Phelan Piñon Hills CSD
Proposed Park Site
South of Phelan Road and East of
Sheep Creek Road
Phelan, California

Geotechnical Investigation Report

Prepared For: Phelan Piñon Hills CSD
Prepared By: Merrell Johnson

April 29, 2022

George Cardenas
PPHCSD Engineering Manager
4176 Warbler Road
PO BOX 294049
Phelan, CA 92329

Re: Geotechnical Investigation
Phelan Piñon Hills CSD
Proposed Park Site
South of Phelan Road and East of Sheep Creek Road
Phelan, California

George Cardenas:

In accordance with your request and authorization, we performed a geotechnical investigation for a portion of the park site proposed by Phelan Piñon Hills CSD. The site is located south of Phelan Road and east of Sheep Creek Road in Phelan, California. The investigation was planned and performed using the plan prepared by Steeno Design Studios dated Dec. 2021, discussions with Phelan Piñon Hills CSD, and a site reconnaissance.

If you have any questions or need additional information, please do not hesitate to contact our firm.

Sincerely,
Merrell Johnson Companies

REGISTERED PROFESSIONAL ENGINEER
JAMES J. STONE
GE808
Exp. 12/31/2023
GEOTECHNICAL
STATE OF CALIFORNIA

James J. Stone, Geotechnical Engineer
RGE 808 Exp. 12/31/2023

Table of Contents

Attachments

Introduction

This report presents the results of the geotechnical investigation Merrell Johnson (MJ) performed for a portion of the park site proposed by Phelan Piñon Hills CSD. The site is located south of Phelan Road and east of Sheep Creek Road in Phelan, California. The investigation was planned and performed using the plan prepared by Steeno Design Studios dated Dec. 2021, discussions with Phelan Piñon Hills CSD, and a site reconnaissance. The location of the proposed development is shown on Figure 1 in Appendix A.

The scope of the Geotechnical Investigation is limited to Phase 3 (14.22-acres). Phase 4 is not a part; except that a separate infiltration test report has been prepared for the proposed infiltration basins. The field exploration program was planned when there was an aquatic center and an equestrian center with covered bleachers proposed within the Phase 4 area. These structures have now been eliminated from the plan. That is why there are borings in the Phase 4 area. Only the restroom building in Phase 3 is proposed at this time.

Two percolation test borings were drilled next to the restroom building; however, no laboratory testing was performed in these borings.

Scope of Services

The scope of work for this project consisted of field exploration, laboratory testing, engineering analyses, and preparation of this report. The results of the field exploration and laboratory test programs were analyzed to develop conclusions and recommendations regarding:

- Subsurface conditions underlying the site
- Site preparation and grading
- Excavation conditions
- Foundation support for the new structure along with preliminary geotechnical engineering criteria for foundation design
- Support for slab-on-grade floors
- Flexible pavement structural sections
- Corrosivity of site soils with respect to reinforced concrete and ferrous metals.

Field Exploration and Laboratory Testing

Field Exploration

Subsurface conditions were explored by drilling 5 test borings 15 feet deep at the locations shown on Figure 2 in Appendix A. The borings were logged by an MJ representative, who also collected samples of the materials encountered for examination and laboratory testing.

Bulk samples were collected from drill cuttings. Relatively undisturbed samples were obtained by driving a 2.5-inch inside diameter modified California sampler with a 140-pound hammer falling 30 inches in accordance with American Society for Testing and Materials (ASTM) Standard D3550. Blow counts required to drive the sampler each 6 inches of an 18-inch (or less) drive are noted on the boring logs as “N” value.

Standard Penetration Tests (SPTs) were performed at selected depths by driving a 1.4-inch inside diameter sampler 18 inches with a 140-pound hammer falling 30 inches in accordance with ASTM D1586. The blow counts required to drive the sampler each 6 inches of the drive are noted on the boring logs as “N” value. Disturbed samples were collected from the SPT sampler at the time of driving.

The logs of the test borings are in Appendix B. Soils are described according to the Unified Soil Classification System explained in Appendix B.

Laboratory Testing

The laboratory program included the following tests:

- In-place moisture content and dry density
- Grain size analysis
- R- (Resistance) Value.

The results of the laboratory tests are summarized in Appendix C.

Site and Subsurface Conditions

Site Conditions

The surface of the site is vacant with some scattered desert vegetation. The ground slopes gently downward from south to north, with a fall of about 20 feet from the southern boundary to Phelan Road.

Subsurface Conditions

The site is underlain primarily by medium dense silty sand and poorly graded sand. No groundwater was encountered in the test borings drilled for this investigation. United States Geological Survey data indicate that the groundwater level is expected to be on the order of several hundred feet deep.

Site Class, Site Coefficient and Seismic Design Category

The soils underlying the site are classified as Site Class D-Default according to the California Building Code (CBC) due to the lack of site-specific subsurface information to a depth of 100 feet. The Design Acceleration Parameters were determined according to Chapter 11 of ASCE 7-16 and are provided in the table below.

California Building Code – Seismic Parameters

MCE_R ground motion. (for 0.2 second period)	S_S = 1.531
MCE_R ground motion. (for 1.0s period)	S_1 = 0.628
Site-modified spectral acceleration value	S_{MS} = 1.837
Site-modified spectral acceleration value	S_{M1} = null
Numeric seismic design value at 0.2 second SA	S_{DS} = 1.225
Numeric seismic design value at 1.0 second SA	S_{D1} = null
Site amplification factor at 0.2 second	F_a = 1.2
Site amplification factor at 1.0 second	F_v = null
MCE_G peak ground acceleration	PGA = 0.671
Site amplification factor at PGA	F_{PGA} = 1.2
Site-modified peak ground acceleration	PGA_M = 0.805

Conclusions and Recommendations

Conclusions

The existing surface soils in some areas of the site have been disturbed by traffic and weather. Below a depth of about 1 foot, the on-site soils appear generally undisturbed. No active or potentially active faults are shown to cross the site on the Fault Activity Map of California published by the California Geological Survey. The granular soils are medium dense, and groundwater is deep below this site. The liquefaction potential consequently is very low. The potential for dynamically induced settlement of the granular soils is also very low. In addition,

the soils have a very low potential for expansion due to changes in moisture content. The potential for encountering groundwater within the anticipated relatively shallow excavations is minimal. There is a potential for minor amounts of water to enter open excavations as a result of direct rainfall and runoff.

Earthwork

Debris, vegetation, and other deleterious materials should be stripped and removed from the site prior to grading work. Organic materials should be disposed of off-site in accordance with the owner's instructions.

Areas to receive fill supporting new structures, slabs-on-grade, and pavements should be scarified to a depth of 12 inches, brought to within 2 percentage points above or below optimum moisture content, and compacted to a minimum of 90% relative compaction based on the ASTM D1557 laboratory test method. All references to optimum moisture content and relative compaction in this report are based on this test method.

Compacted Fill Material

Fill material should consist of clean soils containing no rocks or other particles with a maximum dimension larger than 6 inches. The on-site soils, less any oversize particles, debris, and organic matter, can be used as fill.

Imported soils should consist of predominantly granular material with an expansion index less than 20 when tested in accordance with ASTM D4829 and should have a minimum R-value of 40. Imported material should be inspected and approved by an MJ representative prior to being brought to the site.

Compacted Fill Placement

Fill that will support new structures, slabs-on-grade, and pavements should be placed in 8-inch-thick loose lifts, moisture conditioned to within 2 percentage points above or below optimum moisture content and compacted to a minimum of 90% relative compaction.

Foundation Support

Existing soils below new foundations, and extending at least 5 feet beyond perimeter foundation lines, should be excavated to a depth of 18 inches below planned foundation bottom grades. The exposed surface should be scarified to a depth of at least 6 inches, moisture conditioned

to within 2 percentage points above or below optimum moisture content and compacted to a minimum of 90% relative compaction. Excavated soils should be replaced and compacted as described above for compacted fill placement.

