

PROJECT MANUAL

NEW JEROME  
ELEMENTARY SCHOOL

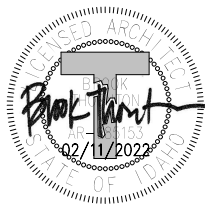
for

Jerome School District

Bid Set

Jerome, Idaho  
February 11, 2022

VOLUME FOUR



THIS PAGE INTENTIONALLY BLANK

**TABLE OF CONTENTS**  
**2/11/2022**

**NO. OF PAGES**

**VOLUME 1**

**INSTRUCTIONS TO BIDDERS**

**VOLUME 2**

Project Architect and Engineers

**DIVISION 01 – GENERAL REQUIREMENTS**

Section 011000	Summary of Work and General Requirement .....	7
Section 012300	Alternates .....	2
Section 012500	Substitution Procedures .....	4
Section 012600	Contract Modification Procedures.....	2
Section 012900	Payment Procedures .....	4
Section 013100	Project Management and Coordination .....	9
Section 013300	Submittal Procedures .....	8
Section 014000	Quality Requirements .....	7
Section 014200	References .....	2
Section 015000	Construction Facilities and Temporary Controls.....	11
Section 016000	Product Requirements.....	6
Section 017300	Execution .....	10
Section 017700	Closeout Procedures .....	4
Section 017823	Operation and Maintenance Data .....	7
Section 017839	Project Record Documents .....	3
Section 017900	Demonstration and Training.....	4
Section 019113	General Commissioning Requirements.....	3

**DIVISION 03 - CONCRETE**

Section 033000	Cast-in-Place Concrete .....	19
Section 033543	Polished Concrete Finishing.....	7

**DIVISION 04 – MASONRY**

Section 042000	Unit Masonry .....	18
----------------	--------------------	----

**DIVISION 05 - METALS**

Section 051200	Structural Steel Framing.....	9
Section 052100	Steel Joist Framing .....	5
Section 053100	Steel Decking.....	5
Section 054000	Cold Formed Metal Framing .....	7
Section 055000	Metal Fabrications .....	9
Section 055113	Metal Pan Stairs.....	6
Section 055213	Pipe and Tube Railings.....	8

**DIVISION 06 – WOOD, PLASTICS AND COMPOSITES**

Section 061000	Rough Carpentry .....	7
Section 061600	Sheathing .....	4
Section 061753	Shop Fabricated Wood Trusses .....	9
Section 064116	Plastic Laminate Faced Architectural Cabinets.....	10
Section 066400	Plastic Paneling .....	4

**TABLE OF CONTENTS**  
**2/11/2022**

**NO. OF PAGES**

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

Section 071113	Bituminous Dampproofing .....	3
Section 071900	Water Repellents .....	4
Section 072100	Thermal Insulation.....	5
Section 072700	Infiltration Barriers .....	2
Section 074213	Metal Panels .....	10
Section 074243	Composite Wall Panels.....	7
Section 075423	Thermoplastic Polyolefin (TPO) Roofing .....	10
Three Year Roofing Warranty .....		3
Section 076200	Sheet Metal Flashing and Trim .....	7
Section 077200	Roof Accessories .....	3
Section 078413	Penetration Firestopping .....	6
Section 078413	Firestopping Appendix A .....	1
Section 078446	Fire Resistive Joint Systems .....	5
Section 079200	Joint Sealants .....	6

**DIVISION 08 – OPENINGS**

Section 081113	Hollow Metal Doors and Frames .....	11
Section 081416	Flush Wood Doors.....	5
Section 083113	Access Doors and Frames.....	4
Section 083313	Overhead Coiling Doors .....	7
Section 083513	Accordion Folding Partition .....	4
Section 084113	Aluminum Framed Entrances and Storefronts .....	9
Section 084523	Translucent Fiberglass Sandwich Panel Assembly .....	6
Section 085619	Pass Thru Windows .....	4
Section 087100	Door Hardware .....	31
Section 088000	Glazing.....	10

**DIVISION 09 - FINISHES**

Section 092216	Light Gauge Steel Framing.....	8
Section 092900	Gypsum Board .....	8
Section 093013	Tiling .....	8
Section 095113	Acoustical Panel Ceilings.....	7
Section 096466	Wood Athletic Flooring.....	6
Section 096513	Resilient Base and Accessories .....	6
Section 096516	Resilient Sheet Flooring.....	5
Section 096519	Resilient Tile Flooring.....	5
Section 096816	Carpeting .....	5
Section 097200	Digitally Printed Vinyl Wallcovering Murals .....	5
Section 097723	Fabric Wrapped Panels.....	3
Section 098413	Fixed Sound Absorptive Panels.....	3
Section 099113	Exterior Painting .....	8
Section 099123	Interior Painting.....	8
Section 099600	High Performance Coatings.....	5

**DIVISION 10 - SPECIALTIES**

Section 101100	Visual Display Surfaces .....	7
Section 101416	Signage.....	6
Section 102113	Toilet Compartments .....	4
Section 102123	Cubicle Curtains .....	3
Section 102600	Wall and Door Protection .....	5

**TABLE OF CONTENTS**

**2/11/2022**

**NO. OF PAGES**

Section 102800	Toilet and Bath Accessories .....	3
Section 104413	Fire Extinguisher Cabinets .....	4
Section 104416	Fire Extinguishers .....	3
Section 105113	Metal Lockers .....	6
Section 107000	Exterior Sun Control Devices .....	5

**DIVISION 11 - EQUIPMENT**

Section 113013	Residential Appliances .....	3
Section 114000	Food Service Equipment.....	11
Section 115213	Projection Screens .....	3
Section 116143	Platform Curtains.....	5
Section 116600	Wall and Floor Padding.....	4
Section 116623	Gymnasium Equipment .....	7
Section 116800	Playground Equipment and Structures .....	6

