Geotechnical Investigation

Payette Valley Orchard Development
Emmett, Idaho

Project No. 01269.1

Prepared for

Adam Little

September 16, 2019

AMERICAN GEOTECHNICS

Prepared for

Mr. Adam Little
Boise Plaza, 1111 W. Jefferson Street, Ste. 530
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Attention: Adam Little

Geotechnical Investigation

Payette Valley Orchard Development

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American Geotechnics
Project No. 01269.1

Prepared by

American Geotechnics

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1.0 INTRODUCTION

1.1 Purpose and Scope of Work

This report presents the results of our geotechnical investigations performed for the proposed Payette Valley Orchard Development. The proposed development is located east of the City of Emmett adjacent to State Highway 16 and the Black Canyon Canal (Figure 1, Appendix A). This property is located within the N ½ of Section 16, Township 6N, Range 1W, Boise Meridian. A 2006 vicinity map showing the site location is included as Figure 1 in Appendix A as well as a 2006 proposed development plat. A 2019 proposed development plat is in Appendix B.

In general, the purposes of this investigation were to evaluate the subsurface conditions and to provide geotechnical recommendations relating to site preparation, earthwork, pavement, subsurface disposal of storm water, and foundations for residential buildings. This report was prepared solely for geotechnical purposes, and does not address any geo-environmental issues.

The work performed for this report was originally authorized by Matt Weaver of WHPacific and was conducted in accordance with our original site investigation proposal dated April 2006. In July 2019, Adam Little (Owner) authorized an update to this report.

1.2 Project Description

We understand that the proposed construction will consist of a residential subdivision consisting of approximately 75 acres. We also understand that the proposed structures will be single or two-story buildings with slab on grade floors. The buildings will not have basements or elevators. The exterior walls are to be wood framed. The most recent site development plan is shown in Appendix B.

We understand that the property was once used as a fruit orchard. At the time of our original 2006 investigation, the proposed development area was observed to be covered with orchard grass and occasional fruit saplings. In July 2019, the development area had overgrown with grasses, shrubs and including tall sagebrush. The topography generally sloped toward the west with about 5 to 8 percent grade.

Drainages features were observed including Black Canyon Canal adjacent on the east and south sides of the site. There was also a smaller irrigation water ditch that traversed the site from south flowing north.

In 2006, existing structures observed were a house and barn near the center of the property.

We understand that that the proposed development will be constructed to the following strict criteria:

- Cuts or fills for site grading will not exceed 4 feet.
- All sewage will be routed to an off-site community sewage treated system.
- Storm water will be disposed of on site.
- All basements will be prohibited.
- There will be no retaining walls over 4 feet high.
- The existing Black Canyon Canal invert will not be altered.

If the above criteria are modified, then our office should be immediately notified so that we may make necessary revisions to our recommendations.

This geotechnical report relates solely to the subject residential development consisting of residential homes and roadway and drainage areas.

This report does not provide any recommendations relating to the above-ground or partially-buried water storage reservoir or for church building, as shown on the Plat image prepared by JUB (attached). However, with additional structural information, an addendum could be prepared that covers the proposed reservoir or church structures.

1.3 References

The following information was provided to American Geotechnics and serves as the basis of our understanding of the project and our scope:

- AutoCAD file entitled 33708-land-celS and dated April 24, 2006 by WH Pacific showing the 2006 proposed development.
- Development plat image by JUB Engineers and provided by Adm Little (undated).

This report is intended to provide geotechnical information to the project owner and project designers. This report may be provided to the contractor as reference information, but is not intended to be a substitute for properly prepared contract drawings and specifications. American Geotechnics requests the opportunity to review final drawing and specifications for comparison with our understanding of the site conditions and project geotechnical requirements.

2.0 METHODS OF STUDY

2.1 Field Explorations

The subsurface soil conditions were explored by excavating 9 test pits within the proposed site to depths of up to 13 feet below the existing grade. The approximate location of the test pits are shown on Figure 2 in Appendix A.

Excavation of the test pits was accomplished with a standard rubber-tired backhoe. Soil samples were identified, described, and classified in the field using ASTM D 2488 as a guide. 2006 logs of the subsurface conditions were recorded at the time of the field work by a geotechnical engineer, and are presented in Appendix C. Representative samples were packaged and transported to our laboratory.

2006 Dynamic Cone Penetrometer (DCP) data was obtained at three test pit locations using the Corps of Engineers penetrometer (ASTM D6951). The DCP plots are presented in Appendix C. Water infiltration measurements were obtained in 2006 in general accordance with the Idaho Department of Environmental Quality Technical Guidance Manual.

2.2 Laboratory Evaluation

Representative samples were selected for laboratory testing to evaluate the pertinent physical and engineering properties of the soils. The laboratory test results are presented on the boring logs at their respective depth or in the body of this report. The following test methods and procedures were utilized:

- ASTM D2488 - Classification of Soils for Engineering Purposes
- ASTM D2434 - Permeability of Granular Soils using the Constant Head Permeameter
- IDAHO T-8 R-Value

3.0 INTERPRETATION

3.1 Geology

Based on the USDA Soil Survey for Gem County, Idaho, the soil association in the site area consists of sandy loam and loamy sand. These are formed in local alluvium that washed from areas of granitic and other micaceous quartz-bearing rocks. Typically, the subsurface profile consists of deep layers of coarse sandy loam and loamy sand on alluvial fans with much coarse quartz sand and some mica and is well-drained.

3.2 Subsurface Profile

The site generally consisted of Sandy Lean Clay (CL), Clayey Sand (SC), and Poorly Graded Sand with trace amounts of clay (SP, SP-SC). The thickness, depth and sequence of these stratums were observed to be variable between test pit locations.

Much of the site has been used for agricultural purposes. Roots and organics were generally encountered within the upper 12 inches of the site.

3.3 Groundwater

Groundwater was not observed in the test borings at the time of our 2006 site investigation. It should be noted that groundwater levels may fluctuate seasonally in response to precipitation, land use, irrigation and other factors. Monitoring of groundwater fluctuation was beyond the scope of this investigation.

3.4 Site Ground Motion

For the purpose of developing earthquake spectral response accelerations, this project site is classified as Site Class E, for use with the International Building Code.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 General

Based on the results of our field and laboratory investigations, it is our opinion that the site is generally suitable for the proposed construction. Recommendations regarding site preparation and foundation design are presented in the following sections.

If any revisions in the nature, design, or location of the proposed building are made at a later date that significantly alter the present definition of the project, the recommendations within the following sections shall be subject to review by American Geotechnics, and may be modified as deemed necessary.

4.2 Earthwork

4.2.1 Erosion Potential

Land disturbance from construction activities will increase the potential for erosion. Sediment leaving a construction site is considered a pollutant by the Environmental Protection Agency. A Storm Water Pollution Prevention Plan should be prepared for this project.

4.2.2 Temporary Excavations andConstruction Slopes

Safety at the construction site is the sole responsibility of the Contractor, who selects and directs the means, methods and sequencing of the construction operations. The Contractor will need to evaluate and select appropriate construction methods and procedures that comply with the applicable local, state and federal safety regulations (including the current OSHA Excavation and Trench Safety Standards) for any temporary site excavations.

During wet weather, surface water should not be permitted to pond near the top or flow into excavations.