New structures can be supported on shallow spread footings with bottom levels at a minimum depth of 18 inches below the lowest adjacent finished grade. A minimum width of 18 inches is recommended for continuous footings. Isolated footings should be at least 24 inches wide. Footings can be designed for an allowable bearing pressure of 2000 pounds per square foot (psf) for dead plus long-term live loads. This value can be increased by ⅓ when considering the total of all loads, including wind or seismic forces.

Total post-construction settlement is estimated to be approximately ¾ inch. Post-construction differential settlements are anticipated to be ½ inch or less between isolated footings, and between the middle and end of a continuous footing.

Footing excavations should be observed by an MJ representative to check bearing materials and cleaning.

Lateral Loading

Resistance to lateral loads will be provided by passive earth pressure against the faces of footings and other structural elements below grade, and by friction along the bases of footings and slabs. Passive earth pressure can be taken as 350 pounds per square foot (psf) per foot of depth. Base friction can be taken as 0.35 times the actual dead load. Base friction and passive earth pressure can be combined without reduction. Retaining structures free to rotate at the top should be designed for an active equivalent fluid pressure of 35 psf per foot of height, plus any additional building or equipment surcharge. MJ should be notified if retaining walls greater than 10 feet in height, restrained walls, or tieback walls are planned so that geotechnical recommendations specific to wall conditions can be developed.

Slabs-on-Grade

Existing soils below new slabs-on-grade, and extending at least 5 feet beyond perimeter slab lines, should be excavated to a depth of 12 inches below planned slab bottom grades. The exposed surface should be scarified to a depth of at least 6 inches, moisture conditioned to within 2 percentage points above or below optimum moisture content and compacted to a minimum of 90% relative compaction. Excavated soils should be replaced and compacted as described above for compacted fill placement.

Slabs-on-grade should be underlain by a 4” thick blanket of clean, poorly graded, coarse sand or crushed rock. A moisture vapor retarder/barrier should be placed beneath slabs where floor coverings will be installed. Typically, plastic is used as a vapor retarder/barrier. If plastic is used, a minimum 10 mil is recommended. The plastic should comply with ASTM E 1745. Plastic installation should comply with ASTM E 1643.

Current construction practice typically includes placement of a 2-inch thick sand cushion between the bottom of the concrete slab and the moisture vapor retarder/barrier. This cushion can provide some protection to the vapor retarder/barrier during construction, and may assist in reducing the potential for edge curling in the slab during curing. However, the sand layer also provides a source of moisture vapor to the underside of the slab that can increase the time required to reduce moisture vapor emissions to limits acceptable for the type of floor covering placed on top of the slab. The floor-covering manufacturer should be contacted to determine the volume of moisture vapor allowable and any treatment needed to reduce moisture vapor emissions to acceptable limits for the particular type of floor covering to be installed.

Reinforcing for slabs-on-grade should consist of at least #3 bars at 12 inches on-center each way placed at mid-height in the slab. Reinforcing should extend down into the footings.

Surface Drainage

It is important that water be kept a minimum of 5 feet from structures and slabs. No ponding adjacent to buildings and structures should be allowed. Final surfaces should have a positive 2 percent minimum slope away from structures.

Retaining walls should be designed to resist hydrostatic pressures or be provided with a backdrain, weep holes or other drainage facilities. If a basement or underground structure is constructed, a subsurface drainage system is recommended.

Utility Excavations

Excavations should be made in accordance with California Administrative Code, Title 8, Industrial Relations, Chapter 4, Division of Industrial Safety, Subchapter 4, Construction Safety Orders, Article 6. Temporary excavations should be shored or sloped in accordance with Cal OSHA requirements. On-site soils can be considered Type C for purposes of excavation design.

In general, temporary excavations in on-site soils should be sloped no steeper than 1.5:1 for excavations up to 20 feet in depth. Compound excavations with vertical sides in lower portions should be properly shielded to a minimum height of 18 inches above the top of the vertical side,

with the upper portion having a maximum slope of 1.5:1. A Registered Professional Engineer should design slopes or benching for excavations greater than 20 feet in depth.

Temporary excavation slopes should be inspected twice daily by the contractor's competent person before personnel are allowed to enter the excavation. If sloughing, raveling or other evidence for slope instability is noted, corrective measures should be implemented.

Temporary shoring will be required for those excavations where temporary cut slopes as described above are not feasible. Cantilever shoring, and shoring with 1 level of bracing, can be designed to resist an equivalent fluid pressure of 30 psf per foot of depth. For shoring with multiple levels of bracing, a uniform lateral pressure equal to 25H in psf, where H is the height of shoring in feet, should be used. The recommended soil pressure applies to level soil conditions behind the shoring. Where a combination of sloped embankment and shoring is used, the soil pressure will be greater and should be evaluated for actual conditions.

Flexible Pavement Structural Sections

Existing soils below new flexible pavement structural sections and extending at least 5 feet beyond perimeter pavement lines except where constrained by property lines or existing improvements, should be excavated to a depth of 12 inches below planned the bottom of the pavement structural section. The exposed surface should be scarified to a depth of at least 6 inches, moisture conditioned to within 2 percentage points above or below optimum moisture content and compacted to a minimum of 95% relative compaction. Excavated soils should be replaced and compacted as described above for compacted fill placement.

Parking areas supporting automobiles and light trucks can be designed using a Traffic Index (TI) of 5. Main access roads and areas where occasional heavy trucks will pass can be designed for a TI of 7. The pavement support characteristics of on-site soils were evaluated by laboratory test. An R-value of 69 was measured in the test, indicating good pavement support characteristics.

Preliminary flexible pavement structural sections are summarized in the following table.

Traffic Index	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
5 (Parking Areas)	2	4
7 (Driveways and Aisles)	2-½	4

It is recommended that areas in front of trash containers where refuse trucks will make frequent stopping, backing, and turning movements be paved with portland cement concrete (PCCP). The PCCP should be at least 6 inches thick and underlain by at least 6 inches of Class 2 aggregate base or equivalent.

