SOILS INVESTIGATION REPORT

GENERAL ATOMICS, DESERT HORIZONS II
73 El Mirage Airport Road
Adelanto, CA 92301

Prepared for Parkway Construction
Submitted by Merrell Johnson Geotechnical, Inc.
April 11, 2025
Project No. 24185P1

MERRELL JOHNSON

MERRELL JOHNSON
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April 11, 2025

Attn: Rick Siegfried
Parkway Construction & Architecture
18400 Von Karman, Suite 650
Irvine, CA 92612

Re: Soils Investigation Report | General Atomics, Desert Horizons II | 73 El Mirage Airport Road, Adelanto, CA 92301 | MJG Project No. 24185P1

Mr. Siegfried:

This letter transmits Merrell Johnson Geotechnical's (MJG) Soils Investigation Report for the subject project. The investigation was planned and performed based on the proposed project development illustrated on the Complete Project Site Plan prepared by Parkway Construction & Architecture dated 12/17/24.

We trust that the enclosed information will be useful for the design and construction phases of this project. If you have any questions, please do not hesitate to contact our firm.

Sincerely,

Brad S. Merrell, P.E., President
Merrell Johnson Geotechnical, Inc.
R.C.E. 49423

CONTENTS

APPENDICES

INTRODUCTION

Project Description

This report presents the results of the Geotechnical Investigation Merrell Johnson Geotechnical (MJG) performed for the General Atomics, Desert Horizons II Project. The location of the proposed project development is shown on the Site Vicinity Map, Google Earth Site Image, and Complete Project Site Plan, included with this report as Appendix A, Figures 1-3.

MJG understands that the improvements will include the construction of a 98,950 SF Hangar, 20,000 SF stockroom, 19,500 SF Ground Control building, parking and other ancillary site improvements.

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 areas to be developed
- Site preparation and grading
- Excavation conditions
- Foundation support for the new structure along with soils engineering criteria for foundation design
- Support for slab-on-grade floors
- Estimated soil corrosivity with respect to concrete and ferrous metals
- Seismic design parameters
- Flexible pavement structural sections

FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

Subsurface conditions were explored by drilling nine (9), 8-inch-diameter, test borings; one (1) to a depth of 50 feet, four (4) to 25 feet, and four (4) to 5 feet below the existing ground surface. The locations of the test borings are shown on Complete Project Site Plan, Figure 3 in Appendix A.

The borings were logged by an MJG 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. 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. 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. The soils are described according to the Unified Soil Classification System, which is explained in the same appendix.

Laboratory Testing

The laboratory program included the following tests:

- ASTM D422 - Particle Size Analysis
- ASTM D4318 – Plasticity Index of Soils
- ASTM D1557 - Maximum Density
- ASTM D2937 - In-Place Moisture Content and Dry Density
- ASTM D4829 - Expansion Index of Soil
- ASTM D2844 / CT 301 - Resistance R-value
- ASTM D2435 / CT-219 - Consolidation of Soils
- ASTM D3080 - Direct Shear
- ASTM G51 / CT643, CT417, CT422 - Corrosion Potential

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

SITE AND SUBSURFACE CONDITIONS

Site Conditions

The proposed improvements will be located west of the existing Hangar 80 and its accompanying stockroom, where the topography is essentially flat. The area appears to have been previously graded, with some areas having sparse desert vegetation.

Subsurface Conditions

The site is blanketed by medium dense silty sand (SM) to a depth of 5-feet. Beneath the silty sand, are stiff to hard silty clays with sand (CLML) to a depth of approximately 40-feet. Below 40-feet, we discovered stiff to very stiff fat clays (CH) to a depth of 50-feet, which was the maximum depth explored.

Expansion Potential

Results of expansion index tests (ASTM D4829) performed on near-surface soil samples from Borings B1 and B4 exhibited expansion indexes of 21 and 30, respectively. These values correspond to a low expansion potential.

Seismic Design Considerations

Included with this study was an assessment of the seismic ground motion parameters of the subject site with respect to the most recently adopted 2022 California Building Code (CBC) and ASCE/SEI Standard 7-16 (ASCE, 2017) as partially summarized and tabulated below. Geographically, the subject site is centrally located at Latitude 34..622107 and Longitude -117.590307.

SUMMARY OF SEISMIC DESIGN PARAMETERS	
Factor or Coefficient	***Value***
S_s	1.125
S_1	0.445
F_a	1.2
F_v	N/A
S_{DS}	0.9g
S_{D1}	N/A
S_{MS}	1.349
S_{M1}	N/A
T_L	12
PGA	0.486
PGA_M	0.583
F_{PGA}	1.2
I_e	1
C_V	1.325

Site Classification (CBC 1613.3.2) – Based on the presence of mapped Quaternary age alluvial deposits underlying the site and the absence of site-specific shear-wave data, the design Site Class is estimated to be **"D."** This class is defined as having the upper 100 feet (30 meters) of thew subsurface being underlain by "stiff soil" with average shear-wave velocities of 600 to 1,200 feet/second (180 to 360 meters/second). In accordance with the CBC, the proposed structures are considered Risk Category II structures.

Liquefaction

Liquefaction is a phenomenon that occurs when saturated, cohesionless soils experience a loss of strength or stiffness due to repeated disturbances. This can lead to building settlement, ground failures, or other related hazards. The primary factors that contribute to this are cohesionless, granular soils having relatively low densities, shallow groundwater (usually less than 40 feet deep), and moderate to high seismic ground shaking.

Groundwater was encountered during MJG's field exploration at a depth of approximately 43-feet below the existing ground surface. A review of the California Department of Water Resources website indicate that the historic high groundwater level is approximately 20 feet below the subject site. (https://wdl.water.ca.gov/waterdatalibrary/)

The liquefaction potential was evaluated with the computer program GeoLiqu (GeoAdvanced, 2025) using the Boulanger & Idriss method (2010-16) with an earthquake magnitude of 7 at a site source distance of 15 kilometers. Due to the presence of stiff to hard silty clay and fat clay at the projected groundwater and boring groundwater depths, the potential for liquefaction induced settlement is nil. A graph of the liquefaction analysis is presented with this report in Appendix D.

CONCLUSIONS AND RECOMMENDATIONS

The soils onsite consist of medium dense silty sands at the surface that are underlain by stiff to hard silty clays with sand. These soils are considered adequate for support of the new facilities.

The site is not within an Alquist Priolo Earthquake Fault Zone. The potential for dynamically induced settlement of the soils is also very low. In addition, the soils have a 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 because of direct rainfall and runoff.

Earthwork

At the time of MJG's investigation, the site appeared partially cleared of vegetation. Any debris, remaining 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. Roots should be removed to a depth of 6 inches below foundation and pavement subgrade elevations.

Areas to receive fill should be scarified to a depth of 12 inches, brought to near optimum moisture content, and compacted to a minimum of 95% 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 Placement

Fill should be placed in 8-inch-thick loose lifts, moisture conditioned to near optimum moisture content and compacted to a minimum of 95% relative compaction. The existing onsite soils are considered suitable to be used as fill provided, they are free from significant organic matter and other deleterious materials.

Imported Soils

Imported soils, if needed, 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 MJG representative prior to being brought to the site.

Shallow Foundation and Building Slab-On-Grade Support

The existing soils below the proposed structures should be over-excavated to a depth of at least 3 feet below the existing ground surface or 12 inches below the proposed footing base grade, whichever depth is greater. Over-excavation should extend, at least, 5 feet horizontally beyond the inside and outside limits of the footings and grade-beams. The existing soils below floor slab areas should be over-excavated to a depth of at least 3 feet below the bottom of the finished subgrade elevation. The bottom of the over-excavation should be scarified to a depth of at least 6 inches, moistened to near the optimum moisture content, and compacted to a relative compaction of at least 95 percent (ASTM D1557).

Fill 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 95% relative compaction.

The planned structures can be supported on shallow spread footings with bottom levels in the compacted fill at a minimum depth of 18 inches below the lowest adjacent finished grade.

A minimum width of 24 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

3,000 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.

Continuous (strip) foundations should be reinforced with a minimum of #5 deformed reinforcing bars at the top and bottom of the footings.

Spread footing reinforcement should be designed by the structural engineer for punching shear and bending. As a minimum, the spread footings should be reinforced with a #5 deformed reinforcing bars, spaced 18 inches on center each way and placed 3 inches above the bottom of the spread footing.

All grade beam reinforcement should be designed and specified by the building's designer/structural engineer.

Foundations should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of joints at openings or other discontinuities in masonry walls is recommended.

Footing excavations should be observed by an MJG 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. MJG 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.

Building Floor Slabs

During grading operations, the building pad soils should be compacted to a relative compaction of at least 95 percent (ASTM D1557). Prior to placing the slab-on-grade concrete, the final pad surfaces should be proof-rolled to provide a smooth, dense surface upon which to place the concrete.

A 15-mil vapor retarder membrane, conforming to ASTM E1745 and installed per ASTM E1643, should be placed beneath concrete slabs-on-grade covered with moisture sensitive or impervious floor coverings, or where the slab will support equipment or materials sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Reinforcing for slabs-on-grade should be designed by the project structural engineer based on anticipated storage and equipment loads. A modulus of subgrade reaction of 150 pounds per cubic inch (pci) can be used. Reinforcing should extend down into the footings. Concrete

construction (i.e. jointing, etc.) should be in conformance with the American Concrete Institute Manual of Concrete Practice Design and Construction Standards.

The project's designer should be responsible for the slabs-on-grade recommendations based on the anticipated floor loading requirements. Minimum reinforcing for 6-inch-thick slabs-on-grade should consist of at least #4 deformed reinforcing bars at 18 inches on center each way placed at mid-height in the slab.

Where the project's structural engineer's reinforcement recommendations exceed MJG's above minimum slab reinforcement recommendations, the structural engineer's recommendations should be followed.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a waterproof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The structural engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing, or other means.

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 back-drain, weep holes or other drainage facilities. If a basement or underground structure is constructed, a subsurface drainage system is recommended.

Concrete and Flexible Asphalt Concrete Pavement Subgrade Preparation

The existing soils below proposed concrete and asphalt concrete pavement areas should be over-excavated to a depth of at least 12 inches below the existing ground surface or finish grade, whichever depth is greater. The soils exposed on the bottoms of the over-excavations should be scarified to a depth of at least 12 inches, brought to within 2 percent of the optimum moisture content and compacted to a relative compaction of at least 95 percent (ASTM D1557). The over-excavated soils and any additional fill required to prepare the finish subgrade should be placed in maximum 8-inch-thick lifts, each lift moistened to within 2 percent of the optimum moisture content and compacted to a relative compaction of at least 95 percent.

Flexible Pavement Structural Sections

New flexible pavement structural sections were determined following California Department of Transportation (Caltrans) procedures.

Based on our laboratory test data, an R-value of 24 was used to calculate the recommended on-site flexible pavement sections for the project. Recommended on-site flexible pavement structural sections are listed in the table below.

ON-SITE FLEXIBLE PAVEMENT STRUCTURAL SECTIONS		
Traffic Index	***Asphalt Concrete (inches)***	***Class 2 Aggregate Base (inches)***
5	3.0	6.0
6	5.0	6.0
7	6.0	7.0
8	6.0	11.0

PORTLAND CEMENT CONCRETE PAVEMENTS AND FLATWORK

The subgrade surface beneath rigid (Portland cement concrete) pavements should be proof-rolled with a smooth-wheel roller to form a dense, uniform surface. Any pumping or yielding areas should be excavated and replaced with compacted fill.

Rigid pavements to support automobile and light truck traffic should be a minimum of 6 inches thick and reinforced with a minimum of #4 deformed reinforcing bars spaced 12 inches on center each way. Joints should be provided at intervals of no more than 12 feet. Smooth dowels should be provided across pavement joints.

Rigid pavement to support heavy truck traffic should be a minimum of 8 inches thick and reinforced with #4 deformed reinforcing bars spaced 12 inches of center each way. Joints should be provided at intervals of no more than 12 feet. Smooth dowels should be provided across pavement joints.

Pedestrian walkways and other lightly loaded concrete flatwork areas should be proof rolled as described above. The flatwork in these areas should have a minimum thickness of 4 inches and be provided with doweled joints at no more than 12-foot intervals. Minimum reinforcement should consist of 6 x 6 W1.4/1.4 welded wire fabric supported mid height in the slab by concrete blocks or dobies. Positioning the wire fabric by lifting after concrete placement should not be allowed.

UTILITY EXCAVATIONS

Excavations for this project will require sloping sidewalls or shoring. 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 horizontal to 1 vertical 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 horizontal to 1 vertical. 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.

In addition to the above recommended lateral earth pressures, a minimum uniform lateral pressure of 125 psf should be incorporated in the design of the upper 10 feet of shoring when normal traffic is permitted within 10 feet of the shoring. The design of temporary shoring should also include the surcharge loads from delivery and construction equipment, as appropriate.

CORROSIVITY

Laboratory test results of soils encountered between 0' to 5' in Boring 1 show low saturated resistivity, which is indicative of a corrosive environment with respect to ferrous metals. Foundations should be designed with continuous reinforcing steel top and bottom. Reinforcing steel should maintain minimum clearances specified by applicable codes and good construction practice.

The test results also indicate a severe soluble sulfate content (Exposure Class S2) per ACI 318 Table 19.3.1.1. Type V cement is recommended for concrete in contact with the ground. Per ACI 318 Table 19.3.2.1 concrete should have a maximum water-cementitious material ratio of 0.45 and a minimum compressive strength of 4,500 psi.

In addition, it is recommended that additional sampling and corrosivity testing be performed on soils from proposed foundation and slab-on-grade levels during construction. If a corrosive environment is determined to be present based on this additional testing, a corrosion engineer should be contacted to develop recommendations for appropriate corrosion protection measures.