4.2.3 Site Preparation

Prior to commencing site grading or foundation excavations, all building and roadway areas including all fill areas should be stripped of all debris, vegetation, and undocumented fill.

Based on our field observations, we estimate the depth of required stripping to be approximately 6 to 12 inches.

After the removal of all vegetation, undocumented fill and prior to any placement of general fill, the exposed subgrade should be uniformly scarified to a minimum depth of 8 inches, moisture-conditioned as necessary, and compacted to a minimum of 95% of the maximum dry density in accordance with ASTM D698. This effort should be documented.

4.2.4 General Fill

Fill placed to develop building pads should meet the requirements for general fill. General fill should not be place until site preparation and stripping have been accomplished, as outlined in Section 4.2.3. General fill used for site grading may be obtained from on-site excavations or approved borrow sources. General fill shall classify according to ASTM D2487 as GW, GP, GC, GM, SW, SP, SC, SM, ML, CL (or combinations of these such as SP-SM) materials. In addition, the general fill material shall have a maximum particle size less than 4 inches and shall be free of excess moisture, organic matter and debris.

Materials that are frozen, contaminated, contain excess moisture, organic matter (such as strippings or roots), trash, debris, stones larger than 4 inches, or that classify by ASTM D2487 as CH, MH, PT, OL, and OH are not suitable for general fill.

After site preparation is completed, general fill should be placed in 8-inch maximum loose horizontal lifts and compacted to at least 95% of the maximum dry density as determined by the ASTM D698 - Standard Proctor Compaction Test. Each lift at each building pad should be documented for density.

4.2.5 Subgrade Preparation, Fill and Drainage for Pavements

For this report, the subgrade for roadways and parking areas is the upper 8 inches of soil supporting the subbase or base layers. Subgrade soils should be uniformly scarified to a depth of 8 inches, moisture-conditioned as necessary and compacted to at least 95% of the maximum dry density as determined by the ASTM D698. At least one acceptable density test report should be retained for each 200 feet of roadway. Subgrade testing requirements for roadways should be noted on the Plans.

Vibratory-type compaction should be specified.

Any material placed as fill underlying the subgrade in pavement areas should conform to the requirements outlined in the Section 4.2.4 of this report.

Depending on the season of the year, subgrade soil water contents may be near or greater than the plastic limit of the soil. Repeated passes of heavy construction equipment may cause rutting of wet subgrade soils. Subgrade soil damaged by rutting from equipment should be repaired, such that the subgrade is firm and will not rut under construction traffic. The Owner's site development engineer should prepare notes warning the contractor of the potential for seasonally unstable subgrade conditions and specify remedial actions should the contractor damage the subgrade soils with rutting. If unstable subgrade conditions are developed by the contractor, remedial fixes may include delaying roadway construction until the season become drier, re-scarifying the subgrade and air drying, removing several feet of subgrade soil and replacing with a subgrade separation geotextile and compacted crushed aggregate, or other prudent methods. A soft spot repair bid items should be considered.

The finish surface of hot mix asphalt (HMA) pavement should be graded at least 2 percent to drain towards storm water conveyance or disposal facilities.

General fill should be placed in 8-inch maximum loose horizontal lifts and compacted to at least 95% of the maximum dry density as determined by the ASTM D698.

4.2.6 Backfilling Utilities Trenches

Materials obtained from required project excavations may be used to backfill utilities trenches. Backfill should be placed in uniform horizontal layers not exceeding 8 inches in loose thickness. In structural areas, each layer should be compacted to at least 95% of the maximum dry density as determined by the ASTM D698. In non-structural areas, each layer should be compacted to at least 90% of the maximum dry density as determined by the ASTM D698. Jetting or flooding of the backfill material in utility trenches should not be permitted.

It is important that sufficient and acceptable documentation of the trench compaction be retained. One acceptable density test report for each 500 feet of trench per lift is recommended. Be advised that it is not uncommon for loose trench backfill to settle, such that surface subsidence of the finished pavement surface is manifested over time.

It is recommended that a typical trench backfill detail be provided on the plans and that the compaction requirement for backfilling also be included on the plans. ISPWC Type II Bedding is suggested.

4.3 Foundations

4.3.1 Spread Footings for Residential Homes

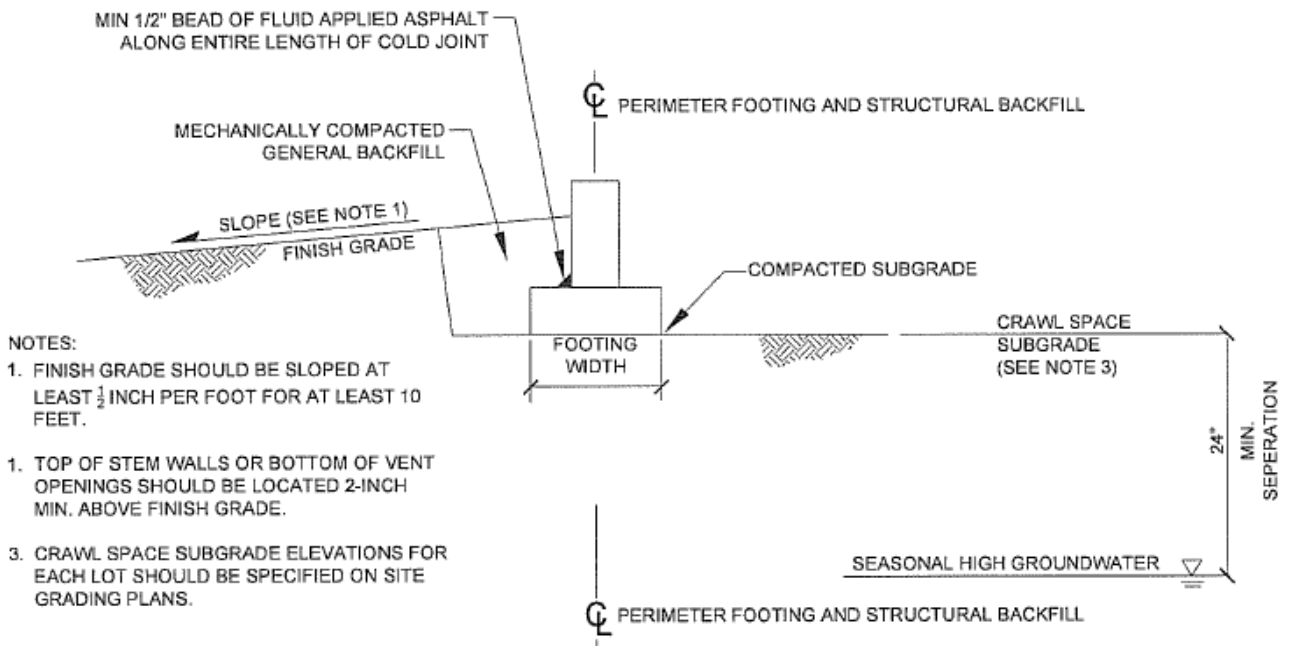
Based on the results of the subsurface investigation, conventional spread footings should be proportioned for an allowable net bearing pressure of 1,200 psf. This allowable net bearing pressure is applicable provided that:

- Exterior footings are placed at least 24 inches below the lowest adjacent final grade for frost protection;
- The base of the foundation excavations is cleaned of all loose material, moisture conditioned as necessary and compacted with a vibratory plate;
- The base of the foundation excavations are observed and probed in the field by a geotechnical engineer prior to placement of any formwork, reinforcement steel, or concrete.
- Continuous wall footings are at least 16 inches wide;
- Column pad foundations are at least 24 inches square;

  Structural reinforcing steel placed in spread footings and stem walls. A minimum of two No. 4 bars should be equally distributed within the footings and at least two No. 4 bars should be equally spaced within the stem walls. Stem walls taller than 4 feet should be designed by a structural engineer.