Limitations

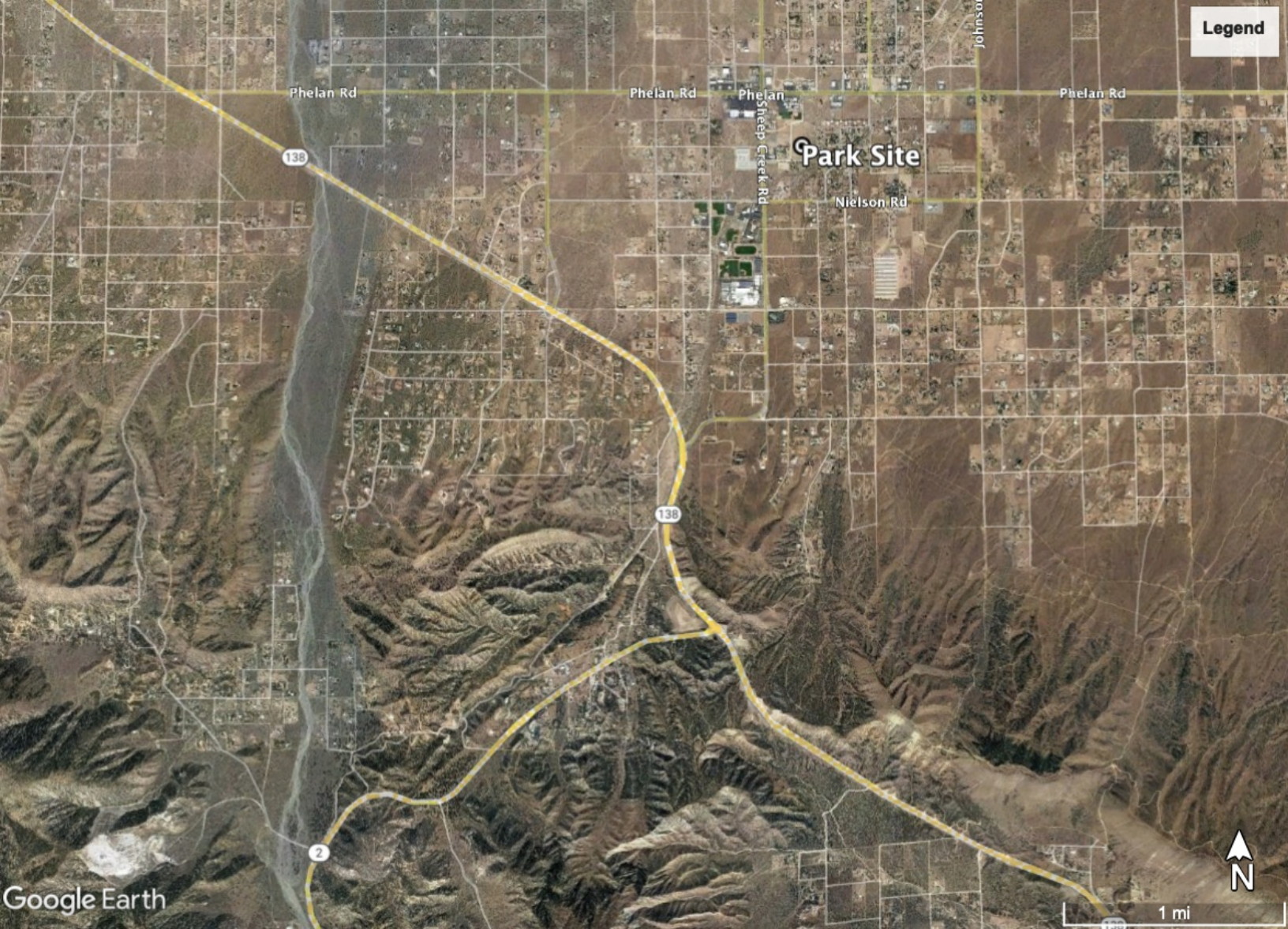
The recommendations in this report are based on results of the field exploration and laboratory test programs, combined with interpolation and extrapolation of subsurface conditions between and beyond boring locations. The nature and extent of variations in these conditions may not become evident until construction. If variations are encountered during construction, MJ should be notified so these variations can be reviewed and the recommendations in this report modified if necessary. If changes in the nature, design or location of the structures are planned, these changes should be reviewed by MJ so that modifications to the recommendations in this report can be made if needed.

Our professional services have been performed using the degree of care and skill ordinarily exercised under similar circumstances by reputable engineering consultants practicing in this or similar localities. No other warranty, express or implied, is made as to the professional advice or data included in this report. This report has not been prepared for use by other parties, and may not contain sufficient information for purposes of other parties or other uses.

Appendix A

Figure 1 – Site Vicinity Map

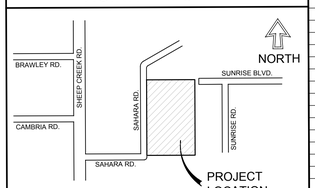
Figure 2 – Plot Plan


Legend
Phelan Rd
Phelan Rd
Phelan
Phelan Rd
Sheep Creek Rd
Park Site
Nielson Rd
138
138
2
Google Earth
N
1 mi


Legend
Phelan
Phelan Rd
Sheep Creek Rd
Park Site
Sierra Vista Rd
Valle Vista Rd
Highland Rd
N
900 ft
Google Earth

PROPOSED DEVELOPMENT FOR:
PHELAN PINION HILLS COMMUNITY SERVICES DISTRICT

VICINITY MAP



KEYED NOTES

#	DESCRIPTION	SYMBOL
1	VAN ACCESSIBLE PARKING SPACE W/ ACCESSIBILITY STALL EMBLEM PAINTED AS SHOWN	
2	DISABLED ACCESSIBLE PARKING ONLY SIGN.	
3	48" WIDE ACCESSIBILITY ACCESS W/ BLUE STRIPES	
4	LANDSCAPED AREA	
5	TRUNCATED DOMES 36" DEEP X WIDTH OF RAMP OR LANDING	
6	6" WIDE CONCRETE CURB.	
7	6" WIDE CONCRETE CURB. W/ 2' PARKING NOSE OVER	
8	ACCESSIBLE RAMP NOT TO EXCEED 8% SL. IN DIRECTION OF RUN & 2% MAX CROSS SL.	
9	WARNING SIGNAGE REGARDING UNAUTHORIZED USE OF DISABLED PARKING SPACES	
10	STRIPED LOADING ZONE	
11	TRAFFIC FLOW DIRECTIONAL ARROWS PAINTED ON PAVING AS SHOWN ON PLAN	
12	DOUBLE STRIPED PAINTED PARKING STALL STRIPE	
13	4" NOMINAL THICK CONCRETE WALKWAY W/ 5% MAX. SLOPE & 2% CROSS SLOPE	
14	PROPOSED CONC. SIDEWALK	
15	PROPOSED CONCRETE OR A.C. PAVING PER GEO-TECH REPORT	
16	20' HIGH SITE LIGHT STANDARD	
17	PROPOSED MONUMENT SIGN,4' HIGH & 36SQ.FT., MAX UNDER SEPARATE PERMIT	
18	TERRACE SEATING W/ RETAINING WALL, HEIGHT VARIES. SEE GRADING PLANS	
19	CONC. WHEEL STOP AT A.D.A. PARKING SPACE	
20	6 FT. WIDE BIKE TRAILS	
21	EXISTING JOSHUA TREE TO REMAIN	
22	EXISTING JOSHUA TREE TO BE REMOVED (DASHED CIRCLE)	
23	EXISTING FENCE TO REMAIN	
24	PROPOSED 5' HIGH CHAINLINK FENCE	
25	OVERLOOK AREA AND GARDENS	
26	LINE OF PROJECT PHASING	
27	CONCESSION STAND W/ PICNIC TABLES	
28	CONCRETE GUTTER OR SWALE, SEE GRADING PLAN	
29	DECORATIVE CANOPY	
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		

PROJECT DATA

ZONE: PER COUNTY MAP FH04A (PH/CG) GENERAL COMMERCIAL

OVERLAYS: FLOOD PLAIN 1 (FP1) / FIRE SAFETY 2 (FS2)

OCCUPANCY: (A-5) ASSEMBLY & (S) STORAGE

CONSTRUCTION TYPE: V-B

STORIES: 1-STORY

FIRE SPRINKLERS: YES

A.P.N. 3066-261-08 & 10/ 3066-251-14

PTN. N.W. 1/4, SEC. 24 T.4N., R.7W. SITE ADDRESS: NW CNR. OF SAHARA RD. AND WARBLER RD. PHELAN,CA 92329

ZONING SETBACKS:

F.E.M.A. FLOOD ZONE

APPLICANT/OWNER:
PHELAN/PINON HILLS C.S.D.
PO BOX 294049
4176 WARBLER RD.
PHELAN, CA 92329-4049
PH:760-868-1212 FAX:760-868-2323

ARCHITECT/REPRESENTATIVE:
STEENO DESIGN STUDIO, INC.
ARCHITECT: TOM STEENO
11774 HESPERIA ROAD, SUITE B-1
PH: 760-244-5001 FAX: 760-244-1948

SITE INFORMATION:

A.P.N. 3066-251-14 GROSS AREA (10.05 AC.)	=	437,963 SQ. FT.	70.4%
A.P.N. 3066-261-08 GROSS AREA (4.22 AC.)	=	183,823 SQ. FT.	29.6%
GROSS AREA TOTAL (14.27 AC.)	=	621,786 SQ. FT.	100%

PROPOSED:

AREA		SQ. FT.	100%
FUTURE PUMP TRACK	=	29,890 SQ. FT.	4.8%
SKATE PARK AREA	=	10,171 SQ. FT.	1.6%
RESTROOMS	=	860 SQ. FT.	0.1%
MULTI-PURPOSE FIELD	=	39,600 SQ. FT.	6.4%
MULTI-PURPOSE/ SOFTBALL FIELD	=	39,600 SQ. FT.	6.4%
LANDSCAPED AREA (INCLUDES MULTI-PURPOSE FIELD EVENT LAWN AREA)	=	298,714 SQ. FT.	48.0%
PROP. PAVING & CONC. (TOTAL)	=	182,076 SQ. FT.	29.3%
RETENTION AREA	=	20,875 SQ. FT.	3.4%

PARKING INFORMATION: SYMBOL INDICATING QTY OF STALLS:

REQUIRED PARKING STALLS:

PHASE 3:
MULTI-PURPOSE FIELD - 39,600 SQ. FT.
705 SQ. FT. OF SEATING AREA @ 1/25 SQ. FT. = 28 SPACES
TENNIS COURT - 2,808 SQ. FT.
3 PER COURT = 3 SPACES

PHASE 4:
MULTI-PURPOSE/ SOFTBALL FIELD - 39,600 SQ. FT.
412 SQ. FT. OF SEATING AREA @ 1/25 SQ. FT. = 17 SPACES
FUTURE PUMP TRACK & SKATE PARK - 40,061 SQ. FT. @ 1/1,000 SQ. FT. = 40 SPACES

TOTAL REQUIRED PARKING STALLS (9'x19') = 88 SPACES

PROPOSED PARKING STALLS @ MIN. 9'x19' = 155 SPACES
PROPOSED "ACCESSIBLE" PARKING STALL @ 9'x19' W/ 8' UNLOADING ZONE = 8 SPACES

TOTAL PROVIDED PARKING STALLS = 163 SPACES

E.V. PARKING STALLS REQUIREMENTS = 10% OF TOTAL SPACES

PHASE I & II PROVIDED PARKING SPACES = 165 SPACES
PHASE III & IV PROVIDED PARKING SPACES = 163 SPACES
TOTAL PARKING SPACES = 328 SPACES

REQUIRED E.V. PARKING SPACES = 33 SPACES
PROVIDED 9'X19' E.V. PARKING SPACES = 33 SPACES

E.V. CHARGING STATIONS REQUIREMENTS = 6% OF TOTAL SPACES

REQUIRED E.V. CHARGING STATIONS = 20
PROVIDED 9'X19' E.V. DUAL CHARGING STATIONS = 10 X 2

SCOPE OF WORK

TO DEVELOP AN APPROX. 14.27 ACRES OF VACANT PARCEL INTO A COMMUNITY PARK. PROPOSED PARK WILL CONSIST OF A MULTI-USE FIELD, INFORMAL MULTI-PURPOSE EVENT AREA, A PUMP TRACK/ SKATE PARK AREA, TENNIS COURT, COMMUNITY GARDEN, RESTROOMS, SPLASH PAD, EVENT PLAZA W/ STAGE, CHILDREN'S TOT-LOT AND PLAYGROUND, PICNIC AREA AND BIKE TRAILS. THE REMAINDER OF THE PARK WOULD CONSIST XEROSCAPED DROUGHT RESISTANT, AND LOW MAINTENANCE LANDSCAPING.

UTILITIES

ELECTRIC:
SOUTHERN CALIFORNIA EDISON CO.
12353 HESPERIA RD.VICTORVILLE CA. 92392
(760) 951-3237

DISPOSAL
CR & R
PHELAN, CA 92371
PH: (760) 868-6353

WATER:
PHELAN PINON HILLS CSD
4176 WARBLER RD. PHELAN, CA 92371
PH:760-868-3755

TELEPHONE:
VERIZON
15168 LA PAZ ROAD VICTORVILLE, CA. 92392
(800) 772-5153

GAS
PROPANE (LP) SERVICE PROVIDER TO BE SPECIFIED

SEWER:
PRIVATE ON SITE SYSTEM

NORTH
SCALE = 1:40
0 20 40 80 120

EXISTING

ADJACENT PROPERTY
A.P.N 3066-251-08
ZONE: PH/CG VACANT

PHASE 1
PHASE I
CIVIC CENTER BLDG
14,034 SQ.FT.
1/250 = 56 SPACES REQD.

CIVIC CENTER
A.P.N 3066-261-10
8.14 ACRES
NOT A PART

PHASE 2
PHASE II
MULTI-PURPOSE
COMMUNITY SERVICE BLDG
17,284 S.F.
45 SPACES REQD.

EVENT PLAZA
W/ STAGE

SPLASH PAD
1,200 SQ. FT.

PROPOSED PARK
A.P.N 3066-251-14
10 ACRES

INFORMAL
MULTI-PURPOSE
FIELD/ EVENT LAWN
AREA

PHASE 3

REST
ROOMS

Percolation Test Boring P-2

Seepage Pit , typ.

Percolation Test Boring P-1
3,600-gal. Septic Tank
Distribution Box

Exploratory Boring, Typical

E-1
E-2
E-3
E-4
E-5

FUTURE PUMP-TRACK
29,890 SQ. FT.

SKATE PARK AREA
10,171 SQ. FT.

TOT LOT

PLAYGROUND
5-12 Y/O

DOG PARK

RETENTION AREA

LOT. 11
TRACT NO 8044
M.B. 204/89
VACANT

LOT. 12
TRACT NO 8044
M.B. 204/89
EX. RESIDENCE

LOT. 13
TRACT NO 8044
M.B. 204/89
EX. RESIDENCE

LOT. 14
TRACT NO 8044
M.B. 204/89
EX. RESIDENCE

LOT. 15
TRACT NO 8044
M.B. 204/89
EX. RESIDENCE

LOT. 16
TRACT NO 8044
M.B. 204/89
EX. RESIDENCE

LOT. 17
TRACT NO 8044
M.B. 204/89
EX. RESIDENCE

LOT. 18
TRACT NO 8044
M.B. 204/89
EX. RESIDENCE

PHASE 4

LOT LINE TO BE MERGED

SHARED
MULTI-PURPOSE/
SOFTBALL FIELD
39,600 SQ. FT.

MULTI-PURPOSE FIELD
39,600 SQ. FT.

PROPOSED PARK
A.P.N 3066-261-08
4.22 ACRES

PARCEL NO. 4
PARCEL MAP NO. 4063
P.M.B. 40/80
EXISTING RESIDENCE

NATIVE GARDEN
& FOUNTAINS

NEW DEVELOPMENT
COMMUNITY GARDEN

NEW DEVELOPMENT
PROP. TENNIS COURT

EXISTING DEVELOPMENT
A.P.N 3066-261-10

EX. BLDG.
NOT A PART

ADJACENT PROPERTY
A.P.N 3066-261-07
DEVELOPMENT
NOT A PART

EXISTING BUILDING
COMMUNITY CENTER
4,588 SQ.FT.
NOT A PART

OPEN SPACE (LANDSCAPED)

SHEEP CREEK ROAD

WARBLER ROAD

LOT. 5 TRACT 10838
M.B. 157/73
VACANT

LOT. 2 TRACT 10838
M.B. 157/73
VACANT

SITE PLAN
SCALE = 1:40

STEENO DESIGN STUDIO INC
ARCHITECTURE ◆ DESIGN ◆ PLANNING
11774 HESPERIA ROAD, SUITE B-1 ◆ HESPERIA, CA 92345
PHONE(760) 244-5001 ◆ FAX(760) 244-1948
www.steenodesign.com

DATE FINISHED
JAN 2022

REVISIONS

THESE PLANS SHALL COMPLY WITH THE 2019 CALIFORNIA BUILDING CODE WHICH ADOPTS THE 2018 IBC, 2018 IRC, 2018 IMC, 2018 UPC, 2018 CEC AND THE 2019 ENERGY STANDARDS.