**DIVISION 12 - FURNISHINGS**

Section 122113	Horizontal Louver Blinds .....	5
Section 126600	Telescoping Stands .....	6

**VOLUME 3**

**DIVISION 21- FIRE SUPPRESSION**

Section 210000	Fire Sprinkler Systems .....	6
Fire Penetration Appendix A .....		7

**DIVISION 22- PLUMBING**

Section 220000	Plumbing General Requirements.....	6
Section 220100	Plumbing.....	11
Section 220800	Commissioning of Plumbing.....	4

**DIVISION 23- HVAC**

Section 230000	HVAC General Requirements .....	9
Section 230100	Heating, Ventilating and Air Conditioning .....	28
Section 230150	Mechanical Start-Up.....	4
Section 230593	Testing, Adjusting, and Balancing for HVAC .....	11
Section 230800	HVAC Commissioning Requirements .....	7
Section 230900	Direct Digital Control System .....	13

**DIVISION 26 - ELECTRICAL**

Section 260500	Electrical General Provisions .....	4
Section 260501	Field Test and Operational Check .....	3
Section 260502	Coordination Study.....	5
Section 260519	Conductors and Cables .....	3
Section 260526	Grounding.....	5
Section 260529	Supporting Devices .....	2
Section 260533	Raceways and Boxes .....	8
Section 260536	Cable Trays.....	2
Section 260543	Under Slab and Underground Electrical Work .....	2

**TABLE OF CONTENTS**  
**2/11/2022**

**NO. OF PAGES**

Section 260800	Lighting Systems Commissioning.....	3
Section 260923	Lighting Control Devices .....	8
Section 262200	Dry-type Transformers .....	4
Section 262413	Switchboards .....	7
Section 262416	Panelboards.....	7
Section 262726	Wiring Devices .....	4
Section 262813	Fuses .....	3
Section 262815	Disconnect Switches.....	2
Section 264314	Transient Voltage Surge Suppression .....	5
Section 265100	Interior Lighting .....	5
Section 265600	Exterior Lighting .....	4

**DIVISION 27 - COMMUNICATIONS**

Section 271101	Telecom Raceway Systems .....	1
Section 275116	Integrated Communications and Clock Network .....	16
Section 275117	Sound Systems.....	7
Section 275200	Classroom Audio System .....	6

**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

Section 281000	Access Control System.....	11
Section 282310	Video Management System.....	14
Section 282329	Video Surveillance Remote Devices and Sensors.....	10
Section 283200	Voice Evacuation Fire Alarm System .....	10

**DIVISION 31 – EXTERIOR IMPROVEMENTS**

Section 310120	Traffic Control.....	2
Section 311000	Site Clearing .....	6
Section 312000	Earth Moving.....	13
Section 315000	Excavation Support and Protection .....	5
Section 321313	Concrete Paving.....	16
Section 321723	Pavement Markings .....	3
Section 321726	Tactile Warning Surfacing .....	5
Section 321800	Playground.....	6
Section 321822	Synthetic Playground Turf .....	7
Section 323113	Chain Link Fences and Gates .....	11
Section 323119	Decorative Metal Fences and Gates .....	7
Section 323150	Site Signage .....	2
Section 323190	Flagpole .....	3
Section 323300	Site Furnishings .....	4
Section 328400	Landscape Irrigation .....	12
Section 328500	Landscape Grading.....	2
Section 329113	Soil Preparation .....	12
Section 329200	Turf and Grasses.....	13
Section 329290	Tree Protection and Trimming .....	3
Section 329300	Plants .....	15

**VOLUME 4**

**APPENDIX A**

Geotechnical Evaluation Report .....	46
--------------------------------------	----

**TABLE OF CONTENTS**  
**2/11/2022**

**NO. OF PAGES**

END OF TABLE OF CONTENTS

THIS PAGE INTENTIONALLY BLANK



7/21/2021

---

---

# *Geotechnical Report*

*Glen Eagle – Jerome School District*

EHM No. 326-21

---

---

Prepared by: Matt Ahrens, EIT



**EHM Engineers, Inc.**  
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE

## Table of Contents

<b>INTRODUCTION .....</b>	<b>2</b>
<b>SITE DESCRIPTION .....</b>	<b>4</b>
<b>AREA GEOLOGY.....</b>	<b>6</b>
<b>SITE INVESTIGATION .....</b>	<b>6</b>
<b>CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>11</b>
<b>FOUNDATION DESIGN .....</b>	<b>11</b>
<b>SEISMIC DESIGN.....</b>	<b>12</b>
<b>PAVEMENT SECTIONS.....</b>	<b>12</b>
<b>LATERAL EARTH PRESSURE .....</b>	<b>14</b>
<b>STRUCTURAL FILL .....</b>	<b>14</b>
<b>SLABS ON GRADE .....</b>	<b>15</b>
<b>SITE GRADING .....</b>	<b>15</b>
<b>STORM WATER RETENTION .....</b>	<b>15</b>
<b>NOTES.....</b>	<b>17</b>
<b>WORKS CITED .....</b>	<b>18</b>
Appendix A Exploratory Test Pit Logs.....	19
Appendix B USGS Soil Classification .....	37
Appendix C Lateral Earth Pressure Calculations .....	41
Appendix D Field Notes & Geologic Information .....	43

## Table of Figures

FIGURE 1: PROJECT VICINITY MAP .....	3
FIGURE 2: TEST HOLE LOCATION MAP .....	5

## Table of Tables

TABLE 1: SITE INVESTIGATION RESULTS.....	7
TABLE 2: ¾" ROAD BASE GRADATION .....	13
TABLE 3: RECOMMENDED RUNOFF COEFFICIENTS .....	16
TABLE 4: TYPICAL SOIL PERMEABILITY.....	16

## Introduction

The purpose of this report is to present the results of a geotechnical investigation for the Jerome School District to construct a new elementary school north of the Glen Eagle Subdivision. The site is accessed Glen Eagle Drive. The legal description for the project location is described as follows:

*Located in the SE<sup>4</sup>NE<sup>4</sup> portion of Section 19, Township 8 South, Range 17 East, Boise Meridian.*

Refer to Figure 1 for subject property location.