LIMITATIONS

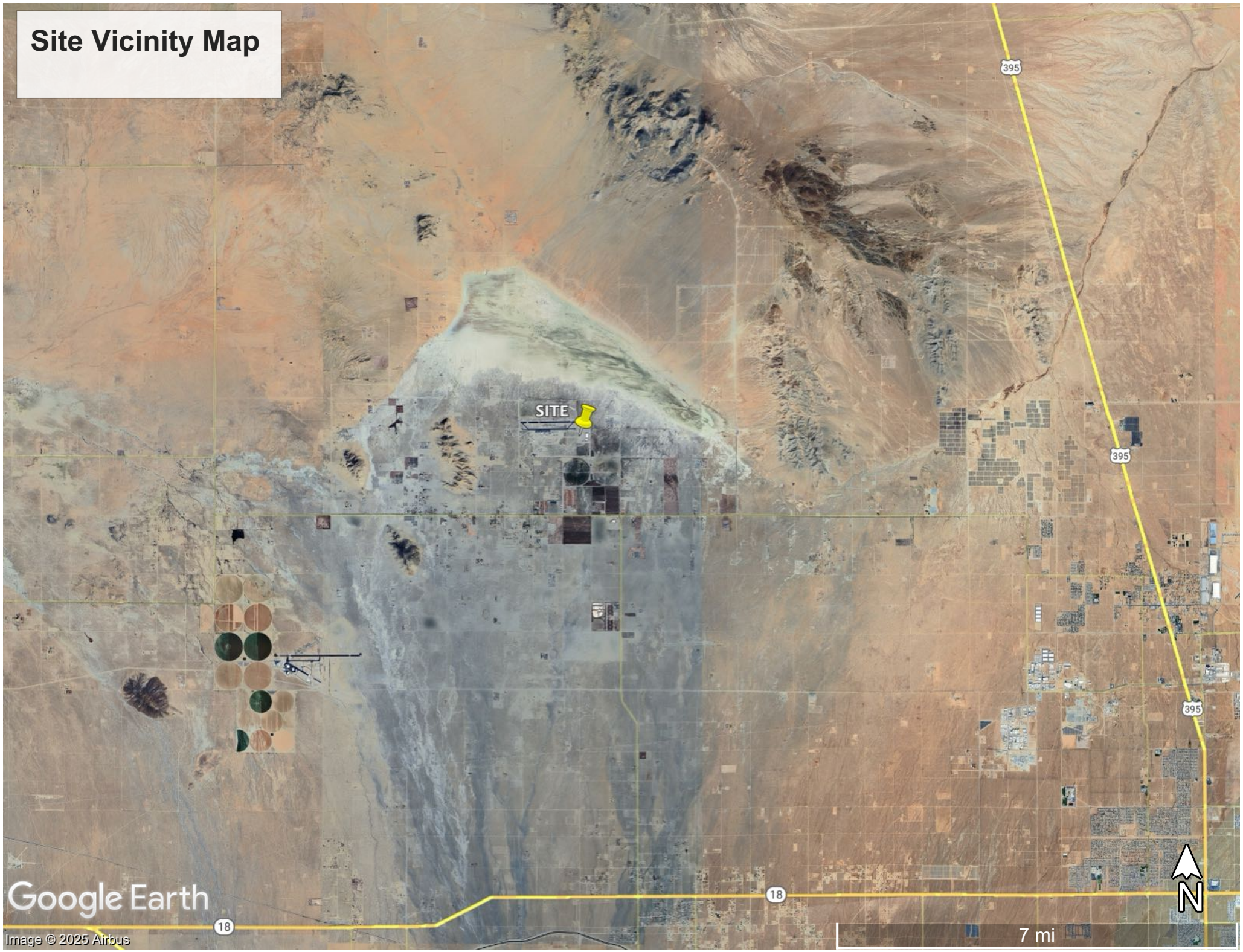
The recommendations in this report are based on results of the field exploration and laboratory test programs, combined with interpolation and extrapolation of subsurface conditions between and beyond boring locations. The nature and extent of variations in these conditions may not become evident until construction. If variations are encountered during construction, MJG 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 MJG so that modifications to the recommendations in this report can be made if needed.

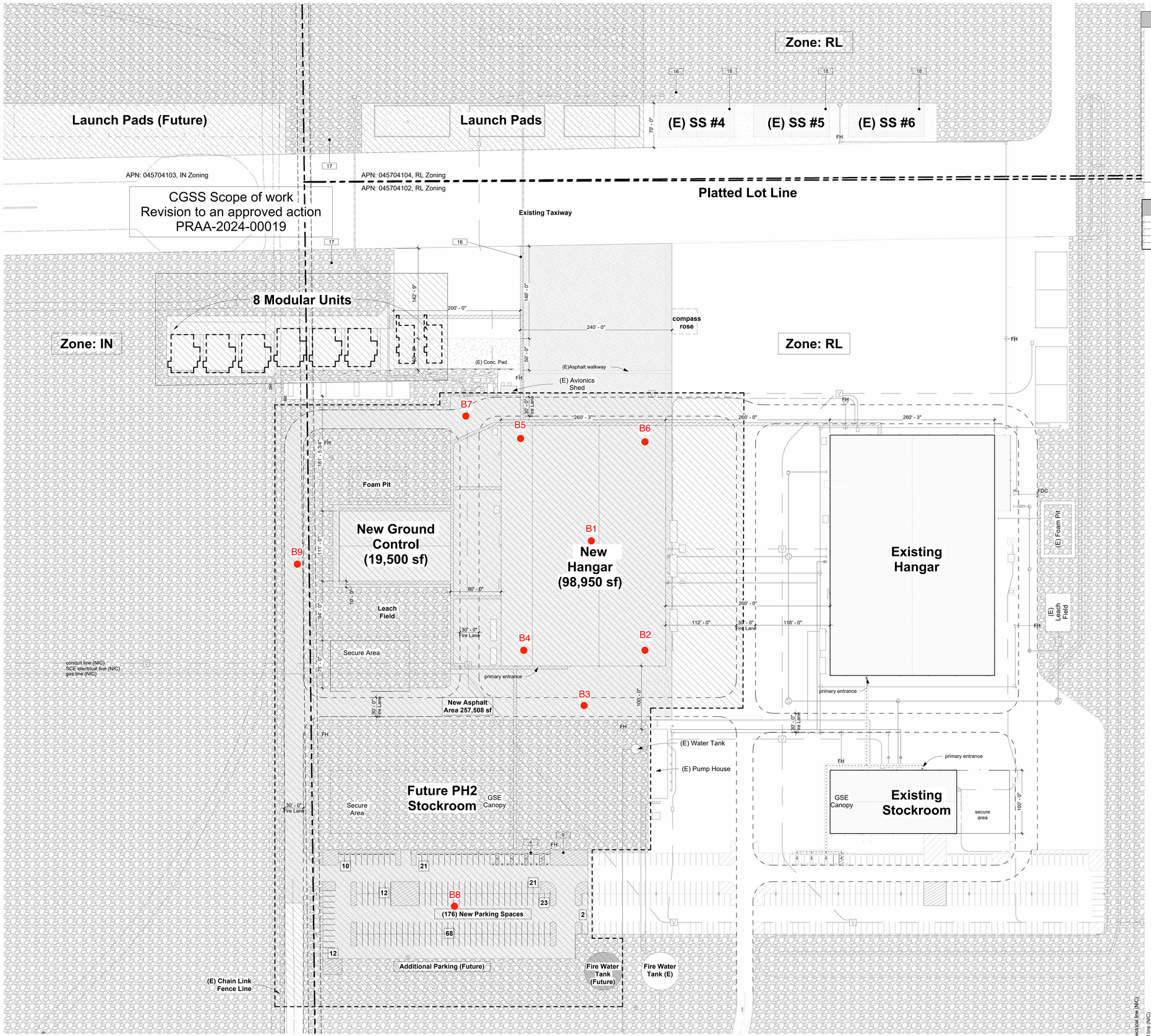
Our professional services have been performed using the degree of care and skill ordinarily exercised under similar circumstances by reputable engineering consultants practicing in this or similar localities. No other warranty, express or implied, is made as to the professional advice or data included 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 – Complete Project Site Plan with Boring Locations

Site Vicinity Map





1 **Site Plan - GCS**
1" = 60'-0"

Site Plan Legend

- Property Line
- Property Setback Line
- Scope of Work
- Landscape Area - Reference landscape drawings
- French Drain/ Riprap stone
- Accessible Path of Travel
- Accessible Parking (NIC)
- Keynote Tag
- New Asphalt Paving
- Existing Chainlink Fence
- FH — Fire Hydrant
- E — Existing Building / Equipment

Site Plan Keynotes

4	Unloading zone
9	Paint stripe for accessible pedestrian walk
16	
17	
18	

Parking Tabulation

Parking Spaces (Existing)

Total Parking Spaces Required (Hangar):	193 spaces
Total Parking Spaces Required (Stockroom):	25 spaces
Total Parking Spaces Required:	218 spaces
Total Parking Spaces Existing:	299 spaces

Parking Spaces (New)

Total Parking Spaces Required (Hangar):	74 spaces
Total Parking Spaces Required (Ground Control):	+ 80 spaces
Total Parking Spaces Required (Modular):	+ 49 spaces
Total Parking Spaces Required (Stockroom): Future	+ 20 spaces
Total Parking Spaces Required:	223 spaces
Total Spaces Existing (extra from previous project):	-81 spaces
Total Parking Spaces Provided (new):	**142 spaces**

(San Bernardino County Development Code - Table 83-15 - Parking Ratios)

Accessible Space Requirements (2022 CBC - Table 11B-208.2)

Total Parking Spaces Provided:	142 spaces
Minimum Accessible Parking Spaces Required:	5 spaces
Total Accessible Parking Spaces Provided:	**Min. 7 spaces** -including 2 Van spaces (2022 CBC - 11B-208.2.4)

Designated Parking for Clean Air Vehicles (2022 CGBSC - A5.106.5.1)

Total Parking Spaces Provided:	142 spaces
Minimum Spaces Required (8% of total):	12 spaces

Designated Parking for EV Charging (2022 CGBSC - Table A5.106.5.3.1 Tier1)

Total Parking Spaces Provided:	142 spaces
Minimum # of EV Capable Spaces Required: (Future Ready)	12 spaces

Clean Air Vehicle Parking

Total spaces designated for Clean Air:	0 spaces
Total spaces designated for Car / Van Pool:	12 spaces
Total Spaces Provided (Clean Air/ Van Pool/ EV):	**12 spaces**

CONSTRUCTION • ARCHITECTURE

PARKWAY
Parkway C&A, LP
1000 Civic Circle Lewisville, TX 75067
pkwycon.com (972) 221-1979

Project Manager: Contact: Raymond A. Morgan 214-111-1111

Architect: Contact: Matt Hodeaux (469) 933-8852

GENERAL ATOMICS

GA - Desert Horizons II

73 El Mirage Airport Road.
Adelanto, CA 92301

Owner:
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MEP Engineer:
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6550 Sprint Parkway, Suite 200
Overland Park, KS 66211
Contact: Joe Hillebrenner, PE.
Phone: 937.435.8584

Structural Engineer:
Wright Engineers
2 Venture, Suite 200
Irvine, CA 2618
Contact: Scott Jones
Phone: 949.477.4001

Fire Protection Engineer

Civil Engineer

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION.
Architect: Matt Hodeaux

No.	Description	Date
SD	Schematic Design	02/28/25
C	Model / Programing Dsgn. Review	01/10/25
B	Programing Review	12/17/24
A	Pre-Development Review	11/14/24

Drawn by: RAM
Checked by: MBH
Project Number: 04-240134

Complete Project Site Plan

SD1.01

APPENDIX B

Exploratory Logs

Soil Classification Key

Unified Soil Classification System (USCS) and Particle Size Limits

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	02/20/25
Sheet:	1 of 1
Appendix:	B
Permit No:	
Client Project No:	
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Unified Soil Classification System (USCS)

Coarse Grained Soils More Than 50% Is Larger Than No. 200 Sieve	Gravel and Gravelly Soils More Than 50% Retained on No. 4 Sieve	Clean Gravels Little Or No Fines	GW		Well-graded gravels, gravel-sand mixtures, little or no fines
			GP		Poorly-graded gravels, gravel-sand mixtures, little or no fines
		Gravels w/ Fines Appreciable Amount	GM		Silty gravels, gravel-sand-silt mixtures
			GC		Clayey gravels, gravel-sand-clay mixtures
	Sand and Sandy Soils More Than 50% Passing No. 4 Sieve	Clean Sand Little Or No Fines	SW		Well-graded sands, gravelly sands, little or no fines
			SP		Poorly-graded sands, gravelly sands, little or no fines
		Sands w/ Fines Appreciable Amount	SM		Silty-sands, sand-silt mixtures
			SC		Clayey sands, sand-clay mixtures
Fine Grained Soils More Than 50% Is Smaller Than No. 200 Sieve	Silts and Clays Liquid Limit Less Than 50		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low placticity
	Silts and Clays Liquid Limit Greater Than 50		MH		Inorganic silts, micaceous or diatomaceous fine sand or silty soils
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
	Highly Organic Soils		PT		Peat, humus, swamp soils with high organic contents

Particle Size Limits

Divison	Silt or Clay	Sand			Gravel		Cobbles	Boulders
		Fine	Medium	Coarse	Fine	Coarse		
U.S. Sieve		No. 200	No. 40	No. 10	No. 4	3/4"	3"	12"
Grain (mm)		0.075	0.420	2.00	4.76	19.1	76.2	305

Soils possessing characteristics of two classifications are designated by group symbol combination. Soils may be classified initially using the visual manual procedure prior to laboratory test.