LICENSED ARCHITECT
THOMAS R. STEENO
No. 26448
REN. 2/29/24
STATE OF CALIFORNIA

PROJECT: **PARKS & RECREATION**

PHELAN / PINION HILLS C.S.D.

SITE ADDRESS:
A.P.N. 3066-251-14 / 3066-261-08 & 10
SAHARA RD. & WARBLER RD.
PHELAN, CA 92329

CONTACT:
DON MARTZ

JOB NO.
C20-L29

SHEET NAME:
SITE PLAN

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Appendix B

Test Boring Logs

Exploratory Log

ASTM D5434, D1452, D1586, D1587, D2488 (USCS), D3550

Project Number:	3499.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Report Date:	03/15/22
Sheet:	1 of 1
Appendix:	B
Permit No:	
Client Project No:	
USA Ticket No:	A220690485
DSA File No:	
DSA Application No:	
DSA LEA No:	

Location No:	E-1	**Start Date/Time:**	03.15.22/0810	**End Date/Time:**	03.15.22/0835

Conducted By:	CDL	**Excavation Type:**	Auger Hole	**Elevation:**	4150
Operator:		**Dimensions:**	10" X15'	**Groundwater:**	None
Equipment Type:	CME-75-HSA	**Advance Assist:**	None	**Recent Weather:**	Clear
Drive Weight (lb)**:**	140	**Field Tests:**	D3550	**Sampler Insertion:**	Driven
Drive Drop (in)**:**	30	**Shoring Type:**	None	**Preservation:**	D4220

Depth (ft)	'N' Value	Sample (1)	Moisture (%)	Density (pcf)	Class (USCS)	Graphic	Description / Comments	Lab Tests (2)
0	4,7,10		2.9	104.4	SP		Light brown fine to medium sand, medium dense, moist CDL03152201	TS
							Bulk Sample from 0-5', CDL03152204	R-value
5	6,13,22		1.1	107.6			CDL03152202	TS
10	8,18,22		2.5	108.7			CDL0315003	TS
					SM		Light brown silty sand, medium dense, moist	
15	10,15,15						SPT at 15'	
							Boring was terminated at 15' No Groundwater was encoutered	
20								
25								

Comments:

(1) =Bulk, =Driven

(2) **DS** =Direct Shear, **EI** =Expansion Index, **SA** =Sieve Analysis, **CR** =Corrosion, **MD** =Max Density, **RV** =R-Value, **AL** =Atterberg Limits, **SE** =Sand Equivalent, **CN** =Consolidation, **TD** =Tube Density

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Exploratory Log

ASTM D5434, D1452, D1586, D1587, D2488 (USCS), D3550

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Project Number:	3499.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Location No:	E-2	**Start Date/Time:**	03.15.22/1015	**End Date/Time:**	03.15.22/1040

Conducted By:	CDL	**Excavation Type:**	Auger Hole	**Elevation:**	4150
Operator:		**Dimensions:**	10" X15'	**Groundwater:**	None
Equipment Type:	CME-75-HSA	**Advance Assist:**	None	**Recent Weather:**	Clear
Drive Weight (lb):	140	**Field Tests:**	D3550	**Sampler Insertion:**	Driven
Drive Drop (in):	30	**Shoring Type:**	None	**Preservation:**	D4220

Depth (ft)	'N' Value	Sample (1)	Moisture (%)	Density (pcf)	Class (USCS)	Graphic	Description / Comments	Lab Tests (2)
0						0	Liight brown silty sand, medium dense, moist	
	4,7,14		4.9	107.5	SM		CDL03152207	TS
	9,14,15		2.2	108.7			CDL03152208	TS
							Bulk Sample from 0-5', CDL03152209	MD, COR, SA
5	11,13,16		1.5	116.4			CDL031522	TS
10	8,6,7						SPT at 10'	TS
15	5,5,5						SPT at 15'	
							Boring was terminated at 15'	
							No Groundwater was encoutered	
20								
25								

Comments:

(1) =Bulk, =Driven

(2) **DS** =Direct Shear, **EI** =Expansion Index, **SA** =Sieve Analysis, **CR** =Corrosion, **MD** =Max Density, **RV** =R-Value, **AL** =Atterberg Limits, **SE** =Sand Equivalent, **CN** =Consolidation, **TD** =Tube Density

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Exploratory Log

ASTM D5434, D1452, D1586, D1587, D2488 (USCS), D3550

Project Number:	3499.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

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Location No:	E-3	**Start Date/Time:**	03.15.22/1045	**End Date/Time:**	03.15.22/1110

Conducted By:	CDL	**Excavation Type:**	Auger Hole	**Elevation:**	4150
Operator:		**Dimensions:**	10" X15'	**Groundwater:**	None
Equipment Type:	CME-75-HSA	**Advance Assist:**	None	**Recent Weather:**	Clear
Drive Weight (lb)**:**	140	**Field Tests:**	D3550	**Sampler Insertion:**	Driven
Drive Drop (in)**:**	30	**Shoring Type:**	None	**Preservation:**	D4220

Depth (ft)	'N' Value	Sample (1)	Moisture (%)	Density (pcf)	Class (USCS)	Graphic	Description / Comments	Lab Tests (2)
0						0	Light brown silty sand, loose, moist	
	3,5,9		5.5	111.2	SM		CDL03152210	TS
	4,6,11		1.6	100.6			CDL03152211	TS
5	8,12,13		1.4	108.1			CDL03152212	TS
10	11,23,30		2.4	108.7			SPT at 10'	TS
							Bulk Sample from 0-5', CDL03152213	SA
15	11,14,19						SPT at 15'	
							Boring was terminated at 15'	
							No Groundwater was encoutered	
20								
25								

Comments:

(1) =Bulk, =Driven

(2) **DS** =Direct Shear, **EI** =Expansion Index, **SA** =Sieve Analysis, **CR** =Corrosion, **MD** =Max Density, **RV** =R-Value, **AL** =Atterberg Limits, **SE** =Sand Equivalent, **CN** =Consolidation, **TD** =Tube Density

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Exploratory Log

ASTM D5434, D1452, D1586, D1587, D2488 (USCS), D3550

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Project Number:	3499.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Location No:	E-4	**Start Date/Time:**	03.15.22/1115	**End Date/Time:**	03.15.22/1145

Conducted By:	CDL	**Excavation Type:**	Auger Hole	**Elevation:**	4150
Operator:		**Dimensions:**	10" X15'	**Groundwater:**	None
Equipment Type:	CME-75-HSA	**Advance Assist:**	None	**Recent Weather:**	Clear
Drive Weight (lb)**:**	140	**Field Tests:**	D3550	**Sampler Insertion:**	Driven
Drive Drop (in)**:**	30	**Shoring Type:**	None	**Preservation:**	D4220

Depth (ft)	'N' Value	Sample (1)	Moisture (%)	Density (pcf)	Class (USCS)	Graphic	Description / Comments	Lab Tests (2)
0						0	Light brown silty sand, medium dense, moist	
	5,17,22	■	2.4	108.7	SM		CDL03152214	TS
	11,13,14	■	0.8	106.0			CDL03152215	TS
5	8,11,15	■	2.6	90.4			CDL03152216	TS
10	3,4,6	■					SPT at 10'	TS
15	11,14,19	■					SPT at 15'	
							Boring was terminated at 15' No Groundwater was encoutered	
20								
25								

Comments:

(1) ▒ =Bulk ■ =Driven

(2) **DS** =Direct Shear **EI** =Expansion Index **SA** =Sieve Analysis **CR** =Corrosion **MD** =Max Density **RV** =R-Value **AL** =Atterberg Limits **SE** =Sand Equivalent **CN** =Consolidation **TD** =Tube Density

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Exploratory Log

ASTM D5434, D1452, D1586, D1587, D2488 (USCS), D3550

Project Number:	3499.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

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Location No:	E-5	**Start Date/Time:**	03.15.22/1215	**End Date/Time:**	03.15.22/1245