The area of interest is currently an undeveloped property that was likely utilized for agricultural crop production in the past but isn't being used as such for the current growing season. EHM Engineers, Inc. understands the scope of work for this report to be limited to a geotechnical investigation for a new proposed elementary school building pad site. This includes the related site development plans for parking, access, and site layout. The proposed construction is understood to be a single-story structure.

This report will include the following scope:

- 1) Description of the existing subsurface materials and conditions.
- 2) Conclusions and recommendations for:
  - a. Foundation design
  - b. Settlement estimation
  - c. Seismic design
  - d. Pavement sections
  - e. Lateral earth pressures
  - f. Structural fill
  - g. Sub-grade preparation beneath slabs on grade and roadways
  - h. Cut slope limitations and excavations
  - i. Storm water retention





**Figure 1: Project Vicinity Map**

## Site Description

The subject area is accessed from Glen Eagle Drive and lies directly north of Glen Eagle Subdivision found one half of a mile south of the Jerome High School. There are no improved surfaces on the premises, and little or no utilities are present. Some buried power may be located near the northeast corner of the property.

Single-family residences are located to the west and south, while agricultural crop land is found to the north and east. Refer to Figure 1 and Figure 2 for more information.

Nineteen (19) test hole locations were identified and seventeen (17) were drilled. Drilling was performed by a truck mounted drill rig. Soil samples were obtained from a split spoon sampler at various depths between two and half, five, and ten feet deep. Refer to Site Investigation for detailed sampling information. Silt with Sand and Sandy Silt soils were identified. Refer to Figure 2 for test hole locations.





**Figure 2: Test Hole Location Map**

The site appears to naturally drain to the southwest from natural topography. According to the National Resource Conservation Service (NRCS), the native soil type in the area is classified as follows:

- Shano Silt Loam: a well-drained soil with a moderately high to high ability to transmit water

Depth to groundwater is described to be more than 80 inches below the ground surface (NRCS).

## Area Geology

The Magic Valley is at the center of the Great Rift, a 635-square mile geologic phenomenon, a series of fissures, spatter cones and lava tubes created by 60 different lava flows and over 25 volcanic eruptions. These geologic events helped create the well-known Snake River. There are two predominant types of volcanic rocks that make up the Snake River Canyon near the project site: Rhyolite is from the explosive volcanic eruptions, dating back to when Magic Valley was located over the Yellowstone volcano, and basalt from the slower-moving lava. The rhyolite is 8-10 million years old and the basalt is less than 1 million years old. The canyon formed prior to the Bonneville Flood, 14,500 years ago. The canyon was much shallower and only became deepened with the high flows and extreme velocities of the water due to the flood.

Locally, the geology can be described as deposits of silt, sand, and similar loess deposits. These deposits range in depth from a few feet to tens of feet in thickness. Underlying basalt rock can be identified from the Pleistocene and Pliocene eras that are relatively dense (Idaho Geological Survey).

## Site Investigation

Site investigation began and finished on July 9, 2021. Nineteen (19) exploratory test holes, numbering #1 through #19, were drilled. Test holes #15 and #17 were not drilled due to their respective markers not being present. All tests were drilled with a truck mounted drill rig that utilized a hollow stem auger. Soil samples were obtained from each test hole at approximately two and half (2.5), five (5), and ten (10) foot depths. Investigation went to a depth of fifteen (15) feet or until rock, whichever was encountered first. Standard Penetration Tests (SPT) were completed at each interval described above with the use of a two (2) inch diameter by eighteen inch long split spoon sampler with a 140 pound automatic drive weight. Blow counts were recorded for the last twelve inches of the eighteen inch sample. The approximate location of the test holes were specified by Tim Vawser of EHM Engineers, Inc. It is noteworthy to mention that groundwater was not encountered in any of the test holes during excavation. Refer to Table 1: Site Investigation Results for more data.

The soils were collected by EHM Engineers, Inc. and analyzed at their materials testing laboratory. The soils were laboratory tested and classified according to the Unified Soil Classification System (ASTM D-2487). The test pit locations are shown on Figure 2 and fully described in Table 1. The bore logs can be found in Appendix A, the USGS soil classification in Appendix B, the lateral earth pressure calculations in Appendix C, and the laboratory results in Appendix D. Note that a proctor test was not done on these samples.



**Table 1: Site Investigation Results**

Test Hole	Ground Elevation	Depth to Rock	Stratum	Blow Count ( $N_{60}$ )	USCS	Soil Description
#1	±3827	7'	0'-2.5'			Topsoil, brown
			2.5'-4'	9-11-10	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	8-12-31	ML	Calcified Silt, Light Brown
			6.5'-7'			
			7'-			Basalt Rock
#2	±3827	3'	0'-2.5'			Topsoil, brown
			2.5'-3'	15-50 (2'')	ML	Calcified Silt, Light Brown
			3'-			Basalt Rock
#3	±3829	6.5'	0'-2.5'			Topsoil, brown
			2.5'-4'	10-11-15	ML	Silt, Light Brown
			4'-5'			
			5'-5.5'	13-50 (4'')	ML	Silt, Light Brown
			5.5'-			Basalt Rock
#4	±3830	8'	0'-2.5'			Topsoil, brown
			2.5'-4'	5-5-8	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	12-12-9	ML	Calcified Silt, Light Brown
			6.5'-8'			
			8'-			Rock
#5	±3826	6.5'	0'-2.5'			Topsoil, brown
			2.5'-4'	12-10-8	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	15-38-18	ML	Calcified Silt, Light Brown
			6.5'-			Basalt Rock
#6	±3826	2'	0'-2'			Topsoil, brown
			2'-			Silty sand