MerrellJohnson. engineering | surveying | testing | inspection

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Exploratory Log

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

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	02/20/25
Sheet:	1 of 2
Appendix:	B
Permit No:	
Client Project No:	
USA Ticket No:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Location No:	B1 (Hangar)	**Start Date/Time:**	02/21/25 0750	**End Date/Time:**	2/21/25 0915

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2855
Operator:	C. Hartman	**Dimensions:**	8" x 50'	**Groundwater:**	43'
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, Dry, Medium Dense, Silty Sand	
	10, 14, 15		1.5	103.2			Bulk Sample at 0' to 5' - JDA02202501	SA, MD, EI, CR
							Tube at 1' - JDA02202502	TD
	6,9,14		1.0	89.3			Tube at 3' - JDA02202503	TD
							Grayish Brown, Dry, Medium Dense, Poorly Graded Sand with Silt	
5	11,14, 32		7.9	107.7	CLML		Tube at 5' - JDA02202504 Grayish Brown, Moist, Hard, Silty Clay with Sand	TD, SA
10	14,22, 26		12.9	100.2			Tube at 10' - JDA02202505 Grayish Brown, Moist, Hard, Silty Clay	SA
15	15,17, 17						Tube at 15' - JDA02202506	CN, TD
20	10,16, 19						Tube at 20' - JDA02202507	
25	3,6,6						SPT at 25' - JDA02202508 Stiff	SA

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Location No:	B1 (Cont.)	**Start Date/Time:**	2/21/25 0750	**End Date/Time:**	2/21/25 0915

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2855
Operator:	C. Hartman	**Dimensions:**	8" x 50'	**Groundwater:**	43'
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)
30	4,8,8				CLML		SPT at 30' Dark Brown, Moist, Very Stiff, Silty Clay with Sand	
35	3,4,7						SPT at 35' Stiff	
40	4,7,11	■			CH		SPT at 40' - JDA02202509 Dark Brown, Moist, Very Stiff, Fat Clay Groundwater encountered at 43'	SA, PI
45	6,11, 13						SPT at 45'	
50	3,4,7						SPT at 50' Stiff *Drilling Terminated at Approximately 50'*	

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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Location No:	B2 (Hangar)	**Start Date/Time:**	2/21/25 0923	**End Date/Time:**	2/21/25 1000

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2854
Operator:	C. Hartman	**Dimensions:**	8" x 25'	**Groundwater:**	Not Encountered
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, Dry, Very Dense, Silty Sand	
	8,31, 50(3")		6.1	109.7			Bulk Sample at 0' to 5' - JDA02202510	MD
							Tube at 1' - JDA02202511	TD
	8, 14, 15		1.4	103.7	SPSM		Tube at 3' - JDA02202512	TD
							Light Brown, Dry, Medium Dense, Poorly Graded Sand with Silt	
5	10, 17, 22		9.4	110.7	SM		Tube at 5' - JDA02202513	TD
							Light Brown, Dry, Dense, Silty Sand	
10	17, 18, 22		6.6	93.3	CLML		Tube at 10' - JDA02202514	TD, DS
							Grayish Brown, Moist, Hard, Silty Clay with Sand	
15	12, 24, 20		7.7	97.5	SM		Tube at 15' - JDA02202515	TD, CN
							Grayish Brown, Moist, Dense, Silty Sand	
20	7, 8, 8				CLML		SPT at 20'	
							Grayish Brown, Moist, Very Stiff, Silty Clay with Sand	
25	7, 4, 7						SPT at 25'	
							Stiff	
							Drilling Terminated at Approximately 25'	

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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Location No:	B3 (Pavement)	**Start Date/Time:**	2/21/25 1007	**End Date/Time:**	2/21/25 1013

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2856
Operator:	C. Hartman	**Dimensions:**	8" x 5'	**Groundwater:**	Not Encountered
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, Dry, Silty Sand	
							Bulk Sample at 0' to 5' - JDA02202516	SA, SE*, RV*
5							*Drilling Terminated at Approximately 5'*	
10								
15								
20								
25								

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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Location No:	B4 (Hangar)	**Start Date/Time:**	02/21/25 1015	**End Date/Time:**	2/21/25 1040

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2855
Operator:	C. Hartman	**Dimensions:**	8" x 25'	**Groundwater:**	Not Encountered
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	11, 10, 13		7.5	103.8	SM		Light Brown, Dry, Medium Dense, Silty Sand Bulk Sample at 0' to 5' - JDA02202517 Tube at 1' - JDA02202518	EI TD
5	12, 16, 25		8.4	89.8	CLML		Tube at 5' - JDA02202519 Grayish Brown, Moist, Hard, Silty Clay with Sand	TD, DS
10	10, 25, 39		15.0	98.6			Tube at 10' - JDA02202520	
15	9, 14, 18				SM		Tube at 15' - JDA02202521 Grayish Brown, Moist, Silty Sand	
20	3, 5, 12				CLML		SPT at 20' Grayish Brown, Moist, Very Stiff, Silty Clay with Sand	
25	3, 5, 4						SPT at 25' Stiff *Drilling Terminated at Approximately 25'*	

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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Location No:	B5 (Hangar)	**Start Date/Time:**	2/21/25 1055	**End Date/Time:**	2/21/25 1120

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2854
Operator:	C. Hartman	**Dimensions:**	8" x 25'	**Groundwater:**	Not Encountered
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, Dry, Medium Dense, Silty Sand	
	5, 8, 9		2.3	103.6			Bulk Sample at 0' to 5' - JDA02202522	SA, MD
							Tube at 1' - JDA02202523	TD
	6, 9, 12		1.3	97.9			Tube at 3' - JDA02202524 (One Tube)	TD
							Sandy	
5	5, 11, 15				SP		Tube at 5' - No Recovery Grayish Brown, Medium Dense, Poorly Graded Sand with Silt	
10	11, 31, 50		18.4	102.7			Tube at 10' - JDA02202525	TD
15	8, 10, 11		8.0	100.6	CLML		Tube at 15' - JDA02202526 Grayish Brown, Moist, Very Stiff, Silty Clay with Sand	TD, CN
20	5, 6, 11						SPT at 20'	
25	11, 10, 9						SPT at 25'	

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

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Exploratory Log

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

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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Location No:	B6 (Hangar)	**Start Date/Time:**	2/21/25 1132	**End Date/Time:**	2/21/2025 1200

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2854
Operator:	C. Hartman	**Dimensions:**	8" x 25'	**Groundwater:**	Not Encountered
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, Dry, Dense, Silty Sand	
	13, 17, 23		5.4	96.2			Bulk at 0' to 5' - JDA02202527	
							Tube at 1' - JDA02202528	TD
	12, 14, 14		2.9	99.5			Tube at 3' - JDA02202529	TD
5	12, 20, 27		9.3	97.7			Tube at 5' - JDA02202530	TD, DS
10	13, 22, 23		5.1	101.1			Tube at 10' - JDA02202531 Grayish Brown, Moist, Dense, Silty Sand with Gravel	TD
15	13, 23, 28						Tube at 15' - JDA02202532 Grayish Brown, Very Dense, Silty Sand	
20	10, 12, 11						SPT at 20' Grayish Brown, Moist, Very Stiff, Silty Clay with Sand	
25	4, 6, 8						SPT at 25' Stiff *Drilling Terminated at Approximately 25'*	

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(1) =Bulk =Driven

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Exploratory Log

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

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
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Client:	Parkway Construction

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Location No:	B7 (Pavement)	**Start Date/Time:**	2/21/25 1210	**End Date/Time:**	2/21/25 1214

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2854
Operator:	C. Hartman	**Dimensions:**	8" x 5'	**Groundwater:**	Not Encountered
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					ML		Light Brown, Dry, Sandy Silt Bulk Sample at 0' to 5' - JDA02202533	SA, SE*, RV*
5							*Drilling Terminated at Approximately 5'*	
10								
15								
20								
25								

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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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Client:	Parkway Construction

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Location No:	B8 (Pavement)	**Start Date/Time:**	2/21/25 1220	**End Date/Time:**	2/21/25 1224

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2857
Operator:	C. Hartman	**Dimensions:**	8" x 5'	**Groundwater:**	Not Encountered
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, Dry, Silty Sand Bulk Sample at 0' to 5' - JDA02202534	SA, SE*, RV*
5							*Drilling Terminated at Approximately 5'*	
10								
15								
20								
25								

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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:	24185P1
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Client:	Parkway Construction

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Location No:	B9 (Pavement)	**Start Date/Time:**	2/21/25 1300	**End Date/Time:**	2/21/25 1305

Conducted By:	J. Albornoz	**Excavation Type:**	Auger Hole	**Elevation:**	2855
Operator:	C. Hartman	**Dimensions:**	8" x 5'	**Groundwater:**	Not Encountered
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, Dry, Silty Sand Bulk Sample at 0' to 5' - JDA02202536	SA, SE*, RV*
5							*Drilling Terminated at Approximately 5'*	
10								
15								
20								
25								

Comments: "N" Value based on 2.5" diameter modified California Tube Sampler (ASTM D3550) or SPT (ASTM D1586) as noted on log. Some boulder/rock encountered during drilling operations. Partial caving of hole observed.

(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 Testing

Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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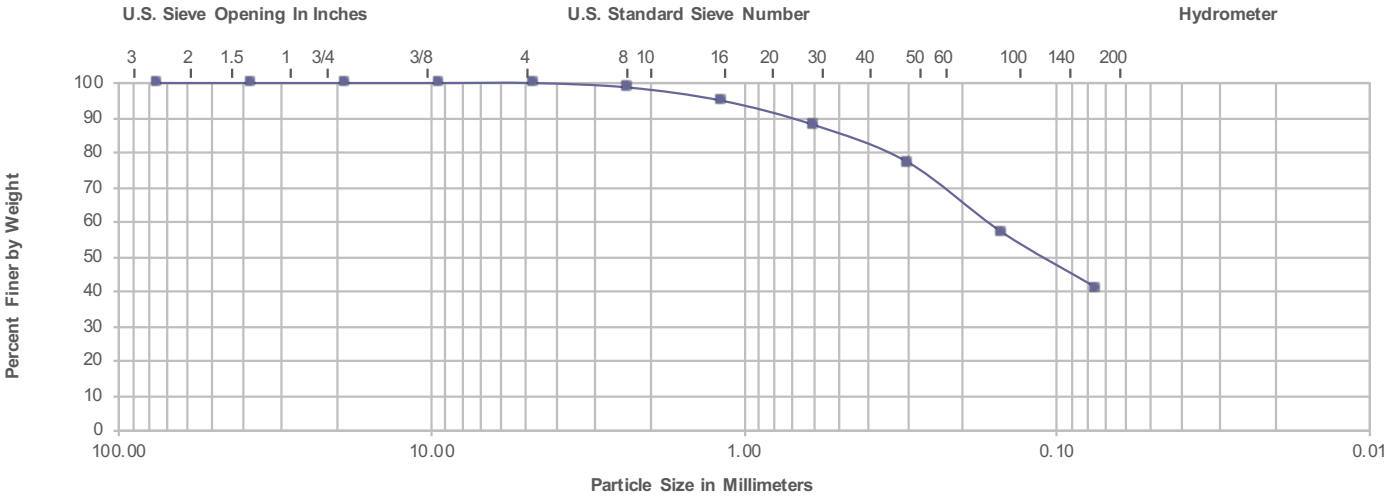
Sample ID: JDA02202501 **Gravel** (%): 0.0% **Sand** (%): 58.8% **Fines** (%): 41.2%

Classification, ASTM D2487: (SM) Silty sand
Sample Origin: Boring One 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	5.0%	2.872	0.164	0.000	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 1060.9
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

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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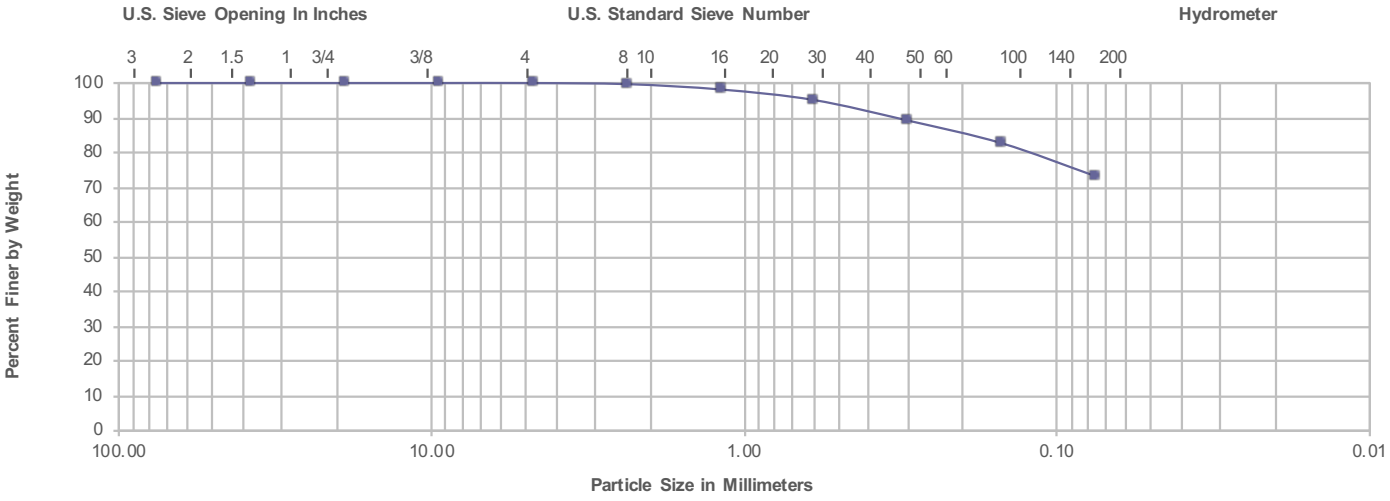
Sample ID: JDA02202504 **Gravel** (%): 0.0% **Sand** (%): 26.8% **Fines** (%): 73.2%

