive Strength (psf) | Description
--- | --- | --- | --- | --- | --- | ---
1 | 2.0 | 62 | - | 3 | - | Medium dense red brown clayey sand (Possible Fill)
2 | 1.4 | 20 | - | - | - | Very dense red brown to orange brown weathered rhyolite
3 | 1.4 | 68 | - | 10 | - | BOTTOM OF BORING (Refusal)
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Diameter (in)</th>
<th>Blows/ft</th>
<th>Dry Density (pcf)</th>
<th>Moisture Content (%)</th>
<th>Unconfined Compress. Strength (psf)</th>
<th>Depth (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.4</td>
<td>20</td>
<td></td>
<td></td>
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<td></td>
<td>Medium dense red brown clayey sand (Possible Fill)</td>
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<tr>
<td>2</td>
<td>1.4</td>
<td>68/10</td>
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<td>Very dense red brown to orange brown weathered rhyolite</td>
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</table>

**Log of Boring Number 1a**

Allied Health Building
Merritt College Campus
12500 Campus Drive, Oakland

**SUPERVISOR:** GVL  **SAMPLING METHOD:** 140 lbs/30-inch drop
**DATE DRILLED:** August 14, 2009  **SURFACE ELEVATION:** Not Measured
**DRILLING METHOD:** 4.5' Solid Auger  **GROUNDWATER DEPTH:** Dry - ATD

**Graphic Log**

**Job Number:** V128AA  **Figure 2a**
Log of Boring Number 2
Allied Health Building
Merritt College Campus
12500 Campus Drive, Oakland

SUPERVISOR: GVL
DATE DRILLED: August 14, 2009
DRILLING METHOD: 4.5" Solid Auger

SAMPLING METHOD: 140lbs/30-inch drop
SURFACE ELEVATION: Not Measured
GROUNDWATER DEPTH: Dry - ATD

Sample Number (in.) Diameter (in.) Blow-Count (B/C) Moisture Content (%)
Depth (feet) Dry Density (psf) Unconfined Compressive Strength (psi)

1 2.0 42 114 13 ...

2 1.4 SPT 50/1 " ...

Description
Dense red brown to orange brown weathered rhyolite

Bottom of Boring
(Refusal)

Figure 3
Sample Number | Diameter (in.) | Blows (SPT) | Dry Density (pcf) | Moisture Content (%) | Unconfined Compressive Strength (psf) | Depth (feet) | Description
---|---|---|---|---|---|---|---
1 | 2.0 | 71 | 47 | - | 5 | - | -
2 | 1.4 | 9 | - | - | - | - | Medium dense orange brown clayey sand
3 | 1.4 | 23 | 50 | - | 11 | - | Dense red brown to orange brown weathered rhyolite
4 | 1.4 | 21 | - | - | - | - | -
5 | 2.0 | 21 | 14 | 108 | 10 | 12 | -
6 | 1.4 | | 50 | - | 5 | - | -

BOTTOM OF BORING (Refusal)
### Log of Boring Number 5

**Allied Health Building**  
**Merritt College Campus**  
**12500 Campus Drive, Oakland**

<table>
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<th>GVL</th>
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<td>DATE DRILLED:</td>
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<td>DRILLING METHOD:</td>
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<tr>
<td>SURFACE ELEVATION:</td>
<td>Not Measured</td>
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<td>GROUNDWATER DEPTH:</td>
<td>Dry - ATD</td>
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**Sample Log**

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<thead>
<tr>
<th>Sample Number</th>
<th>Diameter (in.)</th>
<th>Blow/Foot</th>
<th>Moisture Content (%)</th>
<th>Unconfined Compressive Strength (psf)</th>
<th>Depth (feet)</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>2.0</td>
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</tr>
<tr>
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<td>1.4</td>
<td>17</td>
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<td>13</td>
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<td>3</td>
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<td>50'</td>
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**Graphic Log**

- **BOTTOM OF BORING**
  - (Refusal)
Sample Number | Diameter (in.) | Blows/foot | Moisture Content (%) | Unconfined Compressive Strength (psf) | Description
--- | --- | --- | --- | --- | ---
1 | 2.0 | 50/6" | 116 | 7 | Medium dense brown silty sand and gravel
2 | 1.4 SPT | 50/6" | - | 9 | Dense red brown to orange brown weathered rhyolite

BOTTOM OF BORING (Refusal)
Sample Number  | Diameter (in) | Blows/Feet | Density (pcf) | Moisture Content (%) | Unconfined Compressive Strength (psf) | Depth (feet) | Graphic Log | Description
--- | --- | --- | --- | --- | --- | --- | --- | ---
1 | 1.4 | 67 | 6 | Dense red brown to orange brown weathered rhyolite