Test Hole	Ground Elevation	Depth to Rock	Stratum	Blow Count ( $N_{60}$ )	USCS	Soil Description
#7	±3825	6.5'	0'-2.5'			Topsoil, brown
			2.5'-4'	6-9-10	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	5-7-10	ML	Calcified Silt, Light Brown
			6.5'-			Basalt Rock
#8	±3824	5.5'	0'-2.5'			Topsoil, brown
			2.5'-4'	3-4-4	ML	Silt, Light Brown
			4'-5'			
			5'-5.5'	11-50 (5")	ML	Silt, Light Brown
			5.5'-			Basalt Rock
#9	±3822	6'	0'-2.5'			Topsoil, brown
			2.5'-4'	6-4-5	ML	Silt, Light Brown
			4'-5'			
			5'-6'	9-9-50 (3")	ML	Calcified Silt, Light Brown
			6'-			Basalt Rock
#10	±3824	6'	0'-2.5'			Topsoil, brown
			2.5'-4'	8-3-2	ML	Silt, Light Brown
			4'-5'			
			5'-6'	4-5-50 (5")	ML	Calcified Silt, Light Brown
			6'-			Basalt Rock
#11	±3823	7.5'	0'-2.5'			Topsoil, brown
			2.5'-4'	3-6-5	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	9-22-36	ML	Calcified Silt, Light Brown
			6.5'-8'			
			8'-			Rock



Test Hole	Ground Elevation	Depth to Rock	Stratum	Blow Count ( $N_{60}$ )	USCS	Soil Description
#12	±3825	4'	0'-2.5'			Topsoil, brown
			2.5'-4'	4-7-50 (4")	ML	Calcified Silt, Light Brown
			4'-			Basalt Rock
#13	±3821	10'	0'-2.5'			Topsoil, brown
			2.5'-4'	4-6-12	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	3-5-6	ML	Silt, Light Brown
			6.5'-10'			
			10'-	50 (1")		Basalt Rock
#14	±3823	6.5'	0'-2.5'			Topsoil, brown
			2.5'-4'	6-8-15	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	11-17-24	ML	Silt, Light Brown
			6.5'-			Basalt Rock
#15	±3819	-	-			N/A
#16	±3820	16'	0'-2.5'			Topsoil, brown
			2.5'-4'	7-7-7	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	4-5-6	ML	Silt, Light Brown
			6.5'-10'			
			10'-11.5'	26-50-44	ML	Calcified Silt, Light Brown
			11.5'-15'			
			15'-16'	9-15-50 (4")	ML	Calcified Silt, Light Brown
			16'-			Basalt Rock

Test Hole	Ground Elevation	Depth to Rock	Stratum	Blow Count ( $N_{60}$ )	USCS	Soil Description
#17	±3813	-	-			N/A
#18	±3816	14'	0'-2.5'			Topsoil, brown
			2.5'-4'	3-7-11	ML	Silt, Light Brown
			4'-5'			
			5'-6.5'	10-9-11	ML	Silt, Light Brown
			6.5'-10'			
			10'-11.5'	6-11-15	ML	Calcified Silt, Light Brown
			11.5'-14'			
			14'-			Basalt Rock
#19	±3816	6'	0'-2.5'			Topsoil, brown
			2.5'-4'	5-9-12	ML	Silt, Light Brown
			4'-5'			
			5'-6'	11-17-50 (2")	ML	Silt, Light Brown
			6'-			Basalt Rock



## Conclusions and Recommendations

### Foundation Design

The subsurface exploration drilled nineteen (19) test holes that contain native ML soil classifications. The soils located at the site are suitable for construction of spread footings foundations supporting a large-footprint single-story structure with adherence to the following provisions:

- 1) All structural footings, slabs, or slabs on grade should be placed on approved subgrade, verified by qualified personnel, or structural fill.
- 2) All structural footings and bearing components shall bear entirely upon rock or entirely upon native soils. Where rock is encountered within the footing zones, the rock shall be over-excavated a minimum of six (6) inches and a sand cushion provided to ensure bearing upon native soils or sand cushion fill in accordance with the recommendations above.
- 3) All organic top soils must be removed from the footing areas. Soils containing vegetation, calcified or cementitious materials, organic matter, debris, wastes, disturbed or frozen materials are not suitable for use as structural fills or beneath footings and/or bearing areas.
- 4) Any pavements, gravels, or previously placed controlled fill encountered should be removed from footing areas which are in conflict.
- 5) All demolished building materials and debris not suitable for use beneath footings or slabs on grade must be properly removed in care of the proposed structure.
- 6) The bottom of the footings shall be located a minimum of 24-inches below the finished grade for frost protection.
- 7) Silt soils have a moderate to high collapse potential when they become saturated under load. Therefore, site grading must be designed to direct water away from the building(s) in all directions, regardless of soil type. If this cannot be accomplished, a perimeter drainage system should be installed below the bottom of the foundation elevation. Roof drainage systems must also divert water away from the structure(s) and not discharge onto the ground near exterior walls, footings, or foundations.
- 8) When the ML soils are properly compacted, they may achieve 1,500 psf bearing capacity.
  - a. A subgrade evaluation should be performed by a soils engineer or qualified technician prior to placement of foundation or slab.
  - b. Compaction tests shall be taken every 100 square feet of all footing impact area (footing plus 36 inches either side of the footing or slab).