Classification, ASTM D2487: (CLML) Silty clay with sand
Sample Origin: Boring One at 5'
Laboratory Remarks:



C_u	C_c	Moisture	D_{100}	D_{60}	D_{30}	D_{10}	LL	PL	PI	SG	FM	SE
NA	NA	11.7%	1.844	0.000	0.000	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 314.4
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

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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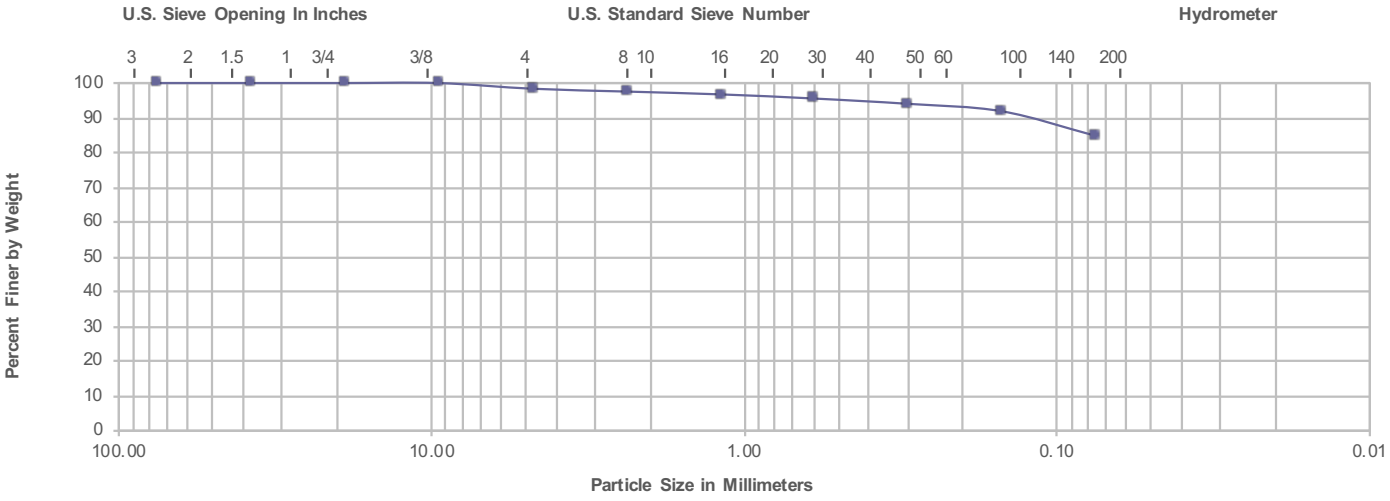
Sample ID: JDA02202505 **Gravel** (%): 1.6% **Sand** (%): 13.6% **Fines** (%): 84.8%

Classification, ASTM D2487: (CLML) Silty clay
Sample Origin: Boring One at 10'
Laboratory Remarks:



C_u	C_c	Moisture	D_{100}	D_{60}	D_{30}	D_{10}	LL	PL	PI	SG	FM	SE
NA	NA	13.6%	14.250	0.000	0.000	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 366.6
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.

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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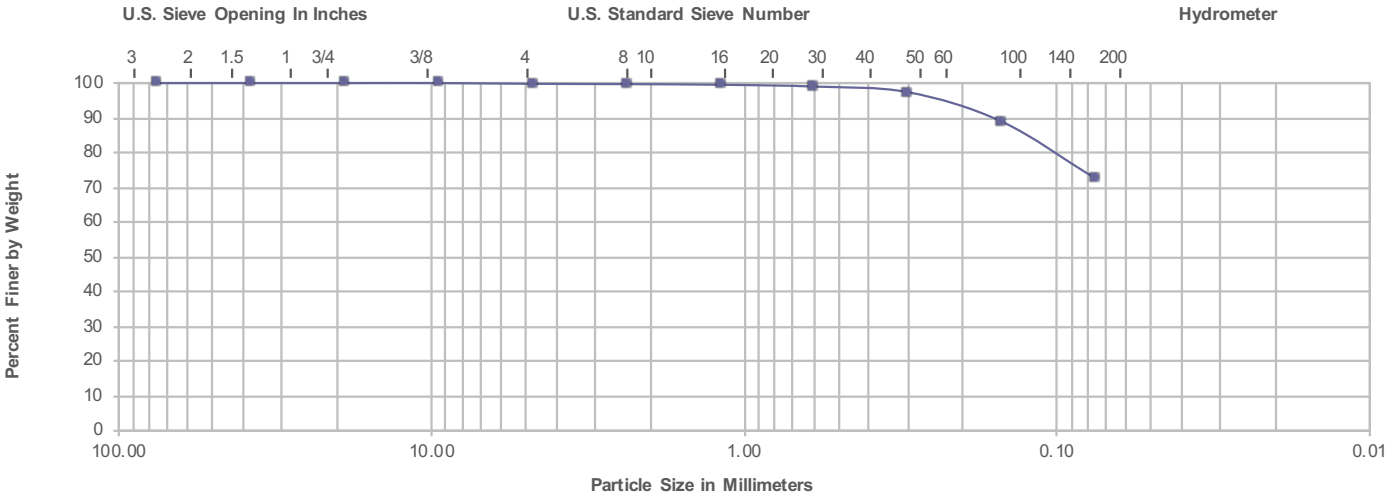
Sample ID: JDA02202508 **Gravel** (%): 0.2% **Sand** (%): 27.4% **Fines** (%): 72.4%

Classification, ASTM D2487: (CLML) Silty clay with sand
Sample Origin: Boring One at 25'
Laboratory Remarks:



C_u	C_c	Moisture	D_{100}	D_{60}	D_{30}	D_{10}	LL	PL	PI	SG	FM	SE
NA	NA	23.4%	0.605	0.000	0.000	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 667.1
Determination of Dry Mass: D2216
Particles; Shape, Hardness: ND
Dispersion Device/Period: Manual/2 hr
Type & Amount of Agent: Defloc. & 1.0
Laboratory Comments:

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The Material Tested ☐ Met ☐ Did Not Meet The requirements of the DSA approved documents.

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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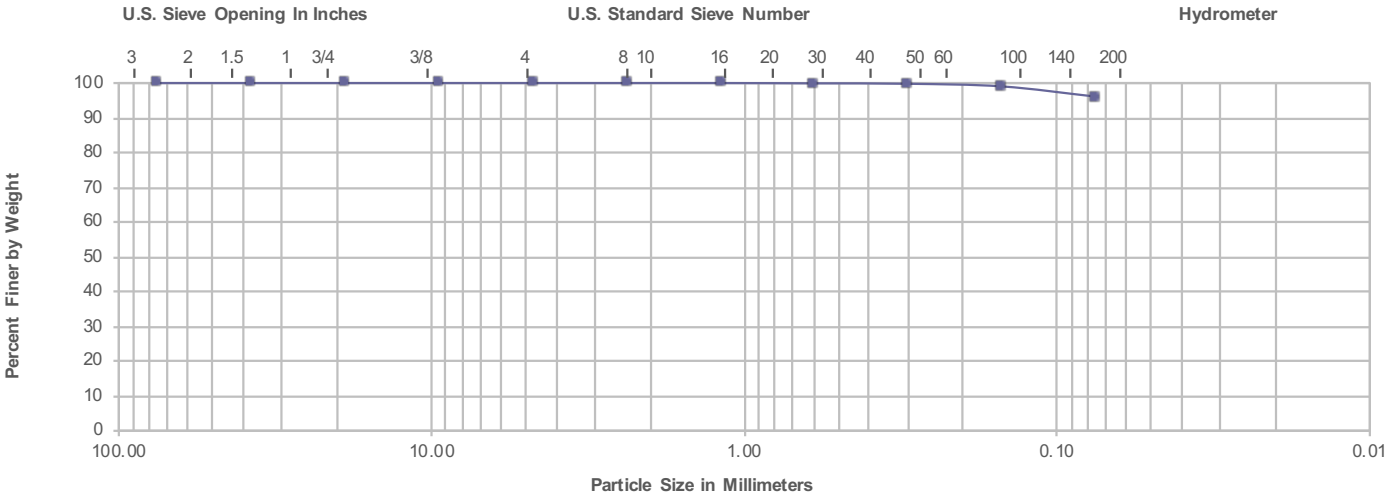
Sample ID: JDA02202509 **Gravel** (%): 0.0% **Sand** (%): 3.9% **Fines** (%): 96.1%

Classification, ASTM D2487: (CH) Fat clay
Sample Origin: Boring One at 40'
Laboratory Remarks:



C_u	C_c	Moisture	D_{100}	D_{60}	D_{30}	D_{10}	LL	PL	PI	SG	FM	SE
NA	NA	25.1%	14.250	0.000	0.000	0.000	53	29	25	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 631.5
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.

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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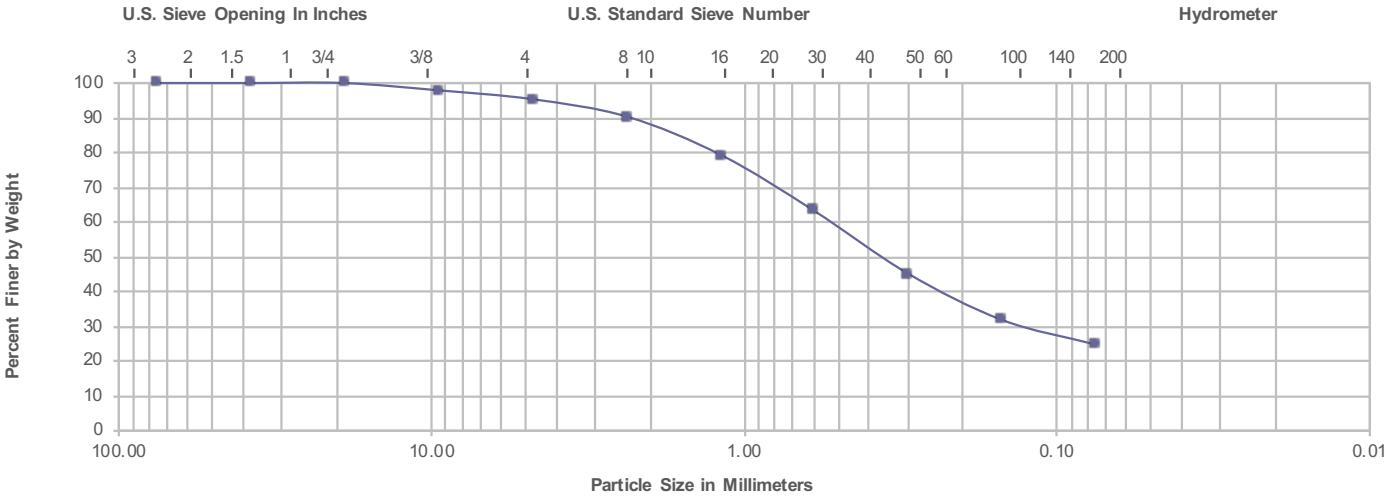
DSA LEA No:	

Sample ID: JDA02202516 **Gravel** (%): 4.7% **Sand** (%): 70.6% **Fines** (%): 24.8%

Classification, ASTM D2487: (SM) Silty sand
Sample Origin: Boring Three 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	3.1%	14.453	0.528	0.120	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 1076.9
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.