Conducted By:	CDL	**Excavation Type:**	Auger Hole	**Elevation:**	4150
Operator:		**Dimensions:**	10" X15'	**Groundwater:**	None
Equipment Type:	CME-75-HSA	**Advance Assist:**	None	**Recent Weather:**	Clear
Drive Weight (lb)**:**	140	**Field Tests:**	D3550	**Sampler Insertion:**	Driven
Drive Drop (in)**:**	30	**Shoring Type:**	None	**Preservation:**	D4220

Depth (ft)	'N' Value	Sample (1)	Moisture (%)	Density (pcf)	Class (USCS)	Graphic	Description / Comments	Lab Tests (2)
0						0	Light brown silty sand, loose, moist	
	4,10,18	■	1.9	103.4	SM		CDL03152217	TS
							Bulk Sample at 0-5' CDL03152219	SA
5	11,16,17	■	2.1	106.4			CDL03152218	TS
10	9,11,19	■					SPT at 10'	TS
							Bulk Sample from 0-5', CDL03152213	SA
15	11,14,19	■					SPT at 15'	
							Boring was terminated at 15'	
20							No Groundwater was encoutered	
25								

Comments:

(1) ▒ =Bulk ■ =Driven

(2) **DS** =Direct Shear **EI** =Expansion Index **SA** =Sieve Analysis **CR** =Corrosion **MD** =Max Density **RV** =R-Value **AL** =Atterberg Limits **SE** =Sand Equivalent **CN** =Consolidation **TD** =Tube Density

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ASTM D5434, D1452, D1586, D1587, D2488 (USCS), D3550

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Project Number:	3499.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Location No:	P-1	**Start Date/Time:**	03.15.22/0840	**End Date/Time:**	03.15.22/0915

Conducted By:	CDL	**Excavation Type:**	Auger Hole	**Elevation:**	4150
Operator:		**Dimensions:**	10" X 20'	**Groundwater:**	None
Equipment Type:	CME-75-HSA	**Advance Assist:**	None	**Recent Weather:**	Clear
Drive Weight (lb)**:**	140	**Field Tests:**	D3550	**Sampler Insertion:**	Driven
Drive Drop (in)**:**	30	**Shoring Type:**	None	**Preservation:**	D4220

Depth (ft)	'N' Value	Sample (1)	Moisture (%)	Density (pcf)	Class (USCS)	Graphic	Description / Comments	Lab Tests (2)
0					SM		Light brown silty sand, loose, moist	
							Bulk Sample at 0-5' CDL03152204	SA
5								
10								
15								
20							Percolation Test Boring Terminated at 20' No Groundwater	
25								

Comments:

(1) =Bulk =Driven

(2) **DS** =Direct Shear **EI** =Expansion Index **SA** =Sieve Analysis **CR** =Corrosion **MD** =Max Density **RV** =R-Value **AL** =Atterberg Limits **SE** =Sand Equivalent **CN** =Consolidation **TD** =Tube Density

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DSA LEA No:	

Project Number:	3499.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Location No:	P-2	**Start Date/Time:**	03.15.22/0920	**End Date/Time:**	03.15.22/1010

Conducted By:	CDL	**Excavation Type:**	Auger Hole	**Elevation:**	4150
Operator:		**Dimensions:**	10" X 30'	**Groundwater:**	None
Equipment Type:	CME-75-HSA	**Advance Assist:**	None	**Recent Weather:**	Clear
Drive Weight (lb)**:**	140	**Field Tests:**	D3550	**Sampler Insertion:**	Driven
Drive Drop (in)**:**	30	**Shoring Type:**	None	**Preservation:**	D4220

Depth (ft)	'N' Value	Sample (1)	Moisture (%)	Density (pcf)	Class (USCS)	Graphic	Description / Comments	Lab Tests (2)
0					SM		Light brown silty sand, medium dense, moist	
5								
10							Bulk Sample from 0-5', CDL03152206	SA
15								
20								
25								
30							End Percolation Test Boring at 30' , No Groundwater	

Comments:

(1) =Bulk, =Driven

(2) **DS** =Direct Shear, **EI** =Expansion Index, **SA** =Sieve Analysis, **CR** =Corrosion, **MD** =Max Density, **RV** =R-Value, **AL** =Atterberg Limits, **SE** =Sand Equivalent, **CN** =Consolidation, **TD** =Tube Density

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Appendix C

Laboratory Test Data

Laboratory Compaction Characteristics

ASTM D1557, D2488

Project Number:	3103.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

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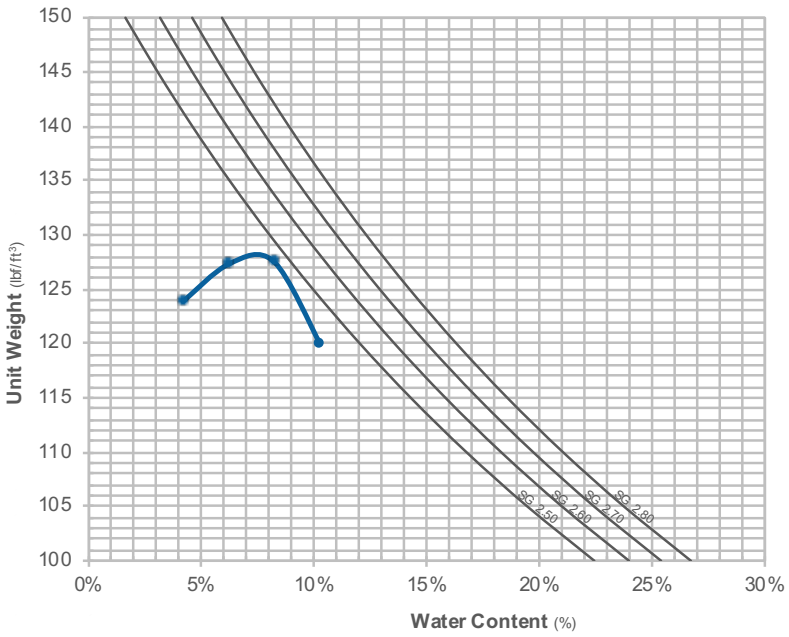
DSA LEA No:	

Sample ID: CDL03152209 **Maximum Dry Unit Weight** (lb/ft³): 128.2 **Optimum Moisture Content** (%): 7.5

Classification, ASTM D2488: (SM) Silty Sand
Sample Origin: Boring Two at 0' to 5'
Laboratory Remarks:



Tested By:	JEC
Date Tested:	04/20/22
Received Moisture:	2.5%
Preparation:	Wet
Specific Gravity:	
Specific Gravity Method:	
Start Weight (lb):	11.0
Retained on 3/4" (lb):	0.2
Retained on 3/8" (lb):	0.3
Retained on No. 4 (lb):	0.4
Retained on 3/4" (%):	1.8%
Retained on 3/8" (%):	2.7%
Retained on No. 4 (%):	3.6%
Oversize Correction:	
Mold Volume Factor:	29.94
Tare Weight	9.50
Rammer Used:	
Method A:	☑
Method B:	☐
Method C:	☐

Weight of Soil and Tare (lb):	13.81	14.02	14.11	13.92
Wet Weight (g):	371.6	323.1	302.2	365.9
Dry Weight (g):	356.7	304.1	279.3	331.9
Moisture Content (%):	4.2%	6.2%	8.2%	10.2%
Dry Unit Weight (lb/ft³):	123.9	127.4	127.6	120.0

The Material	☐ Was	☐ Was Not	Sampled & tested in accordance with the reqs. of the DSA approved documents.
The Material Tested	☐ Met	☐ Did Not Meet	The requirements of the DSA approved documents.

cc: Project Architect, Structural Engineer, Project Inspector, DSA Regional Office, School District

Reviewd By (Signature)