For an allowable bearing capacity of 2,500 psf the site shall be over excavated laterally and vertically no less than 12 inches in either direction from the bottom and sides of any footing location and any interior supporting slabs. Then, the exposed native subgrade shall be proof rolled to 98% maximum density as determined by ASTM D-698 at optimum moisture. Structural fill shall replace the excavated material with approved structural fill placed in eight (8) inch maximum lifts compacted to 98% maximum density as determined by ASTM D-698 at optimum moisture.

Overall, a minimum of 12" of structural fill will be required to provide an allowable bearing capacity of 2,500 psf at all footing locations or where structural support is required. All structural fill shall adhere to compaction testing for every 100 square feet of structural support area as described in Item 8 above.

The estimated settlement is not expected to be greater than one (1) inch total and one-half (1/2) inch differential. Soil conditions should be verified between test pits, prior to foundation, utilities or other constructed improvements are completed. The rock surface should be inspected and verified for competence prior to forming or placing concrete footings. Any differing soil conditions should be immediately called to the attention of the responsible charge or a licensed professional engineer experienced in geotechnical engineering.

### **Seismic Design**

The upper-most 100-feet of strata at the project site is predominantly basalt rock ( $N > 50$ ). Therefore, the site may be classified as Site Class C for seismic design (International Code Council, Inc., 2015).

### **Pavement Sections**

Pavement sections are anticipated to be developed within the subject property. It is recommended that all materials used in the construction of Asphaltic Concrete Pavements meet the requirements of the State of Idaho Department of Transportation Standard Specification for Highway Construction.

The sub-grade upon which any pavement sections are to be constructed should be properly cleared and stripped to a minimum of 12 inches of depth and then compacted to 95% of maximum density as determined by ASTM D 698 at optimum moisture.

To provide for standard traffic loadings, it is recommended that the below section is used:

**Typical Paving Section**

Approved sub-grade compacted to 95% maximum density  
 8" road base of 1-1/2" crushed aggregate per ISPWC (compacted to 95% density)  
 4" leveling course of 3/4" crushed aggregate per ISPWC (compacted to 95% density)  
 2-1/2" of plant mix pavement

(1-1/2" aggregates maybe substituted with 3/4" aggregate meeting ISPWC specification, based on availability)

To provide for heavy traffic loadings, it is recommended that the below section is used:

**Heavy-Duty Paving Section**

Approved sub-grade compacted to 95% maximum density  
 12" road base of 1-1/2" crushed aggregate per ISPWC (compacted to 95% density)  
 4" leveling course of 3/4" crushed aggregate per ISPWC (compacted to 95% density)  
 4" of plant mix pavement

(1-1/2" aggregates may be substituted with 3/4" aggregate meeting ISPWC specification, based on availability)

The 3/4" road base gravel should conform to the following gradation:

**Table 2: 3/4" Road Base Gradation**

Sieve Size	% Passing
3/4"	100
1/2"	90-100
#4	45-70
#8	30-55
#200	2-8



## Lateral Earth Pressure

For the ML soils native to the site, the following lateral earth pressures may be used assuming a typical angle of shearing resistance ( $\phi$ ) of  $33^\circ$  and unit weight of 105 pcf (Geotechdata.info, 2011):

At Rest: 50 psf  
Active: 30 psf  
Passive: 350 psf

## Structural Fill

The ML soil is classified as a fine-grained soil. The general engineering characteristics include (Yun Zhou, 2006):

- Relatively low shear strength.
- High capillarity and frost susceptibility.
- Relatively low permeability.
- Frost heaving susceptibility.
- Difficult to compact.

In areas where structural fill is required, the following recommendations apply:

Structural fill material shall have at least 90% passing a 1½ inch (38mm) sieve and no more than 8 percent passing a No. 200 (0.075mm) sieve. The material shall be uniformly graded and shall be uniform in consistency. These materials shall be free of rock or gravel larger than 3 inches (75mm) in any dimension, debris waste, frozen materials, vegetation, and/or other deleterious material. Also, Structural fill should be placed in 8" lifts and compacted to 98% of maximum density as determined by ASTM D 698.

All areas of structural fill shall be tested for compaction at a recommended frequency of one test for every 250 square feet beneath paving and landscaped areas on the site, and one test for every 100 square feet, at each lift, beneath all structural bearing zones.

Satisfactory soils (ASTM D 2487) are GW, GP, GM, SW, SP and SM, or a combination of these group symbols. These materials shall be free of rock or gravel larger than 3 inches (75mm) in any dimension, debris waste, frozen materials, vegetation, and/or other deleterious material.

Any and all imported fill placed on site shall be placed in 8" inch maximum lifts and compacted to a minimum of 98% of maximum density as determined by ASTM D 698 at optimum moisture.

## **Slabs on Grade**

All organic topsoil, clay or unsuitable soils, must be removed from all areas in which slabs are to be placed. Slabs on grade should be placed over a minimum of 5-inches of compacted structural engineered fill (native or imported structural fill as described above) compacted to 95% of maximum density as determined by ASTM D 698 at optimum moisture. Reinforced concrete, designed by a professional engineer, may then be constructed above the ballast. Due to the potential for problematic soils, verification of the native top soil characteristics should be completed, prior to any work completed.

## **Site Grading**

Site grading should be designed to direct surface run-off away from buildings, other structures, and roadways. Soil permeability was not conducted in field and is approximated from experience of common soil types. Silts may offer little to no permeability or at very slow saturation rates. Therefore, infiltration facilities should be extended into the most appropriate geological stratum as determined by the local authority.