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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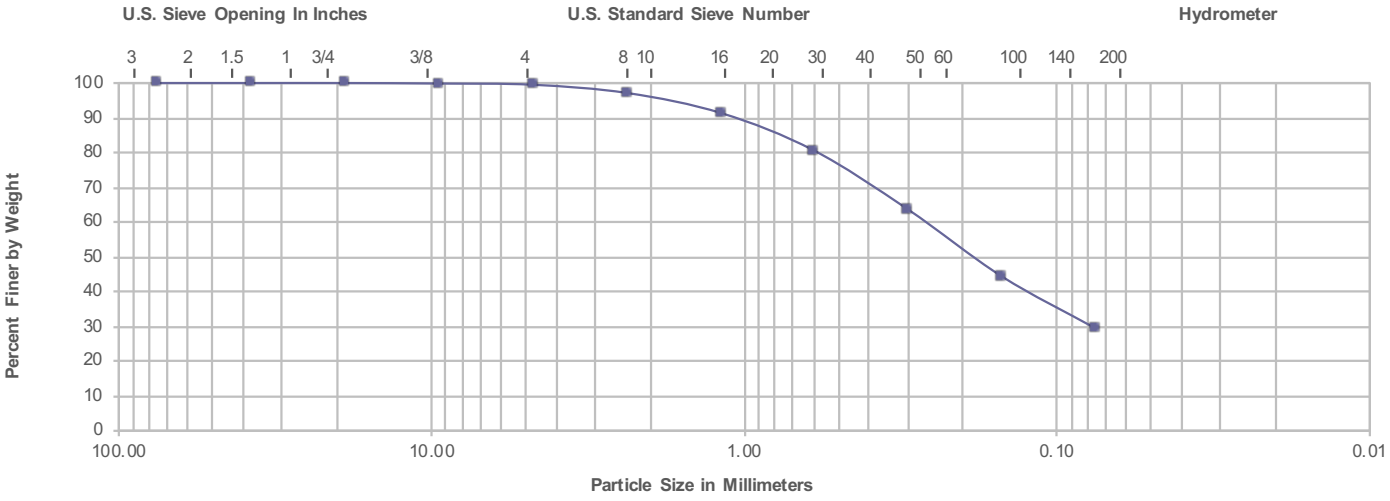
DSA LEA No:	

Sample ID: JDA02202522 **Gravel** (%): 0.5% **Sand** (%): 70.1% **Fines** (%): 29.4%

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	2.4%	4.238	0.264	0.073	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 1066.2
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.
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cc: Project Architect, Structural Engineer, Project Inspector, DSA Regional Office, School District

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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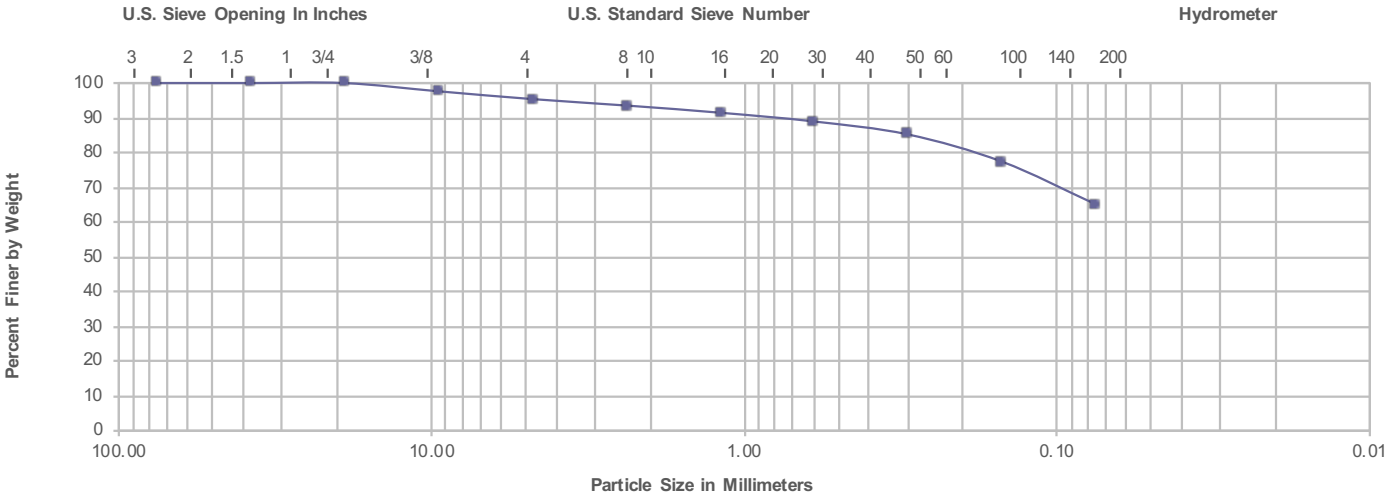
Sample ID: JDA02202533 **Gravel** (%): 4.6% **Sand** (%): 30.3% **Fines** (%): 65.1%

Classification, ASTM D2487: (ML) Sandy silt
Sample Origin: Boring Seven 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	5.6%	14.992	0.000	0.000	0.000	26	23	3	ND	ND	7

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 1232.0
Determination of Dry Mass: D2216
Particles; Shape, Hardness: ND
Dispersion Device/Period: Manual/2 hr
Type & Amount of Agent: Defloc. & 1.0
Laboratory Comments:

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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Other:	
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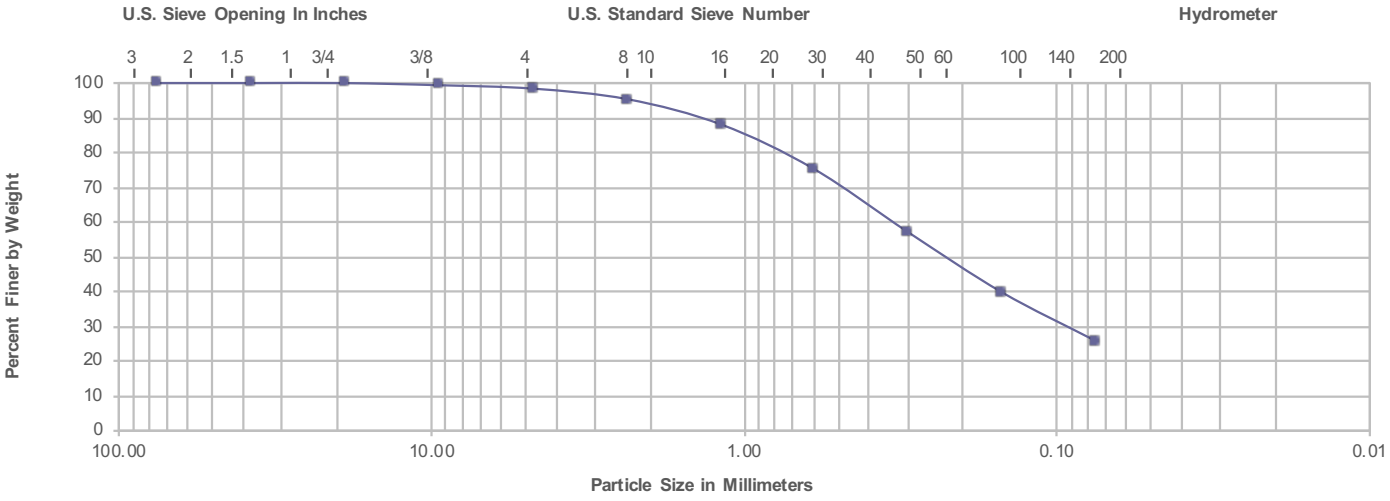
DSA Application No:	
DSA LEA No:	

Sample ID: JDA02202534 **Gravel** (%): 1.6% **Sand** (%): 72.6% **Fines** (%): 25.8%

Classification, ASTM D2487: (SM) Silty sand
Sample Origin: Boring Eight 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%	7.656	0.330	0.092	0.000	ND	ND	ND	ND	ND	34

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 1113.2
Determination of Dry Mass: D2216
Particles; Shape, Hardness: ND
Dispersion Device/Period: Manual/2 hr
Type & Amount of Agent: Defloc. & 1.0
Laboratory Comments:

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Particle-Size Analysis of Soil

D422, D1140, D2487

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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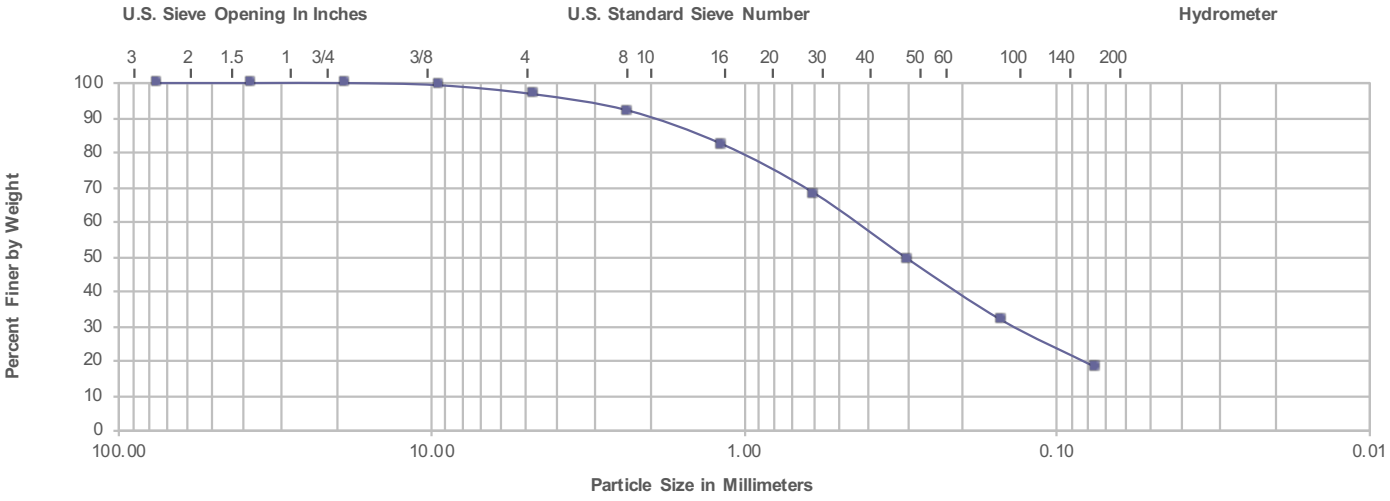
Sample ID: JDA02202536 **Gravel** (%): 3.2% **Sand** (%): 78.6% **Fines** (%): 18.2%

Classification, ASTM D2487: (SM) Silty sand
Sample Origin: Boring Nine 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	1.3%	8.800	0.451	0.135	0.000	ND	ND	ND	ND	ND	ND

Method / Procudure Used: D422, D1140
Size of Initial Dry Mass (g): 1184.8
Determination of Dry Mass: D2216
Particles; Shape, Hardness: ND
Dispersion Device/Period: Manual/2 hr
Type & Amount of Agent: Defloc. & 1.0
Laboratory Comments:

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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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Plasticity Index of Soils

ASTM D4318

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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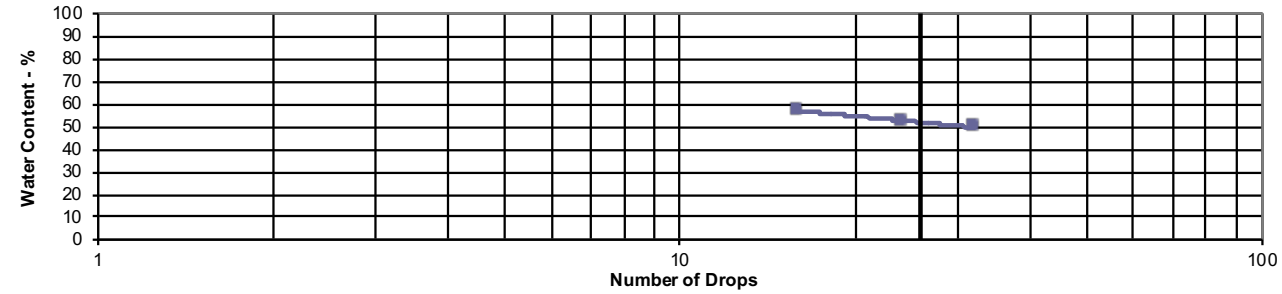
DSA Application No.:
DSA LEA No.:

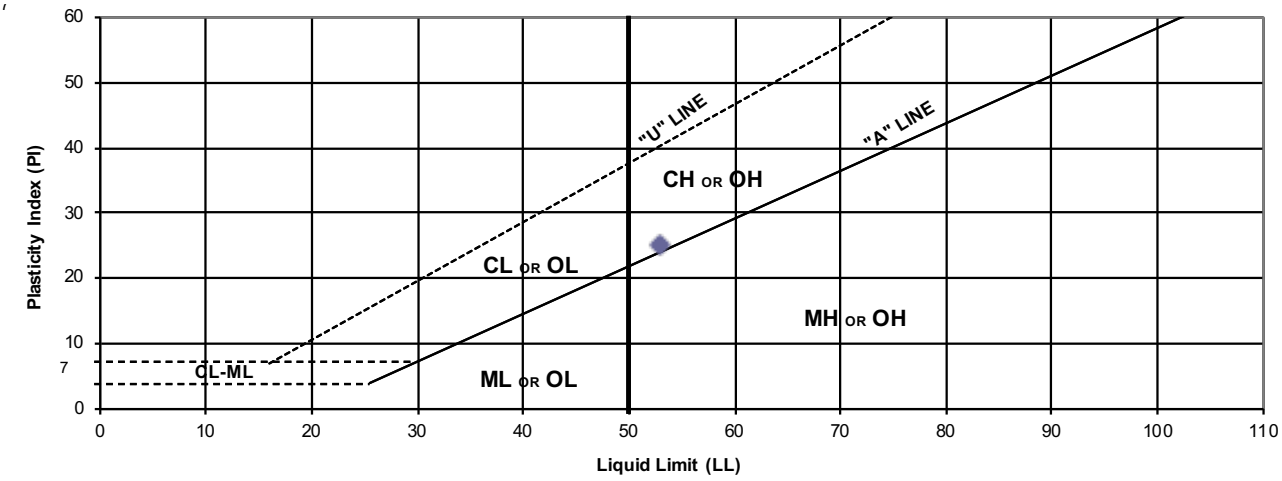
Sample ID: JDA02202509 ☐ **General Compliance** ☐ **Non-Compliance** ☐ **Not Specified**

Desription, D2487:	(CH) Fat clay	**Tested By:**	JJB
Sample Origin:	Boring One at 40'	**Method/Equipment Used:**	Multi Point, Manual
Laboratory Remarks:		**Prep:**	Wet

Plasticity Index (PI):		**Allowable*:**
Liquid Limit (LL):	53	-
Plastic Limit (PL):	29	-
Plasticity Index (LL-PL):	25	-

*Amount Allowable Based On:





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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

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Plasticity Index of Soils

ASTM D4318

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Project Number: 24185P1
Project Title: Desert Horizons II, General Atomics
Project Location: El Mirage, CA
Client: Parkway Construction