Jeremy Beissner/ Laboratory Manager
Name / Title

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	3103.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Report Date:	04/21/22
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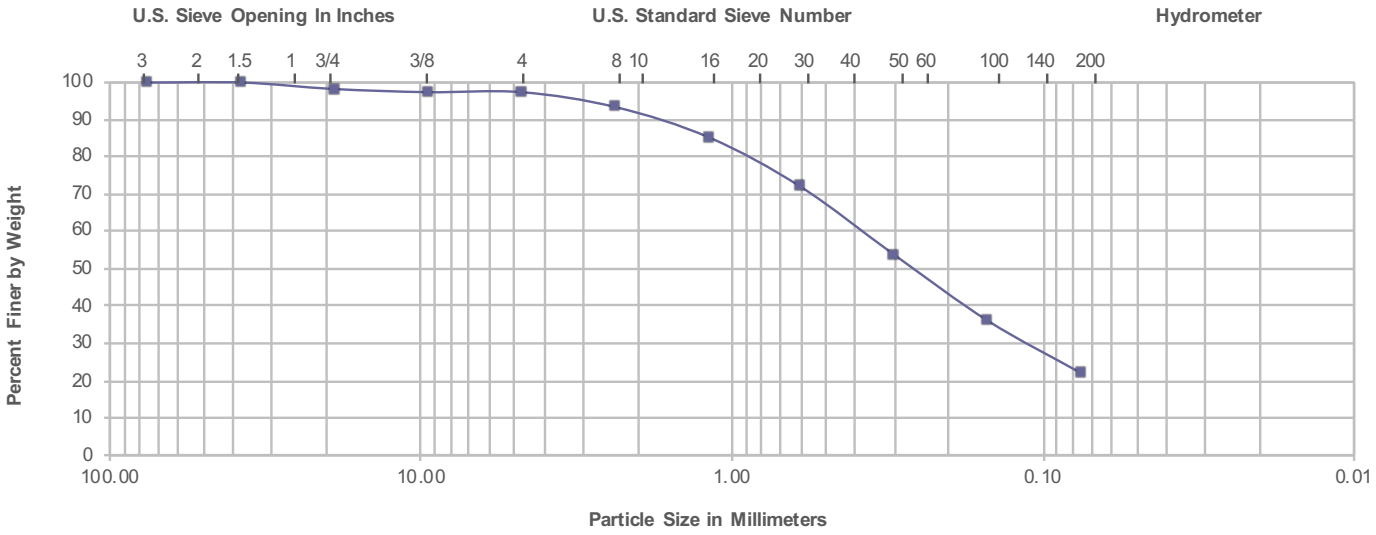
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: CDL30152209 **Gravel (%):** 2.6% **Sand (%):** 75.5% **Fines (%):** 21.9%

Classification, ASTM D2487: (SM) Silty sand
Sample Origin: Boring Two at 0' to 5'
Laboratory Remarks:



C_u	C_c	Moisture	D_{100}	D_{60}	D_{30}	D_{10}	LL	PL	PI	SG	FM	SE
NA	NA	2.4%	19.000	0.300	0.075	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 5176.7
Determination of Dry Mass: D2216
Particles; Shape, Hardness: ND
Dispersion Device/Period: Manual/2 hr
Type & Amount of Agent: Defloc. & 1.0
Laboratory Comments:

The Material ☐ Was ☐ Was Not Sampled & tested in accordance with the reqs. of the DSA approved documents.
The Material Tested ☐ Met ☐ Did Not Meet The requirements of the DSA approved documents.

cc: Project Architect, Structural Engineer, Project Inspector, DSA Regional Office, School District

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Particle-Size Analysis of Soil

D422, D1140, D2487

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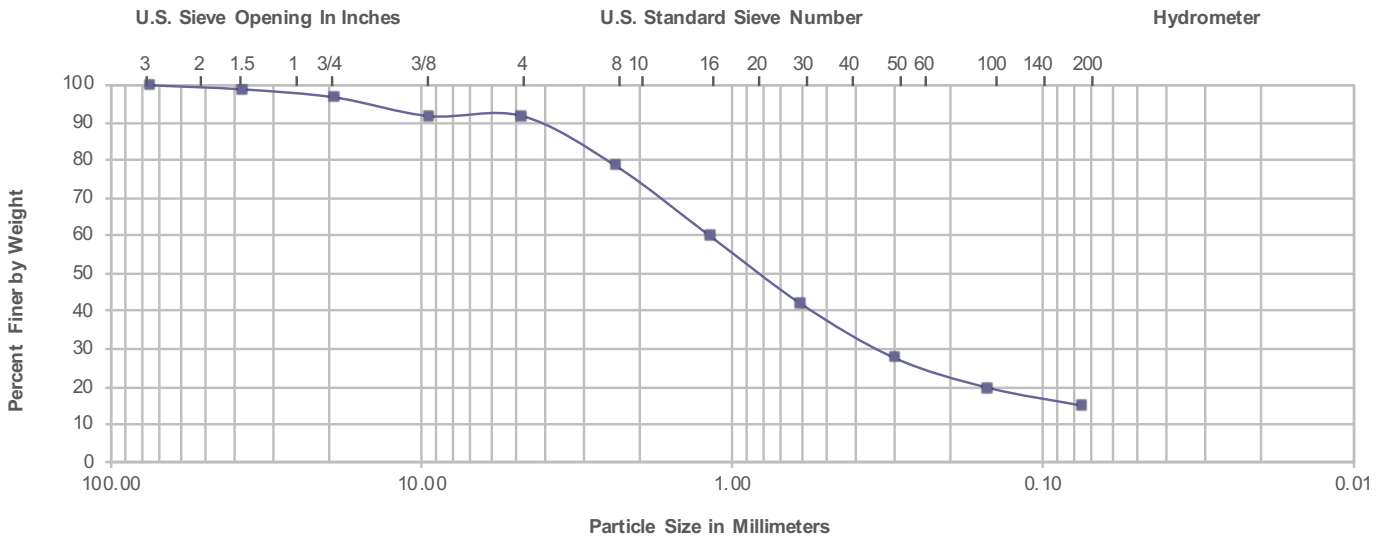
Project Number:	3103.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Sample ID: CDL30152213 **Gravel (%):** 8.2% **Sand (%):** 76.9% **Fines (%):** 15.0%

Classification, ASTM D2487:	(SM) Silty sand
Sample Origin:	Boring Three at 10' to 15'
Laboratory Remarks:	



C_u	C_c	Moisture	D_{100}	D_{60}	D_{30}	D_{10}	LL	PL	PI	SG	FM	SE
NA	NA	1.4%	37.500	1.180	0.300	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used:	D422, D1140
Size of Initial Dry Mass (g):	10602.5
Determination of Dry Mass:	D2216
Particles; Shape, Hardness:	ND
Dispersion Device/Period:	Manual/2 hr
Type & Amount of Agent:	Defloc. & 1.0
Laboratory Comments:	

The Material ☐ Was ☐ Was Not Sampled & tested in accordance with the reqs. of the DSA approved documents.
The Material Tested ☐ Met ☐ Did Not Meet The requirements of the DSA approved documents.

cc: Project Architect, Structural Engineer, Project Inspector, DSA Regional Office, School District

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Particle-Size Analysis of Soil