Spread footings designed in accordance with the aforementioned criteria would be expected to experience maximum post construction settlement of 1 inch or less, with differential settlements of 1/2-inch or less. A one-third increase of the net allowable bearing pressure may be used for transient wind or seismic loads.

We recommend that the aforementioned special provisions together with the following figure be provided to building inspection officials and to home builders.



4.3.2 Managing Crawl Space Water Intrusion

To reduce the risk of water intrusion into crawl space areas, we recommend the following:

- The base of the foundation and crawl space floor should be raised to at least 24-inches above the seasonal high groundwater.
- The concrete cold joint between the footer and the stem wall should be sealed with fluid applied asphalt or other acceptable sealant.
- General backfill placed adjacent to the stem wall (see preceding figure) compacted to at least 95% of the maximum laboratory dry density per ASTM D698;
- The finish grade adjacent to all stem walls should sloped 4 percent (1/2 inch/foot) for at least 10 feet of surface drainage away from the stem wall.
- A minimum subgrade elevation (e.g. xxxx.x) for crawl spaces should be noted on the site grading plans for each lot.
- Rain gutters should be placed below all roof areas and roof drains should carry water at least 5 feet from the buildings.

We recommend the above requirements, including the preceding figure, be provided to building inspection officials and to home builders.

4.4 Pavement Structures

The Idaho Department of Transportation (ITD) design procedure was used to develop the following flexible pavement sections. The pavement sections are based on a minimum subgrade R-Value of 6.

Local Collector Streets are those neighborhood roadways that feed Local Streets. Local Streets provide access to less than a dozen homes.

Typical roadway sections should be provided on the Plans. For simplicity, the Owner may choose to use the pavement structure for a Local Collector Street for all development roadways.

We recommend that the materials used to construct the flexible pavement sections conform to the Idaho State Public Works Construction (ISPWC) specifications.

Flexible Pavement Section		
Material	**Minimum Thickness (inches) Local Collector Streets (TI=8.0)**	**Minimum Thickness (inches) Local Streets (TI=7.0)**
Plant Mix Pavement (ISPWC 810 – SuperPave Mix Design; Limit RAP to maximum 17% for SuperPave Mix Design. (ISPWC 805 Asphalt PG58-28 with 0.5% anti-stripping additive) (ISPWC 803 Plant Mix Aggregates ½-inch nominal maximum size)	3.0	3.0
Crushed Aggregate (ISPWC 802) (3/4-inch Type I)	6.0	5.0
Uncrushed Aggregate (ISPWC 801) 3-inch nominal size	19.5	15.5
Subgrade Separation Geotextile (Type III - Non-woven)	**--**	--
Compacted Subgrade	8	8

The aforementioned pavement section has been designed for residential traffic loads and may not be adequate for heavy construction equipment. The Owner's site development engineer should also warn the contractor that the pavement structure presented herein is designed for post-construction residential vehicular traffic and not necessarily for the contractor's heavy construction equipment. The contractor should be required to repair roadway pavement structure damaged by his heavy equipment. Strictly prohibit the contractor from paving roadways if the subgrade, subbase, or base layers are visibly yielding under the contractor's wheeled- or tracked-equipment. The Owner's construction representative should document that pavement structure layers are not visibly yielding under contractor's proposed paving equipment (including fully-loaded dump trucks) prior to paving.

One year after construction, we recommend that a seal coat be applied. The seal coat will inhibit water intrusion into the subgrade and will promote longevity of the pavement section.

4.5 Subsurface Disposal of Storm Water

Be advised that site drainage conditions are expected to be randomly fair to poor throughout the development.

We understand that infiltration swales will be used for the disposal of storm water for this development.

Due to the variable depth and location of preferred soils on site, the design of project storm water disposal features will be governed by the low permeability soils observed during our investigations. For design purposes, a maximum design infiltration rate of 0.5 inches per hour is suggested for the sizing of subsurface infiltration facilities. A sizing factor of 1.5 is additionally recommended for consideration by the drainage designer.

Subsurface infiltration facilities should be constructed within the following constraints.

- Separate from drinking water wells by at least 100 feet.
- Separate from foundations, septic systems, and other seepage beds by at least 10 feet.
- Do not place on slopes greater than 20 percent (5H:1V).
- Do not place under buildings or other settlement sensitive structures.
- Do not place in loose or undocumented fill.
- Do not place in contaminated soil or groundwater areas.

It is important that runoff be diverted away from the completed infiltration facilities during all phases of construction, until the site is completely stabilized. Sediment loading during construction can severely impact and compromise the performance of the infiltration facility. Contractors should be prohibited from utilizing the infiltration facilities for a cleaning or washout area.

Be advised that infiltration swales can degrade over time due to accumulation of sediment. It may necessary to drill or otherwise excavate windows in the invert of the drainage swales to connect the swales with possible underlying sand layers. Excavated windows may be filled with uniform sand to facilitate connection with underlying san layers.

5.0 CLOSURE

5.1 Limitations

Recommendations contained in this report are based on our field explorations, laboratory tests, and our understanding of the proposed construction. The study was performed using a mutually agreed upon scope of work and understanding. It is our opinion that this study was a cost-effective method to evaluate the subject site and evaluate some of the potential geotechnical concerns. More detailed, focused, and/or thorough investigations can be conducted. Further studies will tend to increase the level of assurance; however, such efforts will result in increased costs. If the Client wishes to reduce the uncertainties beyond the level associated with this study, American Geotechnics should be contacted for additional consultation.

The soils data used in the preparation of this report were obtained from the field explorations made for this investigation. It is possible that variations in soils exist between the points explored. The nature and extent of soil variations may not be evident until construction occurs. If any soil conditions are encountered at this site that differ from those described in this report, our firm should be immediately notified so that we may make any necessary revisions to our recommendations. In addition, if the scope of the proposed project, locations of structures, or building loads change from the description given in this report, our firm should be notified.

The recommendations made in this report are based on the assumption that an adequate program of testing, observation, and engineering consultation will be made during construction to verify compliance with the report findings and recommendations. This should include, but not necessarily be limited to, observations and testing described within this report, and engineering consultation as may be required during construction. These observation and testing items are critical with regards to the conclusions and recommendations provided in this report. If these items are not adequately performed during construction, then the Client agrees to assume American Geotechnics' responsibility for any potential claims that may arise during or after construction. Critical observations and testing include the following:

- stripping of vegetation and organic laden soils;

- Proper preparation of roadway subgrade and pavement structure layers
- proper constructed fills under buildings;
- approval of building foundation excavations by a geotechnical engineer;
- crawl space and groundwater separation;
- approval of excavations for infiltration facilities by a geotechnical engineer.

Construction work activities outlined in the report should be considered unsatisfactory until acceptable documentation is retained.