Cut slope recommendations are based upon the native ML soils discovered onsite. Construction activities should excavate areas to reveal these anticipated soil types. Cut slopes should be excavated at 3:1 slopes, horizontal to vertical. Final cut slopes should be 4:1 or flatter. If alternate soil conditions are suspected, structural fill material should replace the deleterious material as described above.

## **Storm Water Retention**

Common engineering practice includes mitigation of storm water as determined by the local authority. This can be accomplished through several different methods including but not limited to swales, ponds, and dry wells on the subject property. For this site, it is recommended that a combination of swales and dry wells be used in conformance with the City of Jerome and all other local governing authorities. The City of Jerome currently requires that designs consider the 25-year storm for a 24-hour interval with an intensity of 1.6 in/year.



**Table 3: Recommended Runoff Coefficients**

Description of Runoff Area	Runoff Coefficients "C"
<b>Business</b>	
Central business areas	0.70-0.95
District and local areas	0.50-0.70
<b>Residential</b>	
Single-family	0.35-0.45
Multi-family, detached	0.40-0.60
Multi-family, attached	0.60-0.75
Residential 0.5 acre lots of larger	0.25-0.40
<b>Industrial and Commercial</b>	
Light areas	0.50-0.80
Heavy areas	0.75-0.95
<b>Parks, Cemeteries</b>	0.10-0.25
<b>Playgrounds</b>	0.20-0.35
<b>Unimproved Areas</b>	0.10-0.30
<b>Landscaped Areas</b>	0.20
<b>Streets (Asphalt, Concrete), Drives and Walks, Roofs</b>	0.90-0.95

(IDEQ, Water Quality Division, September 2005)

**Table 4: Typical Soil Permeability**

Group Symbol	Coefficient of Permeability, K (cm/s)	Group Symbol	Coefficient of Permeability, K (cm/s)
GW	$2.5 \times 10^{-2}$	SC	$>2.5 \times 10^{-7}$
GP	$5 \times 10^{-2}$	ML	$>5 \times 10^{-6}$
GM	$>5 \times 10^{-7}$	ML-CL	$>2.5 \times 10^{-7}$
GC	$>5 \times 10^{-8}$	CL	$>5 \times 10^{-8}$
SW	$>5 \times 10^{-4}$	OL	---
SP	$>5 \times 10^{-4}$	MH	$>2.5 \times 10^{-7}$
SM	$>2.5 \times 10^{-5}$	CH	$>5 \times 10^{-8}$
SM-SC	$>10^{-6}$	OH	---

(Michael R. Lindeburg, 2011)

## Notes

The recommendations contained in this report are based upon EHM Engineers, Inc. understanding of the proposed development of the site and its evaluation of the conditions observed in the test holes. Soils conditions may vary between test holes. Variations will not appear until construction, and may require changes in the design and construction of the proposed improvements and/or developments. If any variations or undesirable conditions are encountered during construction, or if the proposed construction differs from conventional practices, a soils engineer should be notified to describe necessary supplemental recommendations. Undesirable conditions include construction debris, buried waste, fill material and any soil condition or geology deviating from exploratory tests holes as described in this report, should be called to the attention of a licensed engineer.

All and any fill placed onsite of different origin must be evaluated by a soils engineer. Fills placed without compaction records, or fills containing construction debris, demolition wastes, organic materials, etc. must be over-excavated and replaced with a properly compacted structural fill. Potentially hazardous material within a discovered fill is beyond the scope of this report.

This report is issued with the understanding that it is the responsibility of the owner or the representatives of the owner to ensure that the information and recommendations contained herein are called to the attention of all project Architects and Engineers, incorporated into the plans, and that the necessary steps are taken to assure that all Contractors and Sub-Contractors carry out such recommendations in the field.

This report has been prepared in accordance with generally accepted soils and foundation practices. No other warranty either expressed or implied as to professional advice provided under the terms of this agreement and included in this report is made.

Soils in the test holes are in a loose condition and are prone to settlement. All test holes should be re-excavated and backfilled with structural fill and properly compacted.

## Works Cited

- Geotechdata.info. (2011, April 29). *Angle of Friction*. Retrieved December 8, 2015, from <http://geotechdata.info/parameter/angle-of-friction>
- Idaho Geological Survey. (2021). *Idaho Geological Survey – Interactive Map*. Retrieved July 14, 2021, from <https://www.idahogeology.org/webmap/>
- IDEQ, Water Quality Division. (September 2005). *Catolog of Stormwater Best Management Practices for Idaho Cities and Counties*. Boise, ID: Idaho Department of Environmental Quality.
- International Code Council, Inc. (2018). *2018 International Building Code*. Country Club Hills, IL: International Code Council, Inc.
- Michael R. Lindeburg, P. (2011). *Civil Engineering Reference Manual for the PE Exam, Twelfth Edition*. Belmont, CA: Professional Publications, Inc.
- National Resource Conservation Service. (n.d.). *NRCS Web Soil Survey*. Retrieved July 15, 2021 from <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>
- Yun Zhou, P. P. (2006, December). *Soil Mechanics: Description and Classification*. Retrieved July 21, 2021, from <https://www.cedengineering.com/userfiles/Soil%20Mechanics%20-%20Description%20&%20Classification.pdf>



## Appendix A      Exploratory Test Pit Logs

### LOG OF BORING NO. 1

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map






TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		9	TOP SOIL
4'		11 10	TOP SOIL
5'		8	
6.5'		12 31	TOP SOIL
7'			
7'-			ROCK

### LOG OF BORING NO. 2

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map


TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2'		50 (2")	TOP SOIL
2'-			ROCK

### LOG OF BORING NO. 3

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		10	TOP SOIL
4'		11 15	TOP SOIL
5'		13	
5.5'		50 (4")	
5.5'-			ROCK