D422, D1140, D2487

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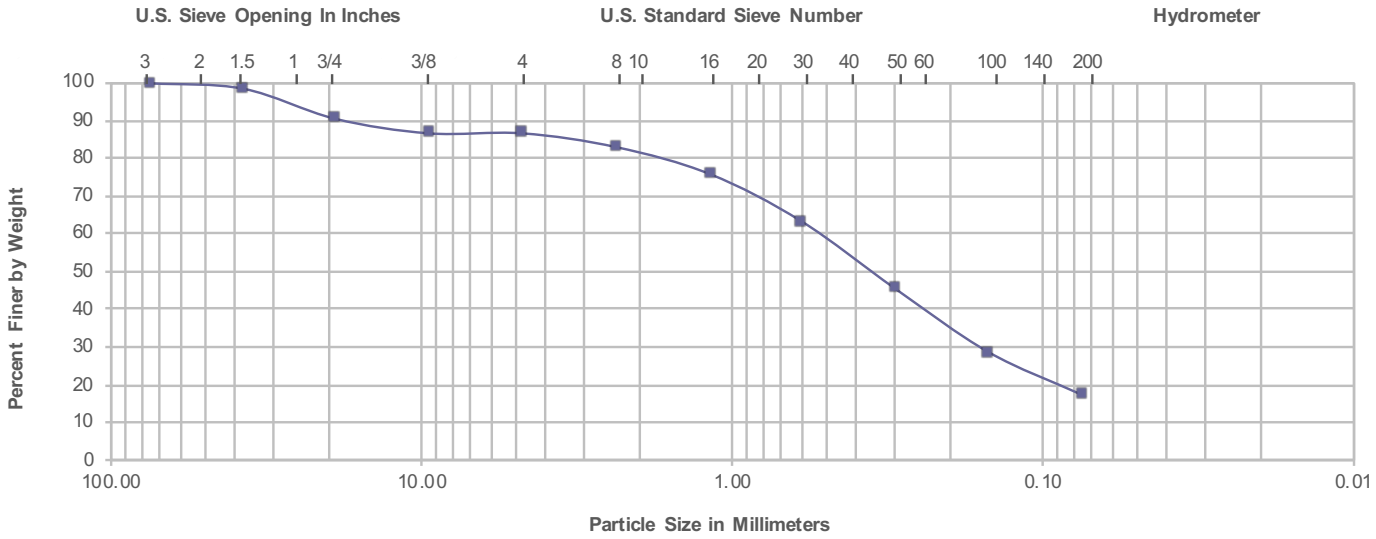
Project Number:	3103.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Sample ID: CDL30152219 **Gravel (%):** 13.3% **Sand (%):** 69.4% **Fines (%):** 17.3%

Classification, ASTM D2487:	(SM) Silty sand
Sample Origin:	Boring Five at 0' to 5'
Laboratory Remarks:	



C_u	C_c	Moisture	D_{100}	D_{60}	D_{30}	D_{10}	LL	PL	PI	SG	FM	SE
NA	NA	1.5%	37.500	0.300	0.150	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used:	D422, D1140
Size of Initial Dry Mass (g):	11557.7
Determination of Dry Mass:	D2216
Particles; Shape, Hardness:	ND
Dispersion Device/Period:	Manual/2 hr
Type & Amount of Agent:	Defloc. & 1.0
Laboratory Comments:	

The Material ☐ Was ☐ Was Not Sampled & tested in accordance with the reqs. of the DSA approved documents.
The Material Tested ☐ Met ☐ Did Not Meet The requirements of the DSA approved documents.

cc: Project Architect, Structural Engineer, Project Inspector, DSA Regional Office, School District

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Corrosion Potential

CT 643, 422, 417, 643

Project Number:	3103.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Report Date:	04/28/22
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DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: CDL03152209

Classification, ASTM D2488:	(SM) Silty sand
Sample Origin:	Boring Two at 0' to 5'
Laboratory Remarks:	

Analysis	Result	Units	Test Method
Saturated Resistivity	2106	ohm-cm	CT 643
Chloride	360	ppm	CT 422
Sulfate	0.061	ppm	CT 417
pH	7.1	pH units	CT 643

The Material	☑ Was	☐ Was Not	Sampled & tested in accordance with the reqs. of the DSA approved documents.
The Material Tested	☑ Met	☐ Did Not Meet	The requirements of the DSA approved documents.

cc: Project Architect, Structural Engineer, Project Inspector, DSA Regional Office, School District

Reviewd By (Signature)

Jeremy Beissner/ Laboratory Manager
Name / Title

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R-Value and Expansion Pressure of Compacted Soils

ASTM D2844

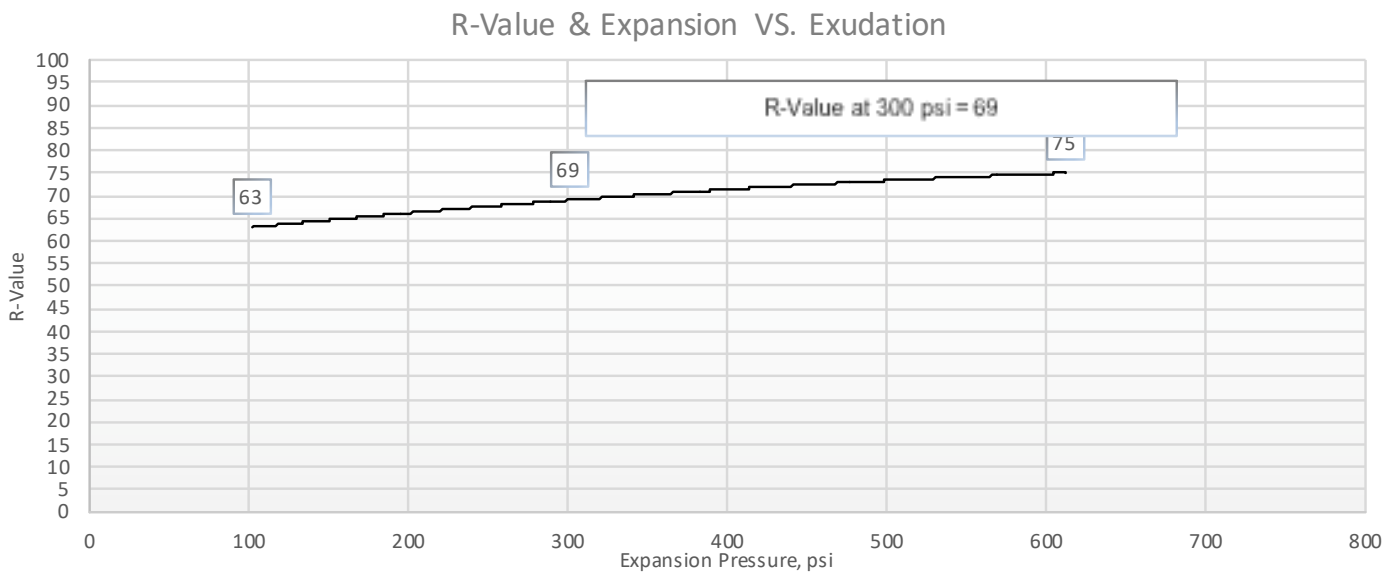
Project Number:	3103.006.500
Project Title:	14-Acre Park Site
Project Location:	Warbler Road, Phelan, CA
Client:	Phelan Pinon Hills Community Services District

Report Date:	04/28/22
Sheet:	1 *of* 1
Appendix:	C
Permit No.:	
Client Project No.:	
Other:	
DSA File No.:	
DSA Application No.:	
DSA LEA No.:	

Sample ID: CDL03152204 ☐ **General Compliance** ☐ **Non-Compliance** ☑ **Not Specified**

Desription, D2847:	(SP) Poorly graded sand
Sample Origin:	Boring One at 0' to 4'
Tested By:	Joseph Chavez

Briguette Number:	1	2	3
Moisture Content (%):	10.1	10.9	9.3
Dry Density (pcf):	126.1	123.6	124.7
Exudation Pressure (psi):	301	102	612
Expansion Pressure (psf):	0	0	0
R-Value:	69	63	75



The Material ☐ Was ☐ Was Not Sampled & tested in accordance with the reqs. of the DSA approved documents.
The Material Tested ☐ Met ☐ Did Not Meet The requirements of the DSA approved documents.

cc: Project Architect, Structural Engineer, Project Inspector, DSA Regional Office, School District

Reviewed By (Signature)

Jeremy Beissner Laboratory Manager
Name / Title

Merrell Johnson COMPANIES

concept to completion
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t)760.256.2068 f)760.256.0418 w)www.merrelljohnson.com