BOTTOM OF BORING (Refusal)
Sample Number
Diameter (in.)
Blows/ft
Dense red brown to orange brown weathered rhyolite

Depth (feet)
SPT
Unconfined Compressive Strength (psi)
Moisture Content (%)
Dry Density (pcf)

BOTTOM OF BORING
(Retalus)
Log of Boring Number 9

Supervisor: QVL
Date Drilled: August 14, 2009
Drilling Method: 4.5' Sstd Auger

Sampling Method: 140lbs/30-inch drop
Surface Elevation: Not Measured
Groundwater Depth: Dry - ATD

Sample Number | Diameter (in.) | Blow Count | Density (pcf) | Moisture Content (%) | Unconfined Compressive Strength (psi) | Depth (feet) | Description
--- | --- | --- | --- | --- | --- | --- | ---
1 | 1.4 | 29 | 81 | - | - | - | Dense range silt to clayey sand and gravel from weathered rhyolite
2 | 2.0 | 19 | 112 | 7 | - | - | Dense red brown to orange brown weathered rhyolite
3 | 1.4 | 50 | 108 | 8 | - | - | Bottom of Boring (Refusal)

Job Number: V128AA
Figure: 10
Log of Boring Number 10

Allied Health Building
Merritt College Campus
12500 Campus Drive, Oakland

SUPERVISOR: GVL
DATE DRILLED: August 14, 2009
DRILLING METHOD: 4.5" Solid Auger

SAMPLING METHOD: 140lbs/30-inch drop
SURFACE ELEVATION: Not Measured
GROUNDWATER DEPTH: Dry - ATD

Sample Number | Diameter (in) | Blows/Feet | Dry Density (pcf) | Moisture Content (%) | Unconfined Compressive Strength (psf) | Depth (feet) |
--- | --- | --- | --- | --- | --- | --- |
1 | 1.4 | 41 |  |  |  |  |
2 | 1.4 | 30 | 14 |  |  |  |
3 | 1.4 | 50 | 2" |  |  |  |

Description
Dense red brown to orange brown weathered rhyolite

BOTTOM OF BORING (Refusal)
PLASTICITY CHART

INDEX TEST RESULTS

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Atterberg Limits (%)</th>
<th>Grain Sizes (% Dry Weight)</th>
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<tr>
<td>4-1-4</td>
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</table>

Jensen - Van Lienden Associates, Inc.
Allied Health Building
Merritt College Campus
12500 Campus Drive, Oakland

Date: 08/2009
Figure: 12a
Job No.: V128AA
### PLAStICITY CHART

Liquid Limit | Plasticity Index
--- | ---
50 | 50
100 | 60

---

### INDEX TEST RESULTS

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Atterberg Limits (%)</th>
<th>Grain Sizes (% Dry Weight)</th>
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<tbody>
<tr>
<td>Sample No.</td>
<td>Description</td>
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<tr>
<td>5-3-4</td>
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</tr>
<tr>
<td>9-2-3</td>
<td>Dense red brown to orange brown weathered rhyolite</td>
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</tbody>
</table>


Allied Health Building
Merritt College Campus
12500 Campus Drive, Oakland

Date: 08/2009
Figure: 12b
Job No.: V128AA
SPREAD FOOTING FOUNDATIONS

PIER FOUNDATIONS

REQUIRED DEPTH of FOUNDATIONS
CONSTRUCTED NEAR SLOPE

\[ D = \text{Depth to bottom of foundation (for spread footings)} \]
\[ D = \text{Depth to top of supporting material (for piers)} \]
(see soil report)
A. GENERAL

1. Definition of Terms

FILL...is all soil or soil/rock materials placed to raise the grade of the site or to backfill excavations.

ON-SITE MATERIAL...is that which is obtained from the required excavations on the site.

IMPORT MATERIAL...is that hauled in from off-site areas.

SELECT MATERIAL...is a soil material meeting the requirements set forth in "C(2)" below.

ENGINEERED FILL...is a fill upon which the Soil Engineer has made sufficient tests and placement and compaction observations to enable him to issue a written statement that in his opinion the fill has been placed and compacted in accordance with the Soil Engineer’s recommendations and/or the specification requirements.

ASTM SPECIFICATIONS...are the Annual Book of ASTM Standards (Part 19), American Society for Testing and Materials, latest revision.