The report has been prepared for specific application to this project in accordance with the generally accepted standards of practice at the time the report was written. No warranty, express or implied, is made.

This report may be used only by the Client and for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on- and off-site), or other factors including advances in man's understanding of applied science may change over time and could materially affect our findings. Therefore, this report should not be relied upon after 24 months from its issue. American Geotechnics should be notified if the project is delayed by more than 24 months from the date of this report so that a review of site conditions can be made, and recommendations revised, if appropriate.

It is the CLIENT'S responsibility to see that all parties to the project, including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk. Non-compliance with any of these recommendations or requirements by the Client or anyone else will release American Geotechnics from any liability resulting from the use of this report by any unauthorized party.

5.2 Review of Plans and Specifications

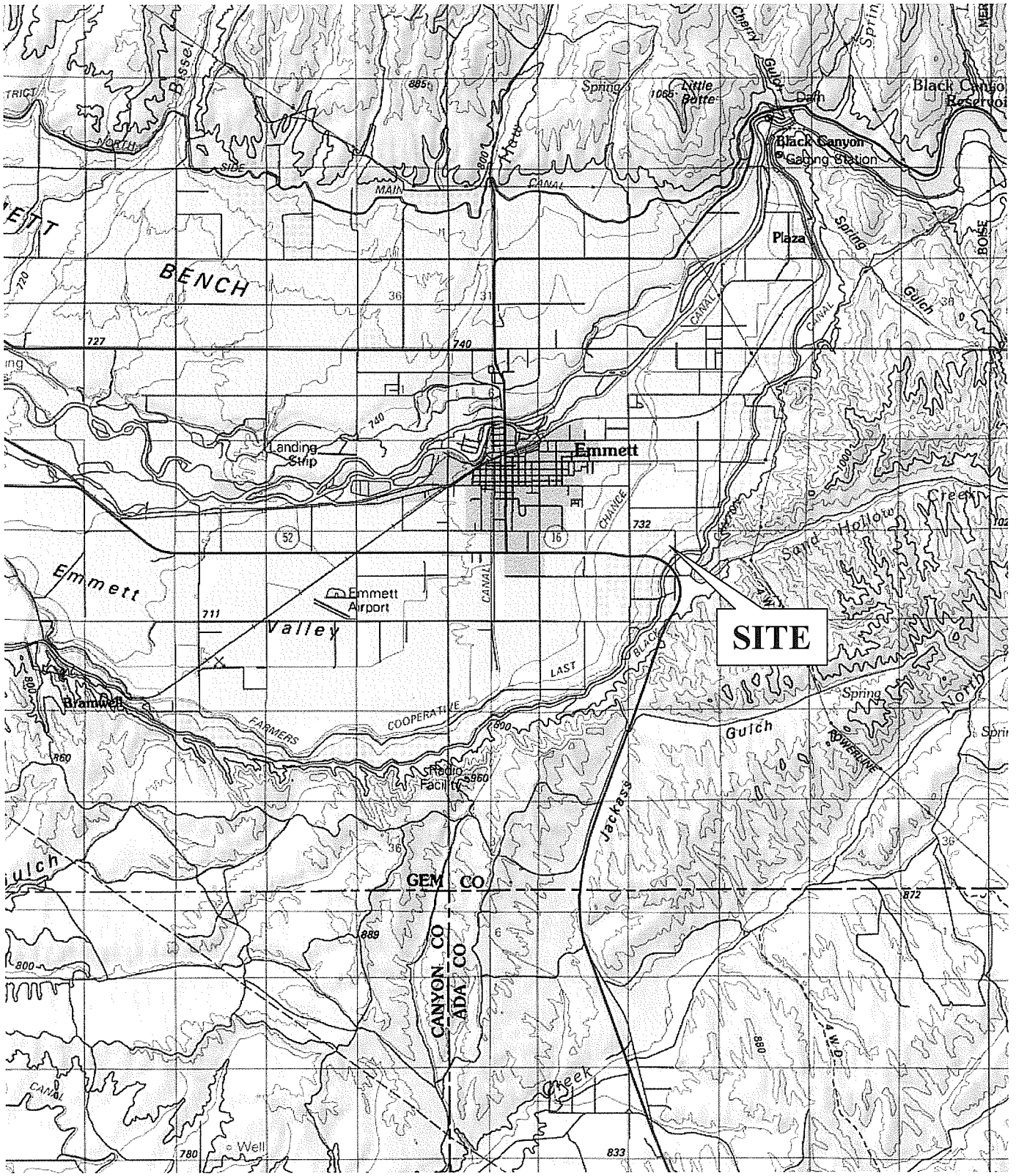
American Geotechnics requests the opportunity to review the final plans and specifications for this project to determine if the final design complies with this report prior to submittal to review agencies.

APPENDIX A

Vicinity Map

2006 Site Development and Exploration Map

2006 Site Photos



N.T.S.

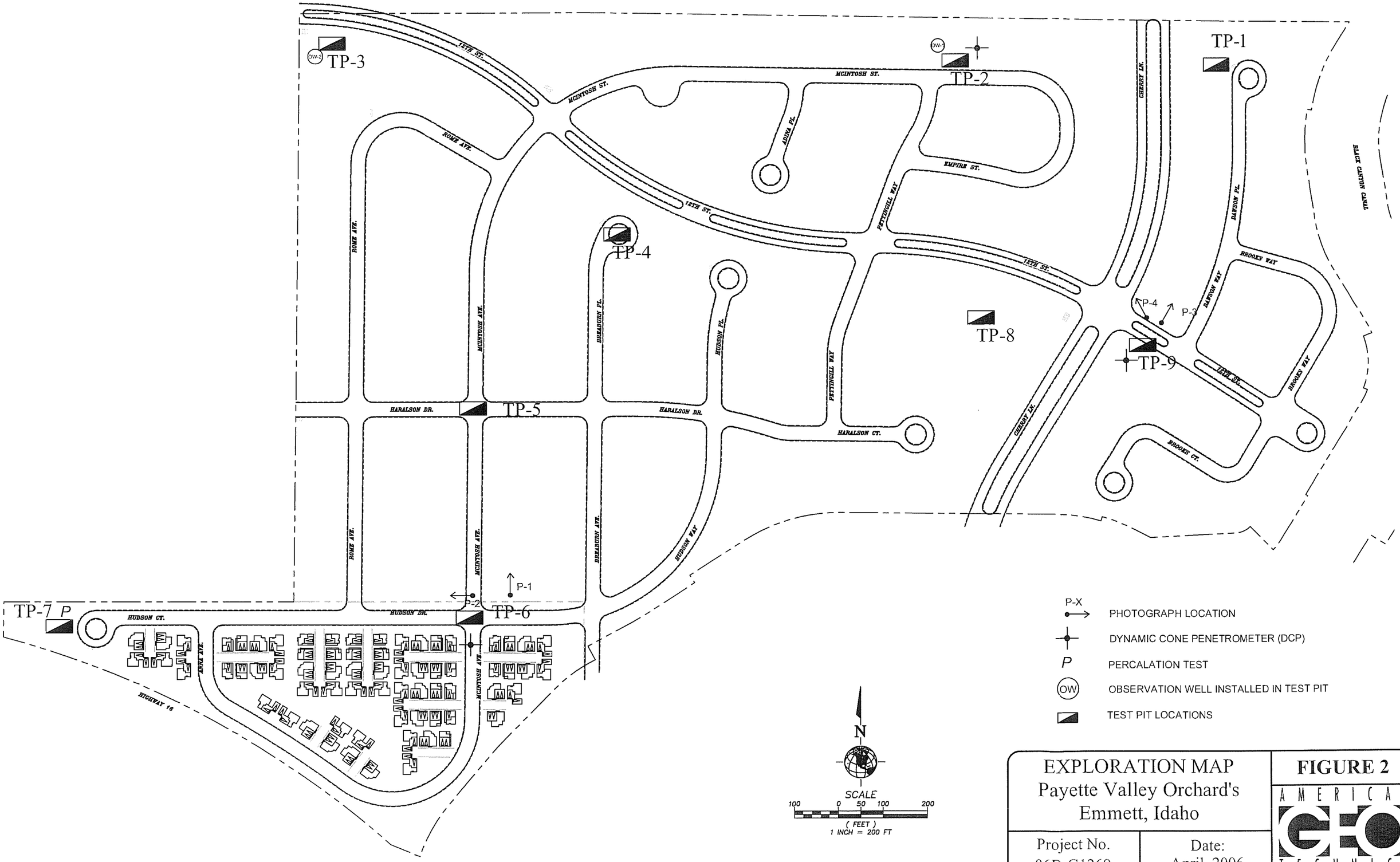
VICINITY MAP
Payette Valley Orchards
Emmett, Idaho