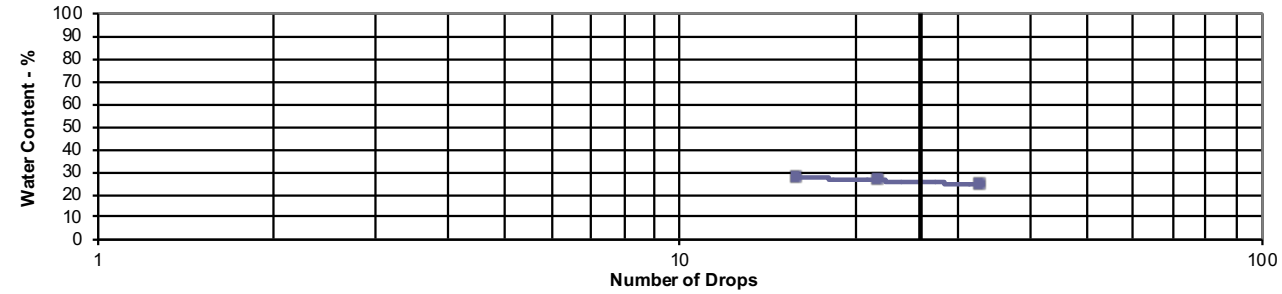
Sample ID: JDA02202533 ☐ General Compliance ☐ Non-Compliance ☐ Not Specified

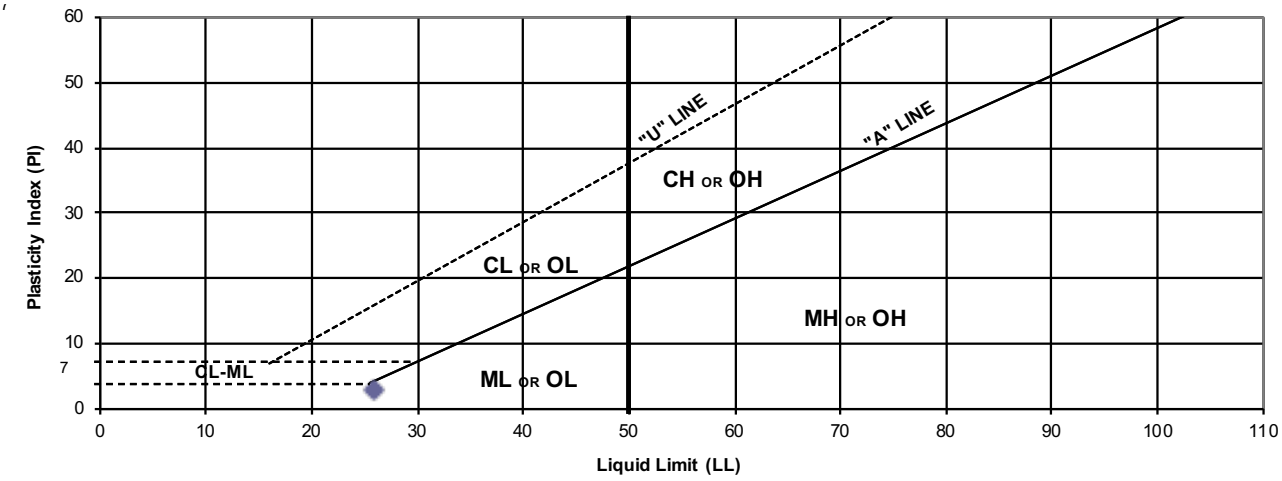
Desription, D2487: (ML) Sandy silt
Sample Origin: Boring Seven at 0' to 5'
Laboratory Remarks:

Tested By: JJB
Method/Equipment Used: Multi Point, Manual
Prep: Wet

Plasticity Index (PI):		Allowable*:
Liquid Limit (LL):	26	-
Plastic Limit (PL):	23	-
Plasticity Index (LL-PL):	3	-

*Amount Allowable Based On:





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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

Laboratory Compaction Characteristics

ASTM D1557, D2488

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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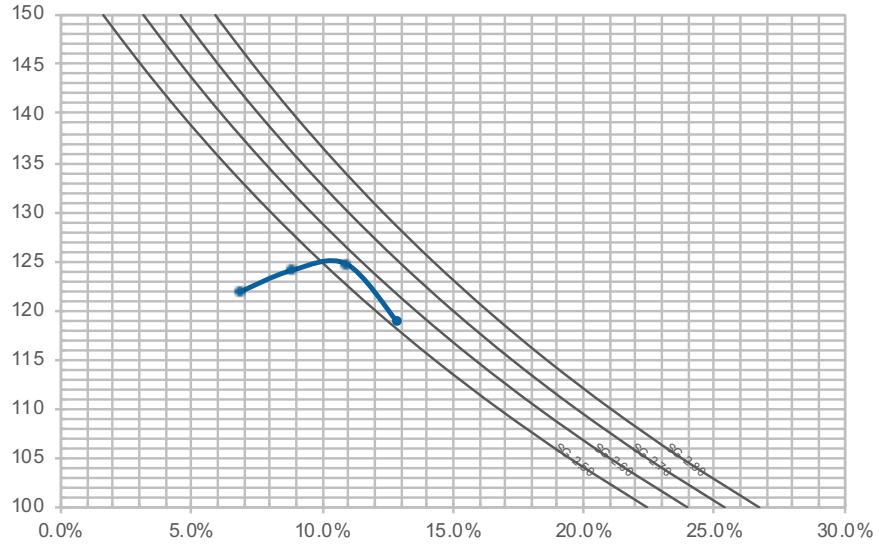
DSA Application No.:
DSA LEA No.:

Sample ID: JDA02202501 **Maximum Dry Unit Weight** (lbf/ft^3): 125.0 **Optimum Moisture Content** (%): 10.2

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



Tested By:	EJM
Received Moisture:	4.9%
Preparation:	Wet
Specific Gravity:	
SG Method:	
Start Weight (lb):	34.5
Retained on 3/4" (lb):	0.0
Retained on 3/8" (lb):	0.0
Retained on No. 4 (lb):	0.1
Retained on 3/4" (%):	
Retained on 3/8" (%):	
Retained on No. 4 (%):	0.3%
Oversize Correction:	
Mold Volume Factor:	30.01
Tare Weight (lb):	4.32
Rammer Used:	Mechanical
Method Used:	☐ A ☑ B ☐ C

Weight of Soil and Tare (lb):	8.66	8.82	8.93	8.79
Wet Weight (g):	315.0	309.2	313.0	316.8
Dry Weight (g):	294.8	284.1	282.2	280.7
Moisture Content (%):	6.9%	8.8%	10.9%	12.9%
Dry Unit Weight (flb/ft^3):	121.9	124.1	124.7	118.9

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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

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Laboratory Compaction Characteristics

ASTM D1557, D2488

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

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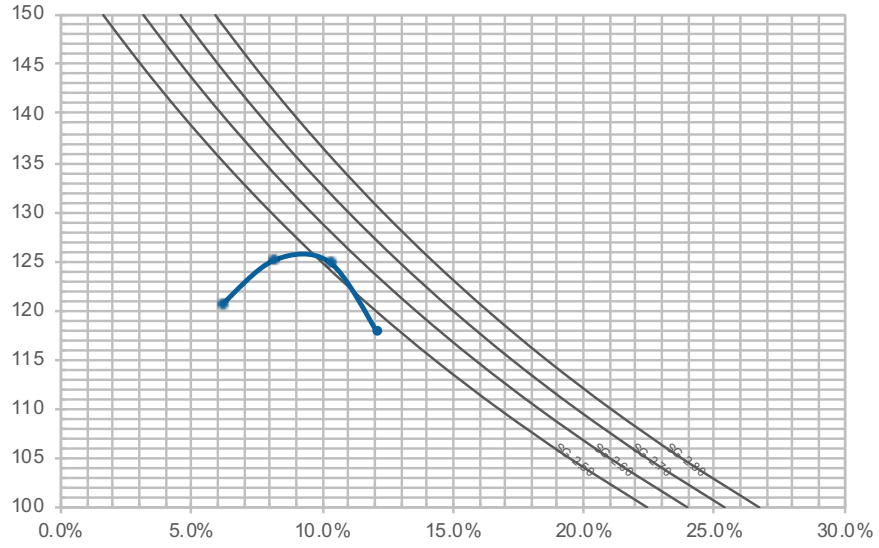
DSA Application No.:
DSA LEA No.:

Sample ID: JDA02202510 **Maximum Dry Unit Weight** (lbf/ft^3): 125.8 **Optimum Moisture Content** (%): 9.6

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



Tested By:	EJM
Received Moisture:	6.2%
Preparation:	Wet
Specific Gravity:	
SG Method:	
Start Weight (lb):	35.2
Retained on 3/4" (lb):	0.0
Retained on 3/8" (lb):	0.2
Retained on No. 4 (lb):	1.0
Retained on 3/4" (%):	
Retained on 3/8" (%):	0.6%
Retained on No. 4 (%):	2.8%
Oversize Correction:	
Mold Volume Factor:	30.01
Tare Weight (lb):	4.32
Rammer Used:	Mechanical
Method Used:	☐ A ☑ B ☐ C

Weight of Soil and Tare (lb):	8.59	8.83	8.91	8.72
Wet Weight (g):	308.8	304.5	313.4	314.9
Dry Weight (g):	290.8	281.5	284.2	280.9
Moisture Content (%):	6.2%	8.2%	10.3%	12.1%
Dry Unit Weight (flb/ft^3):	120.7	125.1	124.9	117.8

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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Laboratory Compaction Characteristics

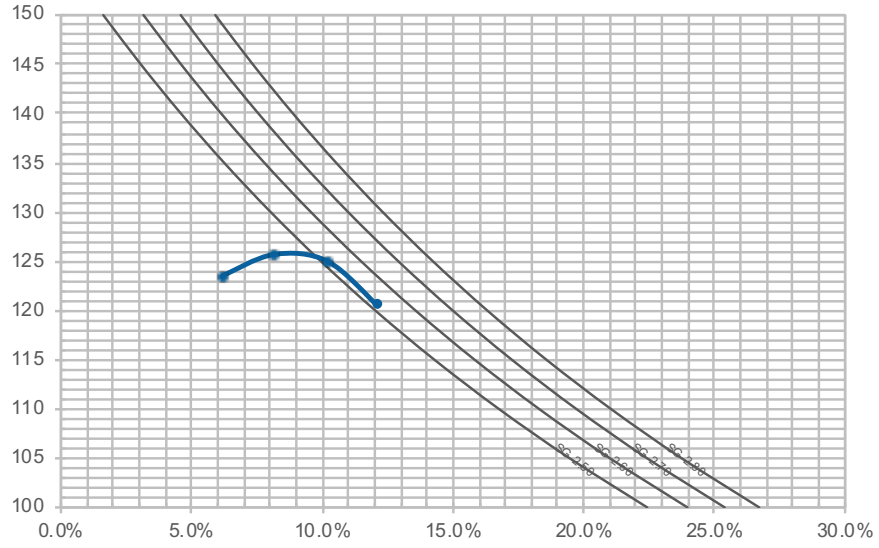
ASTM D1557, D2488

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:
Sheet: 1 *of* 1
Attachment:
Permit No.:
Client Project No.:
Other:
DSA File No.:
DSA Application No.:
DSA LEA No.:

Sample ID: JDA02202522 **Maximum Dry Unit Weight** (lbf/ft^3): 125.9 **Optimum Moisture Content** (%): 8.5

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



Tested By:	EJM
Received Moisture:	2.2%
Preparation:	Wet
Specific Gravity:	
SG Method:	
Start Weight (lb):	40.0
Retained on 3/4" (lb):	0.0
Retained on 3/8" (lb):	0.0
Retained on No. 4 (lb):	0.5
Retained on 3/4" (%):	
Retained on 3/8" (%):	
Retained on No. 4 (%):	1.3%
Oversize Correction:	
Mold Volume Factor:	30.01
Tare Weight (lb):	4.32
Rammer Used:	Mechanical
Method Used:	☐ A ☑ B ☐ C

Weight of Soil and Tare (lb):	8.69	8.85	8.91	8.82
Wet Weight (g):	312.8	317.0	312.3	309.7
Dry Weight (g):	294.6	293.1	283.4	276.2
Moisture Content (%):	6.2%	8.2%	10.2%	12.1%
Dry Unit Weight (flb/ft^3):	123.5	125.7	125.0	120.4

The Material ☐ Was ☐ Was Not Sampled & tested in accordance with the reqs. of the DSA approved documents.
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Expansion Index

ASTM D4829

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:
Sheet: 1 *of* 1
Attachment:
Permit No.:
Client Project No.:
Other:
DSA File No.:
DSA Application No.:
DSA LEA No.:

Sample ID: JDA02202501 ☐ **General Compliance** ☐ **Non-Compliance** ☐ **Not Specified**

Classification, ASTM D2487:	(SM) Silty sand
Sample Origin:	Boring One at 0' to 5'
Laboratory Remarks:	
Tested By:	EJM
Method/Procedure:	ASTM D4829

Expansion Index

Value: 21

Expansion Index	Potention Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
> 130	Very High

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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Expansion Index

ASTM D4829

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:
Sheet: 1 *of* 1
Attachment:
Permit No.:
Client Project No.:
Other:
DSA File No.:
DSA Application No.:
DSA LEA No.:

Sample ID: JDA02202517 ☐ **General Compliance** ☐ **Non-Compliance** ☐ **Not Specified**

Classification, ASTM D2487:	(SM) Silty sand
Sample Origin:	Boring Four at 0' to 5'
Laboratory Remarks:	
Tested By:	EJM
Method/Procedure:	ASTM D4829

Expansion Index

Value: 30

Expansion Index	Potention Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
> 130	Very High

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.
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Name / Title

Sand Equivalent of Soils and Fine Aggregate

ASTM D2419

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 *of* 1
Attachment:	
Permit No.:	
Client Project No.:	
Other:	
DSA File No.:	
DSA Application No.:	
DSA LEA No.:	

Sample ID: JDA02202533 ☐ **General Compliance** ☐ **Non-Compliance** ☐ **Not Specified**

Desription:	(SM) Silty sand
Sample Origin:	Boring Seven at 0' to 5'
Laboratory Remarks:	
Tested By:	EJM
Mechanical/Manual Shaker:	Mechanical