### LOG OF BORING NO. 4

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		5	TOP SOIL
4'		5 8	TOP SOIL
5'		12	
6.5'		12 9	TOP SOIL
8'			
8'-			ROCK



### LOG OF BORING NO. 5

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		12	TOP SOIL
4'		10 8	TOP SOIL
5'		15	
6.5'		38 18	TOP SOIL
6.5'-			ROCK

### LOG OF BORING NO. 6

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map

TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2'	[Patterned Box]		TOP SOIL
2'-			ROCK

### LOG OF BORING NO. 7

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		6	TOP SOIL
4'		9 10	TOP SOIL
5'		5	
6.5'		7 10	TOP SOIL
6.5'-			ROCK

### LOG OF BORING NO. 8

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		3	TOP SOIL
4'		4 4	TOP SOIL
5'		11	
5.5'		50 (5")	TOP SOIL
5.5' -			ROCK

### LOG OF BORING NO. 9

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		6	TOP SOIL
4'		4 5	TOP SOIL
5'		9	
6'		9 50 (3")	TOP SOIL
6'-			ROCK

### LOG OF BORING NO. 10

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		8	TOP SOIL
4'		3 2	TOP SOIL
5'		4	
6'		5 50 (5")	TOP SOIL
6'-			ROCK



### LOG OF BORING NO. 11

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		3	TOP SOIL
4'		6 5	TOP SOIL
5'		9	
6.5'		22 36	TOP SOIL
7.5'			
7.5'-			ROCK

### LOG OF BORING NO. 12

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map



TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		4	TOP SOIL
4'		7 50 (4")	TOP SOIL
4'-			ROCK



### LOG OF BORING NO. 13

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		4	TOP SOIL
4'		6 12	TOP SOIL
5'		3	
6.5'		5 6	TOP SOIL
10'		50 (1")	
10'-			ROCK

### LOG OF BORING NO. 14

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		6	TOP SOIL
4'		8 15	TOP SOIL
5'		11	
6.5'		17 24	TOP SOIL
6.5'-			ROCK

### LOG OF BORING NO. 16

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map






TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		7	TOP SOIL
4'		7 7	TOP SOIL
5'		4	
6.5'		5 6	TOP SOIL
10'		26	
11.5'		50 44	TOP SOIL
		9	
16'		15 50 (4")	TOP SOIL
16'-			ROCK

### LOG OF BORING NO. 18

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map





TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		3	TOP SOIL
4'		7 11	TOP SOIL
5'		10	
6.5'		9 11	TOP SOIL
10'		6	
11.5'		11 15	TOP SOIL
14'			
14'-			ROCK

### LOG OF BORING NO. 1

PROJECT: JEROME SCHOOL DISTRICT - GEOTECH

JOB NO: 326-21

LOCATION: See Attached Map




TYPE: Hollow Stem Auger

DATE: 7/9/2021

WATER ENCOUNTERED:  YES  NO

DEPTH: N/A

LOGGED BY: M. Ahrens

DEPTH (ft.)	SYMBOL	STANDARD PENETRATION (blows/6")	STRATUM DESCRIPTION
2.5'		5	TOP SOIL
4'		9 12	TOP SOIL
5'		11	
6'		17 50 (2")	TOP SOIL
6'-			ROCK
14'-			ROCK






































## **Appendix B      USGS Soil Classification**







### MAP LEGEND

-  Area of Interest (AOI)
-  Area of Interest (AOI)
-  Soils
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
-  Special Point Features
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Special Line Features
-  Water Features
-  Streams and Canals
-  Transportation
-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads
-  Background
-  Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale. Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Jerome County and Part of Twin Falls County, Idaho  
Survey Area Data: Version 14, Jun 4, 2020  
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.  
Date(s) aerial images were photographed: Aug 14, 2012—Nov 8, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
122	Shano silt loam, 1 to 4 percent slopes	41.5	100.0%
<b>Totals for Area of Interest</b>		<b>41.5</b>	<b>100.0%</b>

## Appendix C      Lateral Earth Pressure Calculations

## Lateral Earth Pressures - ML Soil

Job Name: Jerome School District  
By: Matt Ahrens

Job Number: 326-21  
Date: 7/20/2021

$$\sigma_v = 105 \text{ pcf}$$
$$\varphi = 33^\circ \text{ (Assumed)}$$

$$K_o = 1 - \sin \varphi = 0.46$$

At Rest:

$$\sigma_H = \sigma_v \times K_o$$

$$\sigma_H = 47.8 \text{ pcf/ft}$$

Active:

$$\sigma_H = \sigma_v \times \tan^2 \left( 45 - \frac{\varphi}{2} \right)$$

$$P_a = 31.0 \text{ pcf/ft}$$

Passive:

$$\sigma_H = \sigma_v \times \tan^2 \left( 45 + \frac{\varphi}{2} \right)$$

$$P_p = 356 \text{ pcf/ft}$$

## **Appendix D      Field Notes & Geologic Information**

**SIEVE ANALYSIS**  
ASTM C136 & C117  
**SOIL CLASSIFICATION**  
ASTM D2487

**Project:** Jerome School District

**Sample Locations:** TH 4,6 -5'

Sample	Total Wt
Sample/Tare	614.1
Tare /Ratio	0
Sample Wt.	614.1

**Date Sampled:** 04-16-20      **EHM Job #** 434-19

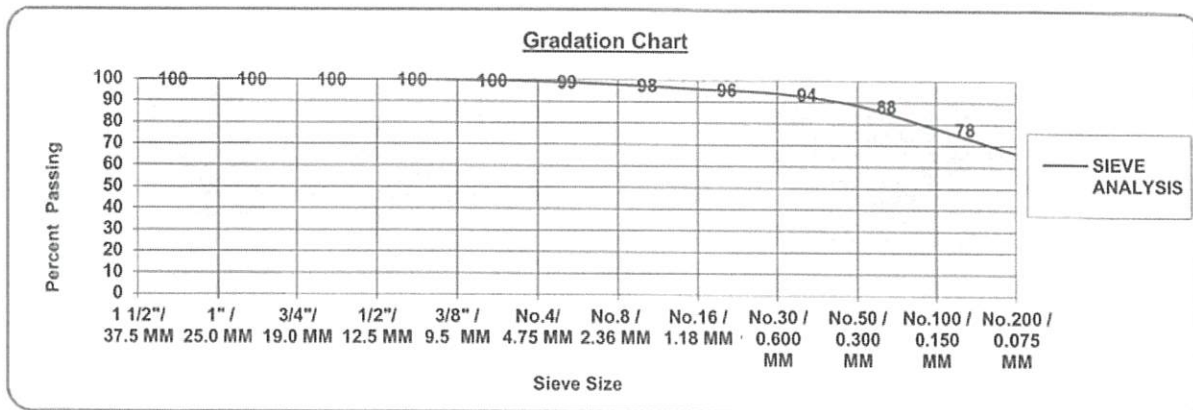
**Sampled By:** EHM      **Tested By:** B. Kruger

**Sieve Analysis**

ASTM C136 -C117	Accum. Wt.	% Retained	% Passing
1 1/2" / 37.5 MM	0.0	0.0	100
1" / 25.0 MM	0.0	0.0	100
3/4" / 19.0 MM	0.0	0.0	100
1/2" / 12.5 MM	0.0	0.0	100
3/8" / 9.5 MM	2.0	0.3	100
No.4/ 4.75 MM	5.3	0.9	99
No.8 / 2.36 MM	14.1	2.3	98
No.16 / 1.18 MM	26.2	4.3	96
No.30 / 0.600 MM	38.5	6.3	94
No.50 / 0.300 MM	71.4	11.6	88
No.100 / 0.150 MM	136.7	22.3	78
No.200 / 0.075 MM	206.9	33.7	66

**Atterburg Limits**  
ASTM D4318

Liquid Limit: NP
Plastic Limit: NP
Plasticity Index: NP



**Classification (UCS)**

ASTM D2487 Group Name:

**Sandy SILT**

Group Symbol:

**ML**

Reviewed By: \_\_\_\_\_

W.J. Nenno C.E.T.

**SIEVE ANALYSIS**  
ASTM C136 & C117  
**SOIL CLASSIFICATION**  
ASTM D2487

Project: Jerome School District

Sample Locations: TH 2,4,6,8 -2.5' TH 1,11,15,16 -5'

Sample	Total Wt
Sample/Tare	684.4
Tare /Ratio	0
Sample Wt.	684.4

Date Sampled: 04-16-20 EHM Job # 434-19

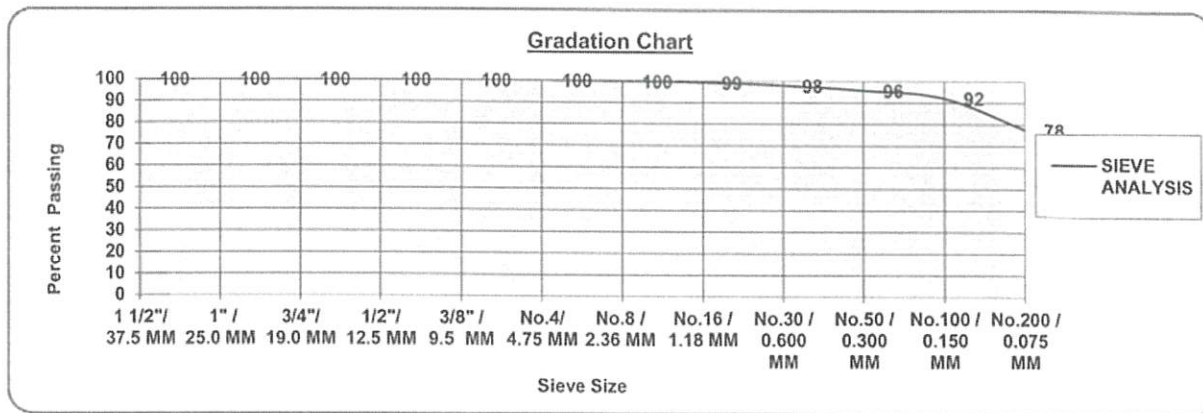
Sampled By: EHM Tested By: B. Kruger

**Sieve Analysis**

ASTM C136 -C117	Accum. Wt.	% Retained	% Passing
1 1/2" / 37.5 MM	0.0	0.0	100
1" / 25.0 MM	0.0	0.0	100
3/4" / 19.0 MM	0.0	0.0	100
1/2" / 12.5 MM	0.0	0.0	100
3/8" / 9.5 MM	0.0	0.0	100
No.4/ 4.75 MM	0.0	0.0	100
No.8 / 2.36 MM	2.5	0.4	100
No.16 / 1.18 MM	5.6	0.8	99
No.30 / 0.600 MM	14.5	2.1	98
No.50 / 0.300 MM	29.9	4.4	96
No.100 / 0.150 MM	54.3	7.9	92
No.200 / 0.075 MM	152.9	22.3	78

**Atterburg Limits**  
ASTM D4318

Liquid Limit: NP
Plastic Limit: NP
Plasticity Index: NP



**Classification (UCS)**

ASTM D2487 Group Name:

**SILT with Sand**

Group Symbol:

**ML**

Reviewed By: \_\_\_\_\_

W.J. Nenno C.E.T.