FIGURE 1

Project Number:
06B-G11269

April 2006

AMERICAN GEO TECHNICS



EXPLORATION MAP
Payette Valley Orchard's
Emmett, Idaho

FIGURE 2

Project No.	Date:
06B-G1269	April, 2006

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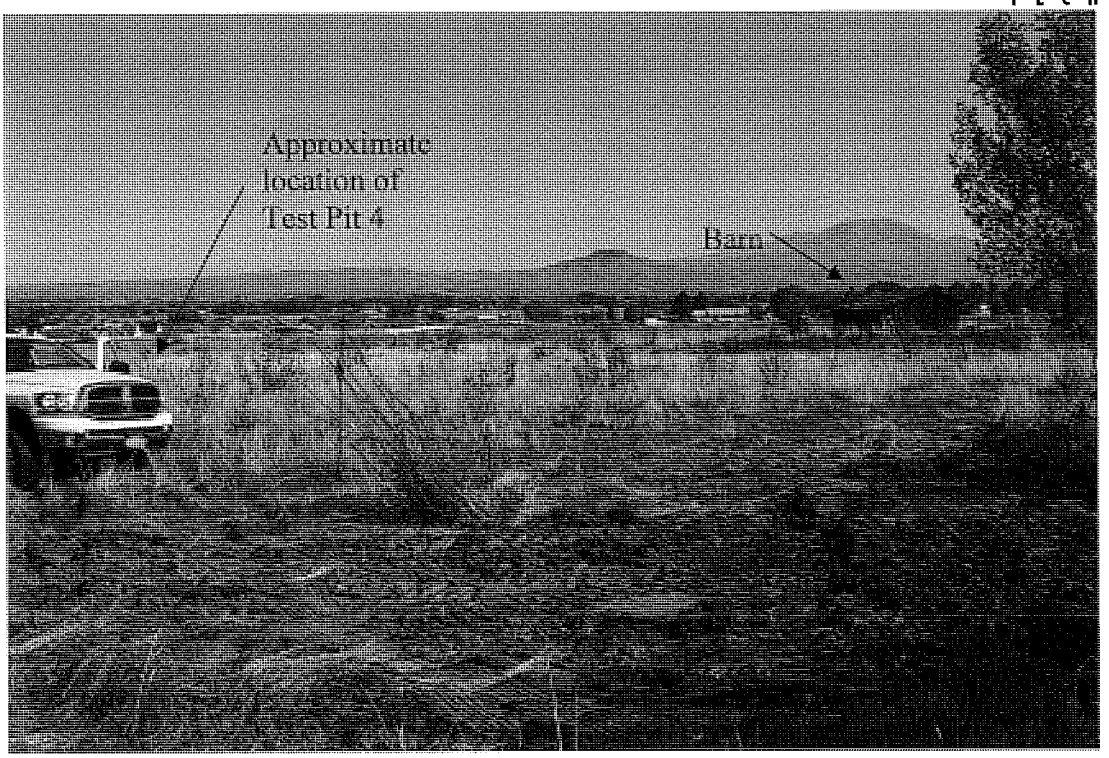

Photo – 1 View from TP-6 looking north. The existing home is just southwest of the barn.

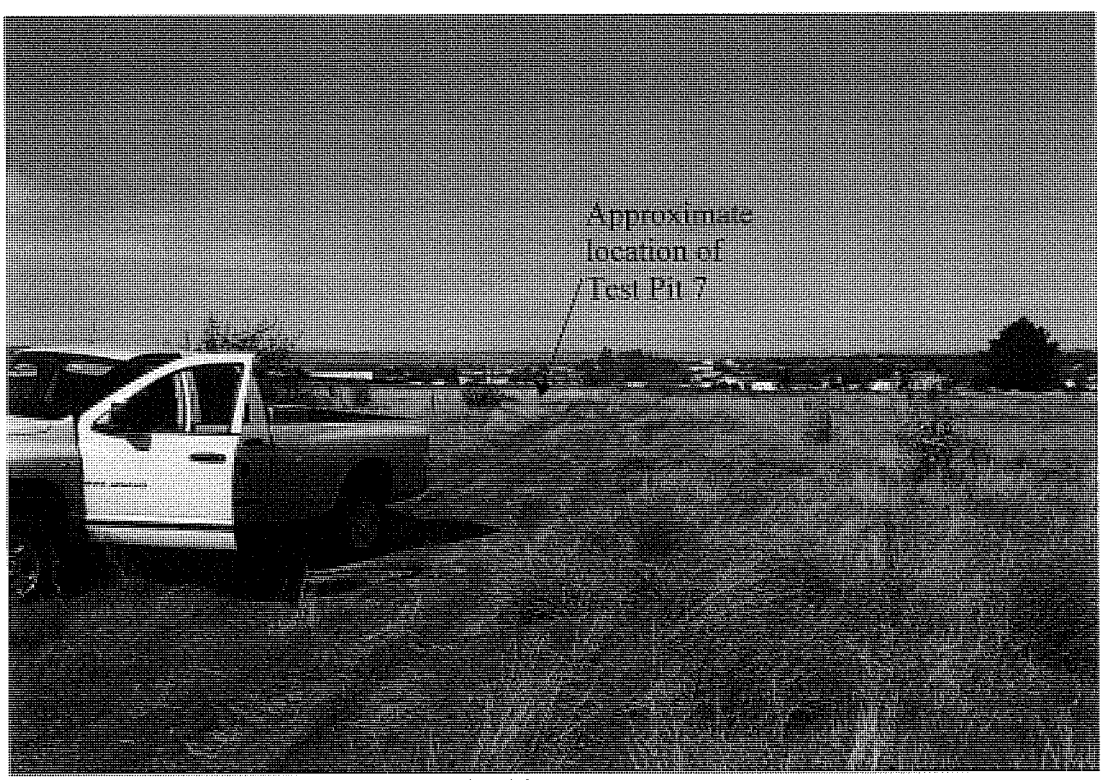

Photo – 2 View from TP-6 looking west.