MAXIMUM DRY DENSITY...is the maximum density for a given fill material that can be produced in the laboratory by the Standard procedure ASTM D1557, "Moisture-Density Relations of Soils Using a 10 Pound (4.5 kg) Rammer and an 18 inch (457 mm) Drop".

OPTIMUM MOISTURE CONTENT...is the moisture content at which the maximum laboratory density is achieved using the standard compaction procedure ASTM Test Designation D1557.

DEGREE OF COMPACTION...is the ratio, expressed as a percentage, of the dry density of the fill material as compacted in the field to the maximum dry density for the same material.

2. Responsibility of the Soil Engineer

The Soil Engineer shall be the Owner’s representative to observe the grading operations, both during preparation of the site and compaction of any engineered fill. He shall make enough visits to the site to familiarize
himself generally with the progress and quality of the work. He shall make a sufficient number of field observations and tests to enable him to form an opinion regarding the adequacy of the site preparation, the acceptability of the fill material, and the extent to which the degree of compaction meets the specification requirements. Any fill where the site preparation, type of material, or compaction is not approved by the Soil Engineer shall be removed and/or recompacted by the contractor until the requirements are satisfied.

3. **Soil Conditions**

A soil investigation has been performed for the site by Jensen-Van Lienden Associates, Inc. and a report has been issued by them dated September 24, 2009 covering that investigation. The contractor shall familiarize himself with the soil conditions at the site, whether covered in that report or not, and shall thoroughly understand all recommendations associated with the grading.

**B. SITE PREPARATION**

1. **Stripping**

   Prior to any cutting or filling, the site shall be stripped and grubbed to a sufficient depth to remove all grass, weeds, roots, and other vegetation. The minimum stripping depth shall be 2 inches. The site shall be stripped to such greater depth as the Soil Engineer in the field may consider necessary to remove materials that in his opinion are unsatisfactory. The stripped material shall either be removed from the site or stockpiled for reuse later as topsoil, but none of this stripped material nor any of the building debris may be used in engineered fills.

2. **Preparation for Filling**

   After stripping, existing fill as called for on the plans and recommended in the Soil Report in areas to be filled shall be overexcavated to the minimum depth called for on the plans or that is required by the Soil Engineer in the field. The overexcavated soils that are clean and free from organic material can be used later as general engineered fill.

   After stripping the surface vegetation and overexcavating the weak soils to the required depths, the exposed surface shall be scarified to a minimum depth of 6 inches, watered or aerated as necessary to bring the soil to a moisture content that will permit compaction, and recompacted to the requirements of engineered fill as specified in "D" below. Prior to placing
fill, the Contractor shall obtain the Soil Engineer's approval of the site preparation in the area to be filled. The requirements of this section may be omitted only when approved in writing by the Soil Engineer.

All fills within 30 feet of a fill slope or where fills are placed on natural slopes inclined at 5 horizontal to 1 vertical or steeper shall be founded on strong soils below the natural surface soils. An excavation shall be made at the toe of the fill slope to form a key having a minimum width as recommended in the soil report and shown on the grading plans. The key shall be excavated into the underlying undisturbed rock or strong soil if approved by the Soil Engineer. Excavations shall then be made into the strong natural soils to form level benches upon which to place the fill.

C. MATERIAL USED FOR FILL

All fill material must be approved by the Soil Engineer. The material shall be a soil or soil/rock mixture that is free of organic matter or other deleterious substances. The fill material shall not contain rocks or lumps over 6 inches in greatest dimension, and not more than 15% by dry weight shall be larger than 2 1/2 inches in greatest dimension. The soils from the site, except the surface strippings, shall be suitable for use as fill.

D. PLACING AND COMPACTING FILL MATERIAL

All fill material shall be compacted as specified below, or by other methods if approved by the Soil Engineer, so as to produce a minimum degree of compaction of 90%. Higher degrees of compaction shall be as described in the Soil Report.

Fill material shall be spread in uniform lifts not exceeding 8 inches in uncompacted thickness. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either aerating the material if it is too wet or spraying the material with water if it is too dry. Each lift shall be thoroughly mixed before compaction to ensure a uniform distribution of water content.

E. EXCAVATION

All excavations shall be carefully made true to the grades and elevations shown on the plans. The excavated surfaces shall be properly graded to provide good drainage during construction and to prevent ponding of water.
F. TREATMENT AFTER COMPLETION OF GRADING

After grading is completed and the Soil Engineer has finished his observation of the work, no further excavation or filling shall be done except with the approval of and under the observation of the Soil Engineer.

It shall be the responsibility of the Grading Contractor to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.