Sand Equivalent Value	**Minimum Value Allowable**
7	**-**

Ammount/Value Allowable Based On:

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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Jeremy Beissner/ Laboratory Manager

Name / Title

Sand Equivalent of Soils and Fine Aggregate

ASTM D2419

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 *of* 1
Attachment:	
Permit No.:	
Client Project No.:	
Other:	
DSA File No.:	
DSA Application No.:	
DSA LEA No.:	

Sample ID: JDA02202534 ☑ **General Compliance** ☐ **Non-Compliance** ☐ **Not Specified**

Desription:	(SM) Silty sand
Sample Origin:	Boring Eight at 0' to 5'
Laboratory Remarks:	
Tested By:	EJM
Mechanical/Manual Shaker:	Mechanical

Sand Equivalent Value	**Minimum Value Allowable**
31	**-**

Ammount/Value Allowable Based On:

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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Name / Title

R-Value and Expansion Pressure of Compacted Soils

ASTM D2844

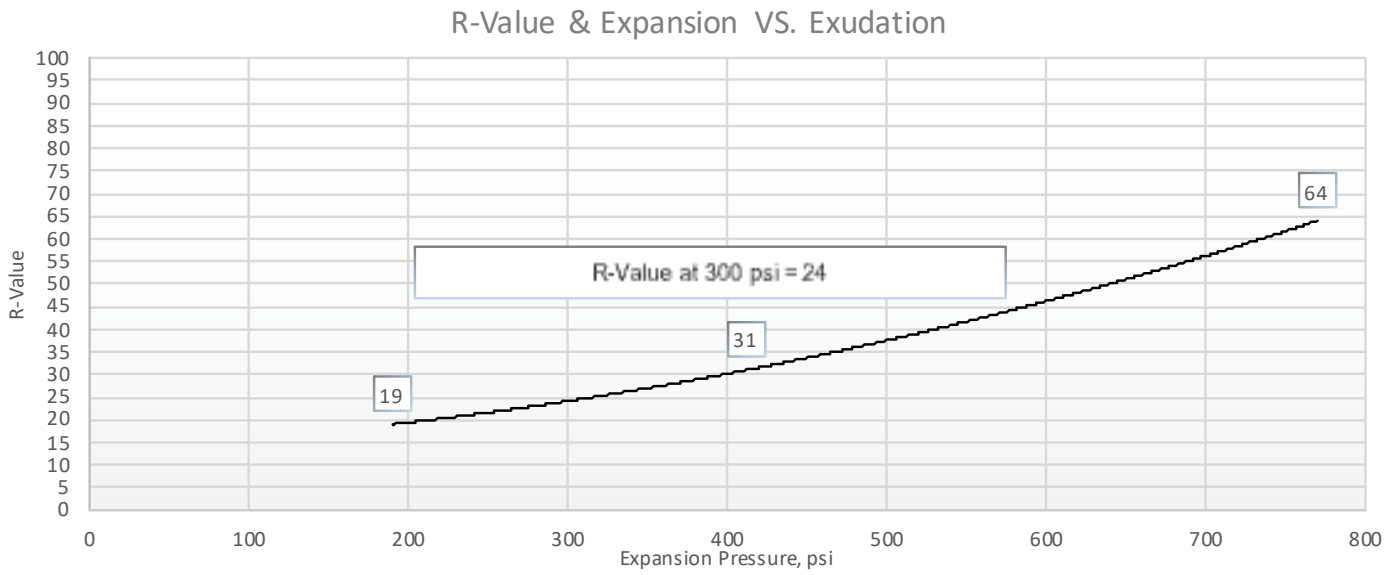
Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:
Sheet: 1 *of* 1
Appendix:
Permit No.:
Client Project No.:
Other:
DSA File No.:
DSA Application No.:
DSA LEA No.:

Sample ID: JDA02202533 ☐ **General Compliance** ☐ **Non-Compliance** ☐ **Not Specified**

Desription, D2847:	(ML) Sandy silt
Sample Origin:	Boring Seven at 0' to 5'
Tested By:	EJM
Value Allowable Based On:	

Briguette Number:	1	2	3
Moisture Content (%):	10.8	12.4	14.7
Dry Density (pcf):	127.0	124.9	124.0
Exudation Pressure (psi):	770	412	190
Expansion Pressure (psf):	0.0206	0.0015	0.0025
R-Value:	64	31	19



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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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R-Value and Expansion Pressure of Compacted Soils

ASTM D2844

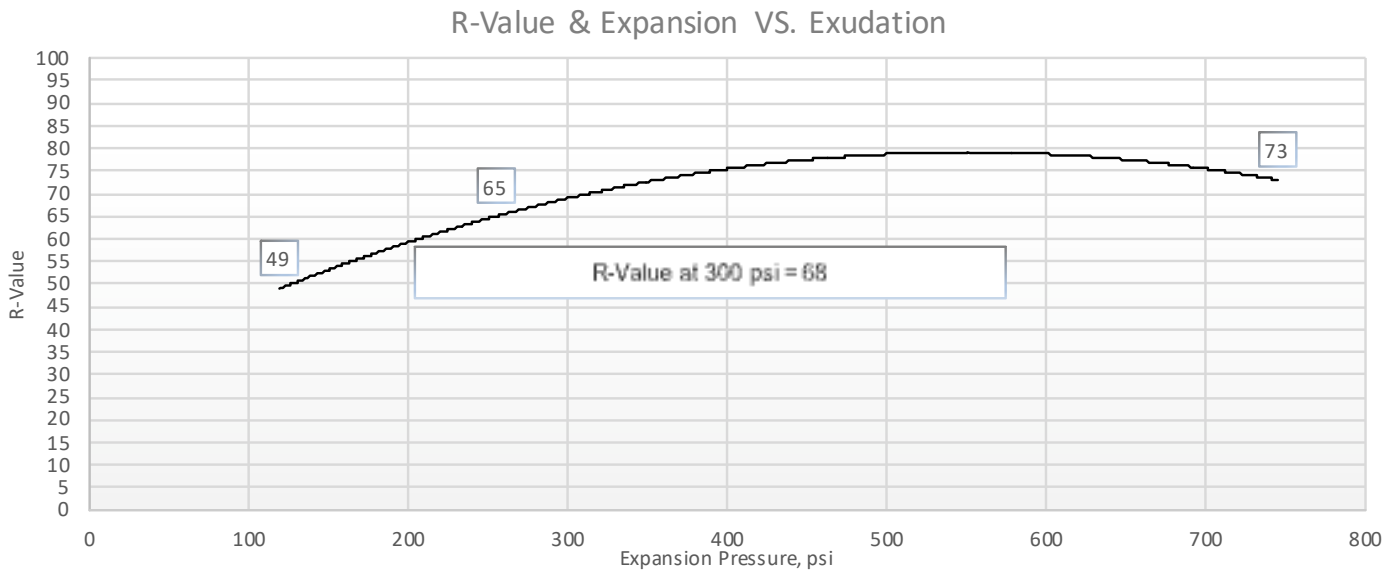
Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:
Sheet: 1 *of* 1
Appendix:
Permit No.:
Client Project No.:
Other:
DSA File No.:
DSA Application No.:
DSA LEA No.:

Sample ID: JDA02202534 ☐ **General Compliance** ☐ **Non-Compliance** ☐ **Not Specified**

Desription, D2847:	(SM) Silty sand
Sample Origin:	Boring Eight at 0' to 5'
Tested By:	EJM
Value Allowable Based On:	

Briguette Number:	1	2	3
Moisture Content (%):	8.8	9.3	11.4
Dry Density (pcf):	130.0	128.6	126.5
Exudation Pressure (psi):	745	255	119
Expansion Pressure (psf):	0.0031	-0.0002	-0.0010
R-Value:	73	65	49



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Name / Title

Direct Shear Test of Soils

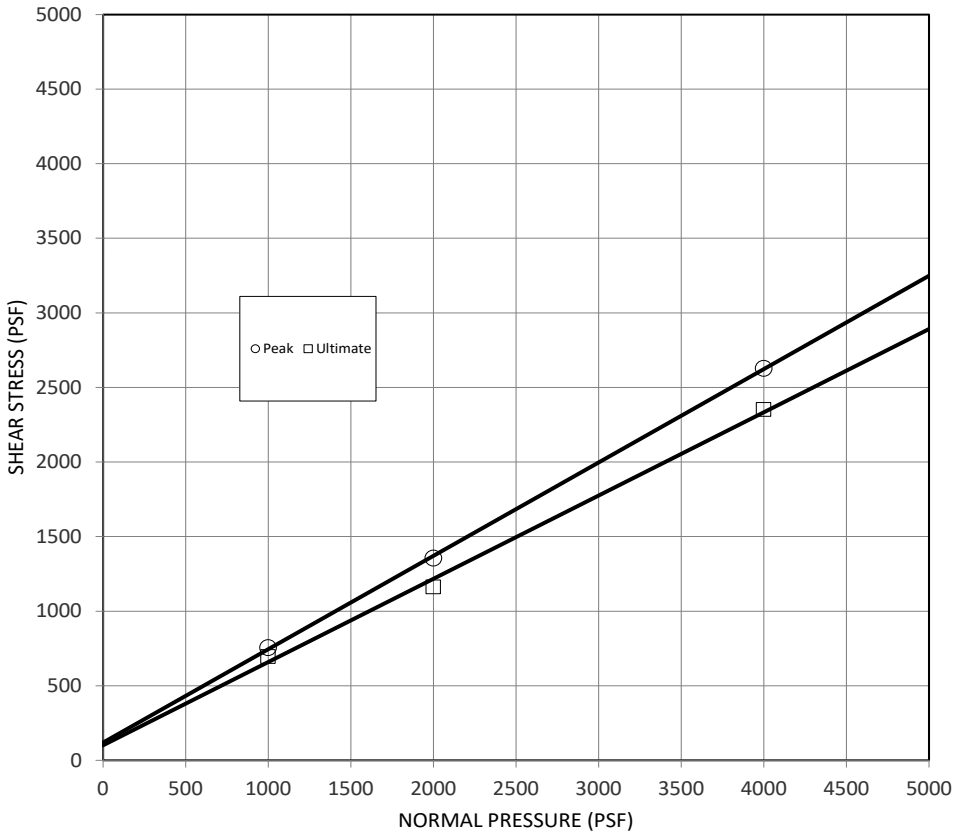
ASTM D3080

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 of 1
Appendix:	C
Permit No:	
Client Project No:	
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: JDA02202514 **Angle of Internal Friction** (°)**: 32 / 29** **Peak Cohesion** (psf)**: 120** **Ultimate Cohesion** (psf)**: 101**

Classification, ASTM D2488: (CLML) Silty clay
Sample Origin: Boring Two at 10'
Laboratory Remarks:



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

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Direct Shear Test of Soils

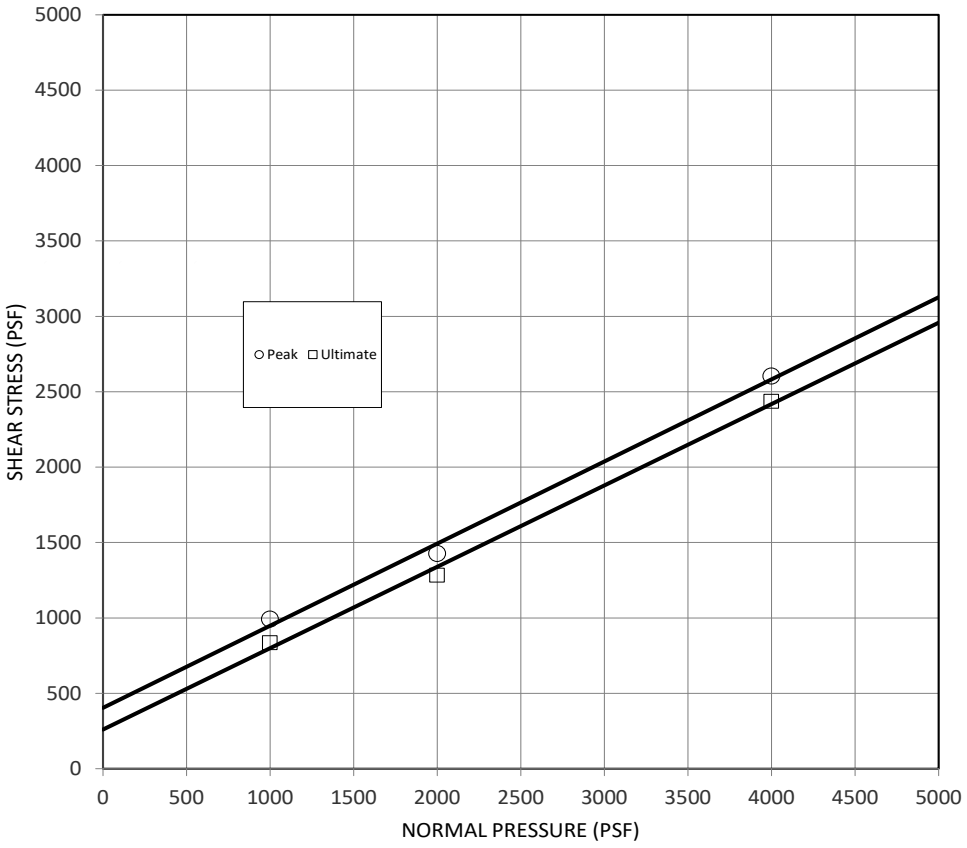
ASTM D3080

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 of 1
Appendix:	C
Permit No:	
Client Project No:	
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: JDA022025149 **Angle of Internal Friction** (°)**:** 29 / 28 **Peak Cohesion** (psf)**:** 404 **Ultimate Cohesion** (psf)**:** 260