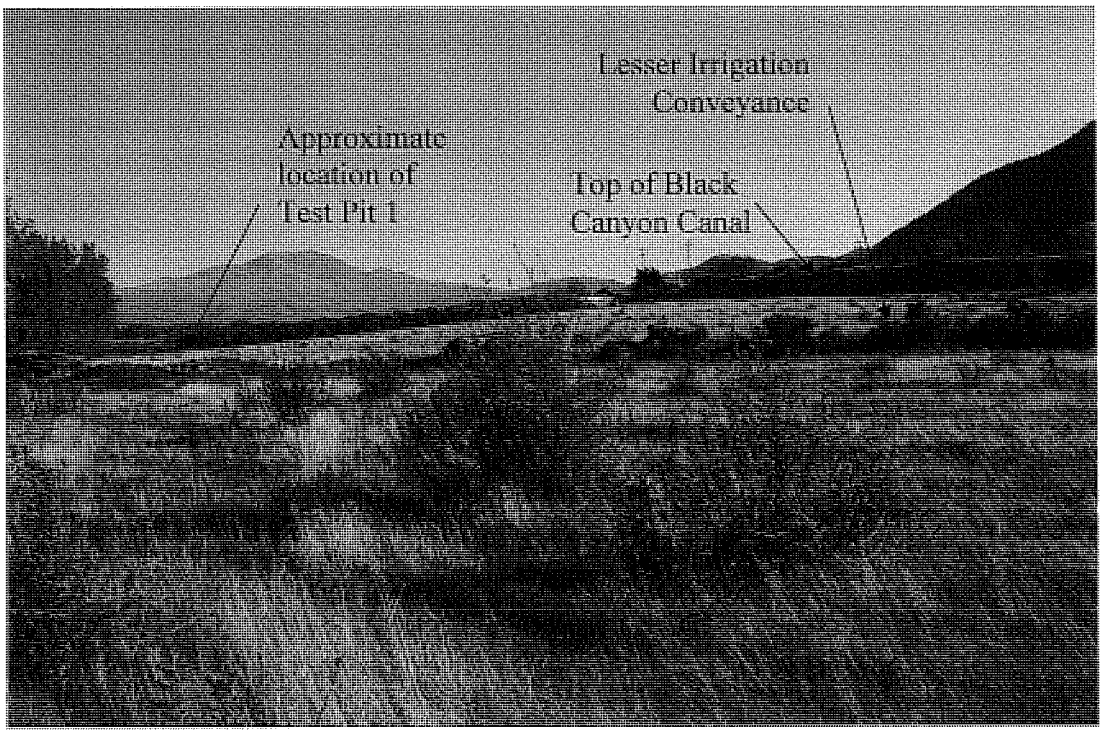

Photo – 3 View from TP-9 looking northeast.

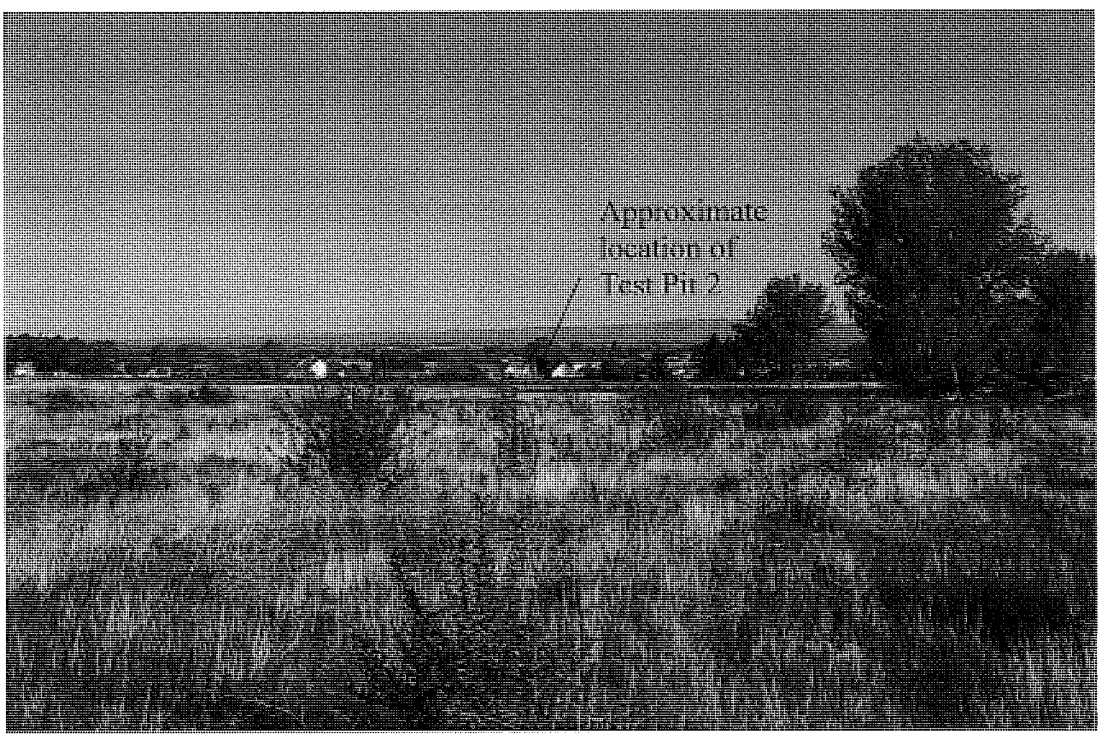

Photo – 4 View from TP-9 looking northwest.

APPENDIX B

2019 Development Plat by JUB Engineers

ACCESS ROAD

FUTURE STORAGE RESERVOIR BY CITY 60' DIAM. MAX.

CHURCH

COMMON AREA

LAND USE SUMMARY NORTH

TOTAL AREA:	65.75 AC.
TOTAL LOTS:	263 LOTS
RESIDENTIAL LOTS:	242 LOTS
COMMON AREA LOTS:	21 LOTS
RESIDENTIAL DENSITY:	3.68 DU/AC
COMMON AREA	5.75 AC. (8.7%)
AVERAGE LOT SIZE:	7,808 S.F.
SMALLEST LOT:	5,500 S.F.

LOT MIX

- 50' LOT – 12 LOTS (5%)
- 60' LOT – 86 LOTS (35%)
- 67' LOT – 82 LOTS (34%)
- 74' LOT – 62 LOTS (26%)

N

0 100 200

SCALE IN FEET

PAYETTE RIVER ORCHARDS SUBDIVISION
EMMETT. IDAHO

J-U-B ENGINEERS, INC.

Plot Date:7/26/2019 9:19 AM Plotted By: Everett Earnest
Date Created:7/26/2019 \\BOISEFILES\PUBLIC\PROJECTS\JUB\10-18-102 PAYETTE RIVER ORCHARDS\CAD\EXHIBITS\10-18-102 CONCEPT NORTH-6.DWG

APPENDIX C

2006 Logs of Exploration Test

2006 Laboratory Reports

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-1

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LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Sandy Lean Clay (CL)- About 65% medium plasticity fines; about 35% fine to coarse sand; moist; dark brown.	Roots extend to a depth of 12 inches.
4			Poorly Graded Sand with Clay (SP-SC)- About 90% fine to coarse sand; about 10% low plasticity fines; moist; brown.	
7			Poorly Graded Sand (SP)- About 95% fine to coarse sand; about 5% fines; moist; light brown.	Grades to predominantly fine sand with increasing depth.
10			Bottom of pit at 10 feet.	

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-2

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

AMERICAN GEOTECHNICS

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Clayey Sand (SC)- About 70% fine to coarse sand; about 30% low plasticity fines; moist; light brown.	
2			Sandy Lean Clay (CL)- About 60% medium plasticity fines; about 40% fine to coarse sand; moist; dark brown.	
6	BG-4		Poorly Graded Sand with Clay (SP-SC)- About 90% fine to coarse sand; about 10% low plasticity fines; moist; brown.	
8			Poorly Graded Sand (SP)- About 95% fine to coarse sand; about 5% fines; moist; light brown.	
13			Bottom of pit at 13.2 feet.	Installed 2" PVC observation well.

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

WATER LEVEL: None encountered on 4-27-06

ELEVATION:

TEST PIT LOG: TP-3

AMERICAN GEOTECHNICS

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Sandy Lean Clay (CL)- About 60% low plasticity fines; about 40% fine to coarse sand; moist; brown.	
7	BG-1		Silty Sand (SM)- About 60% fine to coarse sand; about 40% low to no plasticity fines; moist; light brown.	Content of fines decreases gradually with depth.
12			Bottom of pit at 12.4 feet.	Installed 2" PVC observation well.

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-4

AMERICAN GEO TECHNICS

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Silty Sand (SM) About 60% fine to coarse sand; about 35% low plasticity fines; about 5% fine, weak gravel; moist; brown.	
2			Poorly Graded Sand with Clay (SP-SC)- About 90% fine to coarse sand; about 10% low plasticity fines; moist; light brown.	
6			Sandy Lean Clay (CL)- About 60% medium plasticity fines; about 40% fine to coarse sand; moist to wet; dark brown.	Saturated materials encountered, no groundwater observed.
8			Silt with Sand (ML)- About 80% low to no plasticity fines; about 20% fine to medium sand; moist; light brown.	
11			Bottom of pit at 11.4 feet.	
19				

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-5

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

AMERICAN GEOTECHNICS

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Sandy Lean Clay (CL)- About 55% medium plasticity fines; about 45% fine to coarse sand; moist; dark brown.	Roots extend to a depth of 12 inches.
5			Clayey Sand (SC)- About fine to coarse sand; about 40% low plasticity fines; moist; brown.	
7			Poorly Graded Sand (SP)- About 95% fine to coarse sand; about 5% fines; moist; light brown.	
			Bottom of pit at 7.0 feet.	

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-6

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

AMERICAN GEOTECHNICS

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Sandy Lean Clay (CL)- About 55% medium plasticity fines; about 45% fine to coarse sand; moist to wet; dark brown.	Roots extend to a depth of 12 inches.
7			Clayey Sand (SC)- About 60% fine to coarse sand; about 40% low plasticity fines; moist; brown to light brown.	Saturated materials encountered between 4.5 to 6 feet, no groundwater observed.
11.5			Bottom of pit at 11.5 feet.	

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-7

AMERICAN GEOTECHNICS

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Sandy Lean Clay (CL)- About 60% medium plasticity fines; about 40% fine to coarse sand; moist; dark brown.	Roots extend to a depth of 8 inches.
1	BK-5			
2			Poorly Graded Sand (SP)- About 95% fine to coarse sand; about 5% fines; moist; light brown.	Percolation test performed.
3				
4				
5				
6				Grades to predominantly fine sand with increasing depth.
7				
8				
9				Dry materials.
10				
11			Bottom of pit at 10.3 feet.	
12				
13				
14				
15				
16				
17				
18				
19				

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-8

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

AMERICAN GEOTECHNICS

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Clayey Sand (SC)- About 70% fine to coarse sand; about 30% low plasticity fines; moist; brown.	Roots extend to a depth of 8 inches.
1			Sandy Lean Clay (CL)- About 60% medium plasticity fines; about 40% fine to coarse sand; moist; dark brown.	
2				
3				
4			Poorly Graded Sand with Clay (SP-SC)- About 90% fine to coarse sand; about 10% low plasticity fines; moist; brown.	
5	BG-2			
6			Clayey Sand (SC)- About 70% fine to coarse sand; about 30% low plasticity fines; moist light brown.	
7				
8				
9			Poorly Graded Sand (SP)- About 95% fine to coarse sand; about 5% fines; moist; light brown.	
10				
11				
12			Bottom of pit at 11.7 feet.	
13				
14				
15				
16				
17				
18				
19				

PROJECT: Payette Valley Orchards
LOCATION: Emmett, Idaho

TEST PIT LOG: TP-9

LOGGED BY: Adam Lyman
EXCAVATION EQUIPMENT: Backhoe
DATE OF EXCAVATION: April 27, 2006

ELEVATION:

WATER LEVEL: None encountered on 4-27-06

AMERICAN GEOTECHNICS

DEPTH (feet)	SAMPLE TYPE - No.	SAMPLE SYMBOL	DESCRIPTION	NOTES (Stratification lines represent approximate boundaries between materials.)
0			Sandy Lean Clay (CL)- About 50% medium plasticity fines; about 45% fine to coarse sand; about 5% hard, subrounded gravel to 3"; moist; dark brown.	
1			Poorly Graded Sand with Clay (SP-SC)- About 90% fine to coarse sand; about 10% low plasticity fines; moist; brown.	
2				
3	BG-3			
4			Sandy Lean Clay (CL)- About 55% medium plasticity fines; about 45% fine to coarse sand; moist; dark brown.	
5				
6			Poorly Graded Sand (SP)- About 95% fine to coarse sand; about 5% sand; moist; brown.	
7				
8				Occasional thin layers of clay.
9				
10				
11				
12			Bottom of pit at 11.5 feet.	
13				
14				
15				
16				
17				
18				
19				

DCP TEST DATA

File Name:

Project: *Payette Valley Orchard*

Location: TP-2

Date: 27-Apr-06

Soil Type(s): SC

Hammer
○ 10.1 lbs.
● 17.6 lbs.
○ Both hammers used

Soil Type
○ CH
○ CL
● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	70	1
10	340	1
12	695	1
10	900	1
3	1230	1
3	1395	1
16	1900	1
		1
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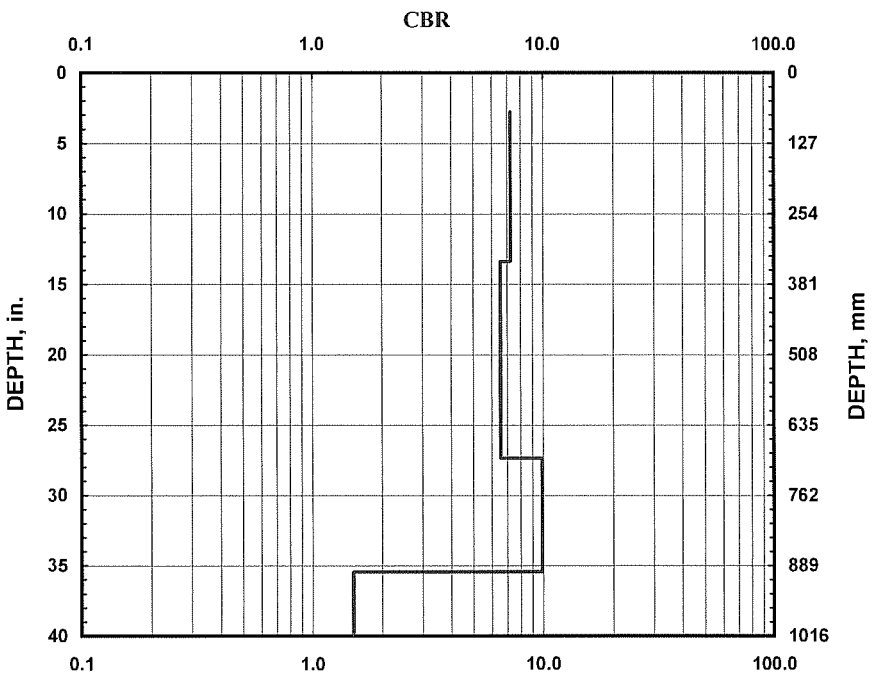
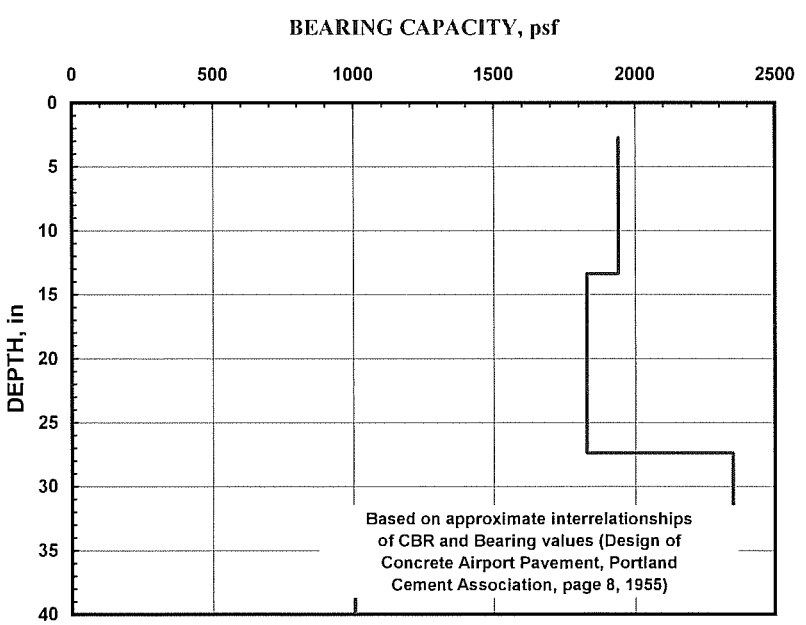
CBR



BEARING CAPACITY, psf



Based on approximate interrelationships of CBR and Bearing values (Design of Concrete Airport Pavement, Portland Cement Association, page 8, 1955)

DCP TEST DATA

File Name:

Project: *Payette Valley Orchard* Date: 27-Apr-06
Location: TP-6 Soil Type(s): SC

Hammer
○ 10.1 lbs.
◉ 17.6 lbs.
○ Both hammers used

Soil Type
○ CH
○ CL
◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	65	1
5	270	1
8	575	1
7	790	1
10	930	1
4	1140	1
15	1545	1
8	2010	1
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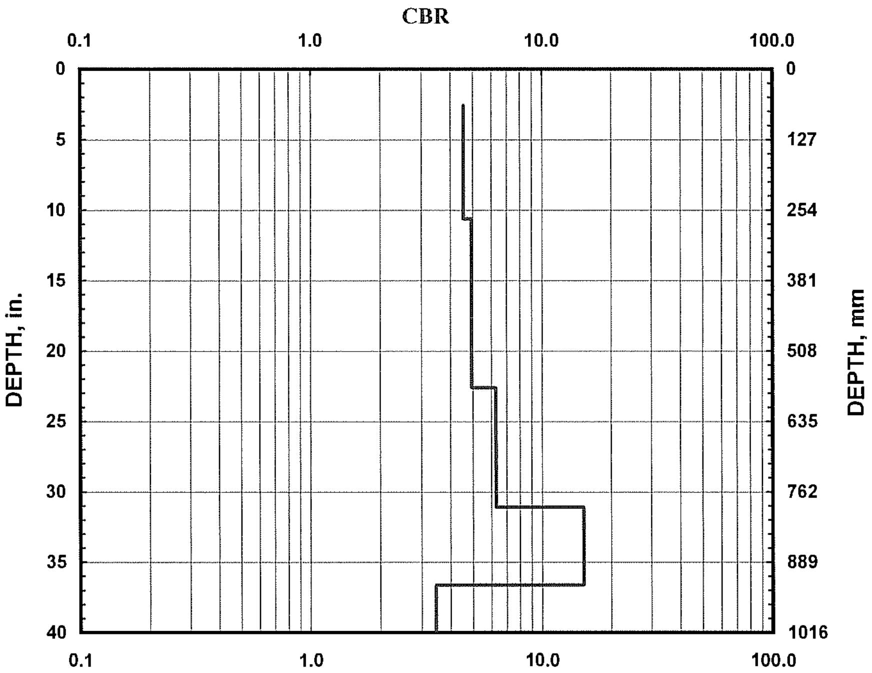

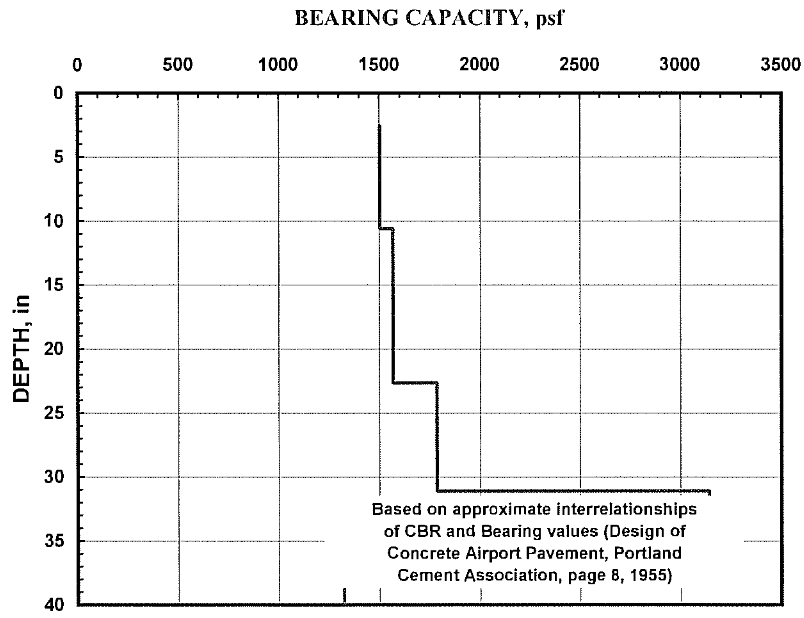

DCP TEST DATA

File Name:

Project: *Payette Valley Orchard*
Location: TP-9
Date: 27-Apr-06
Soil Type(s): SC

Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	100	1
10	440	1
15	720	1
5	850	1
2	980	1
5	1190	1
5	1590	1
12	1950	1
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