Classification, ASTM D2488: (CLML) Silty clay
Sample Origin: Boring Four at 5'
Laboratory Remarks:



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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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Direct Shear Test of Soils

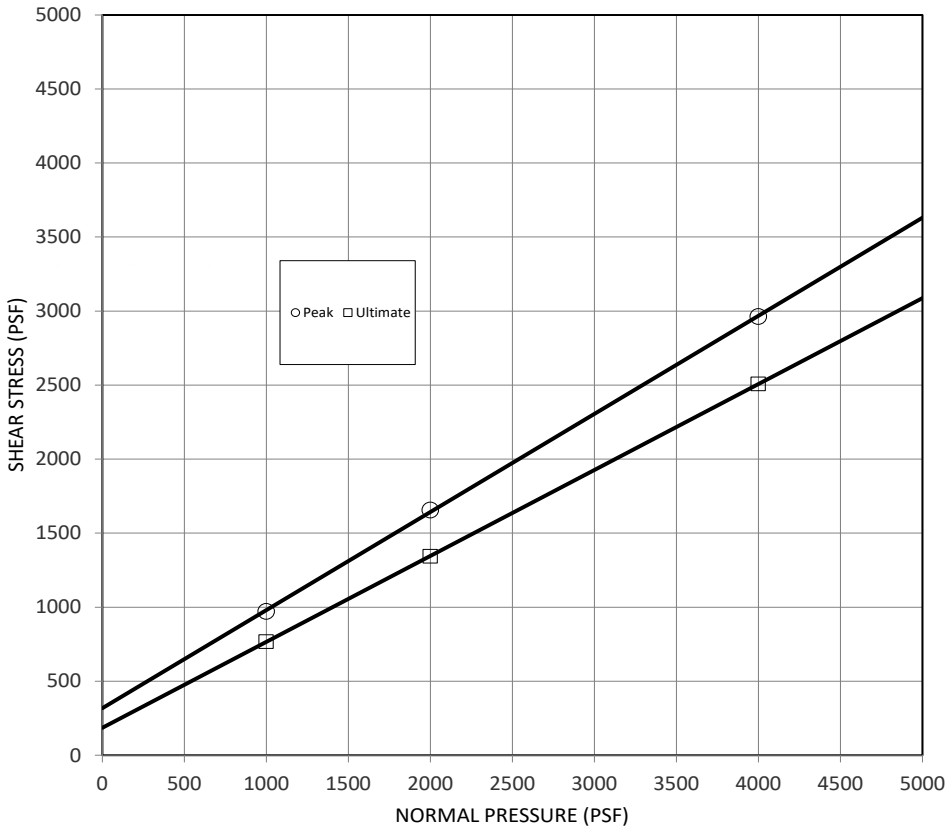
ASTM D3080

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 of 1
Appendix:	C
Permit No:	
Client Project No:	
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: JDA02202530 **Angle of Internal Friction** (°)**: 34 / 30** **Peak Cohesion** (psf)**: 318** **Ultimate Cohesion** (psf)**: 186**

Classification, ASTM D2488: (CLML) Silty clay
Sample Origin: Boring Six at 5'
Laboratory Remarks:



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Consolidation Properties of Soils

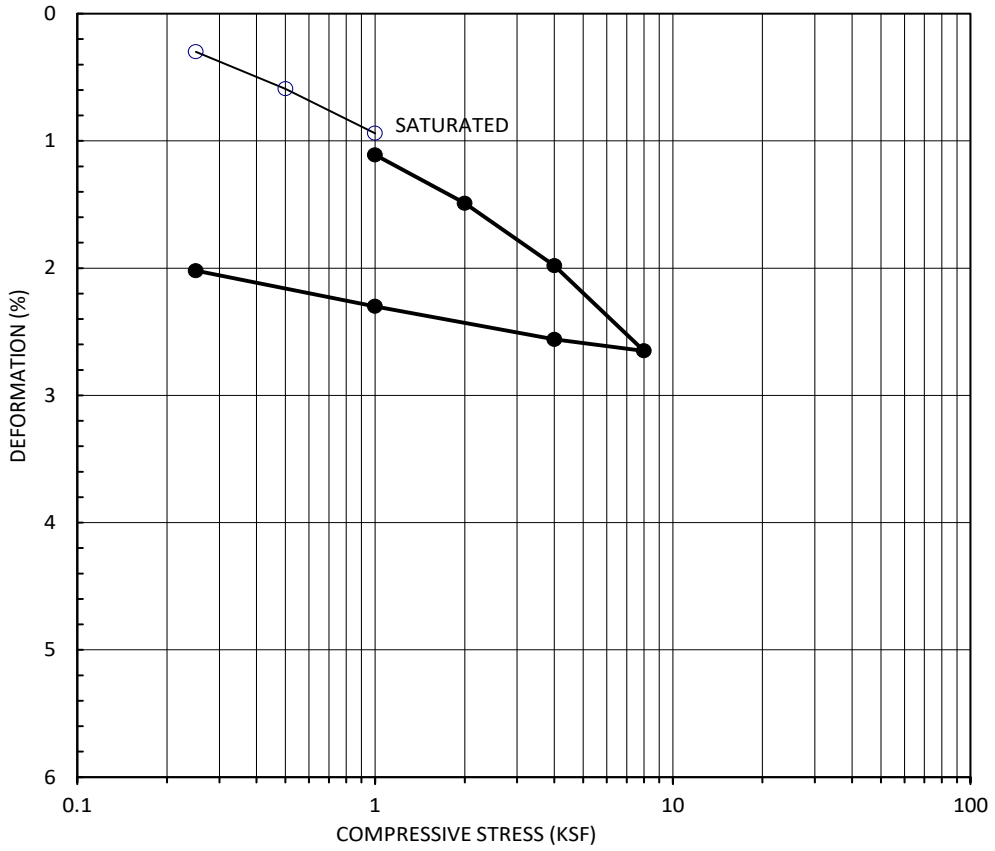
ASTM D2435

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 of 1
Appendix:	C
Permit No:	
Client Project No:	
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: JDA02202506 **Initial Moisture Content** (%)**:** 3.5 **Initial Dry Density** (pcf)**:** 110.7 **Initial Void Ratio:** 0.522

Classification, ASTM D2488: (CLML) Silty clay
Sample Origin: Boring One at 15'
Laboratory Remarks:



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Consolidation Properties of Soils

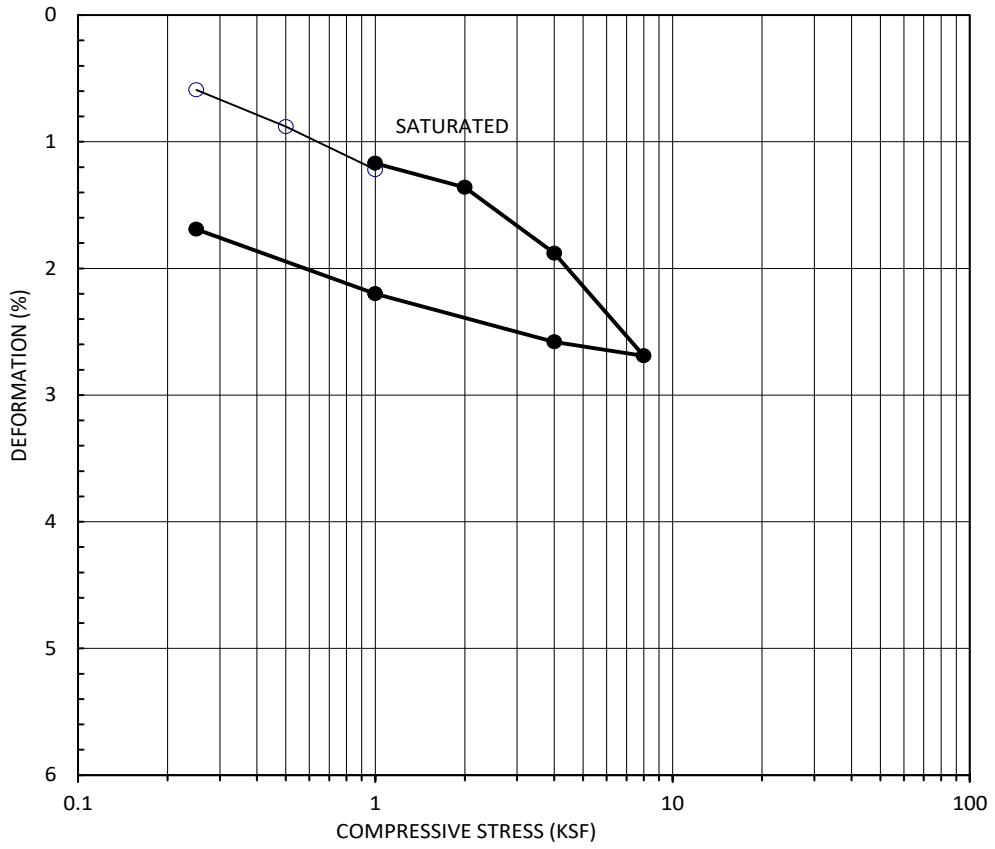
ASTM D2435

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 of 1
Appendix:	C
Permit No:	
Client Project No:	
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: JDA02202515 **Initial Moisture Content** (%)**:** 11 **Initial Dry Density** (pcf)**:** 125.4 **Initial Void Ratio:** 0.343

Classification, ASTM D2488: (SM) Silty sand
Sample Origin: Boring Two at 15'
Laboratory Remarks:



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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Consolidation Properties of Soils

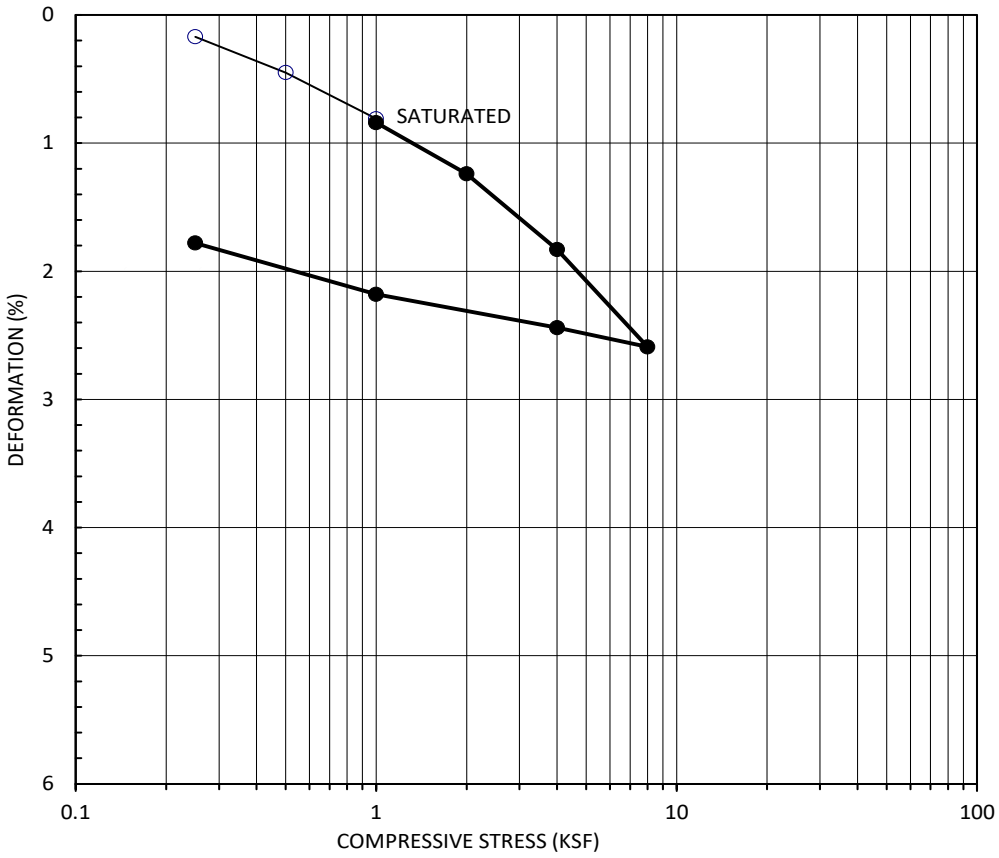
ASTM D2435

Project Number:	24185P1
Project Title:	Desert Horizons II, General Atomics
Project Location:	El Mirage, CA
Client:	Parkway Construction

Report Date:	
Sheet:	1 of 1
Appendix:	C
Permit No:	
Client Project No:	
Other:	
DSA File No:	
DSA Application No:	
DSA LEA No:	

Sample ID: JDA02202526 **Initial Moisture Content** (%)**:** 7.4 **Initial Dry Density** (pcf)**:** 119.1 **Initial Void Ratio:** 0.414

Classification, ASTM D2488: (CLML) Silty clay
Sample Origin: Boring Five at 15'
Laboratory Remarks:



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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Name / Title

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Corrosion Potential

CT 643, 422, 417, 643

Report Date:
Sheet: 1 of 1
Appendix: C
Permit No:
Client Project No:
Other:
DSA File No:
DSA Application No:
DSA LEA No:

Project Number: 24185P1
Project Title: Desert Horizons II, General Atomics
Project Location: El Mirage, CA
Client: Parkway Construction

Sample ID: JDA02202501

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

Analysis	Result	Units	Test Method
Minimum Resistivity	185	ohm-cm	CT 643
Chloride Content	640	ppm	CT 422
Sulfate Content	0.523	%	CT 417
pH	8.48	pH units	CT 643

The Material ☐ Was ☐ Was Not Sampled & tested in accordance with the reqs. of the DSA approved documents.
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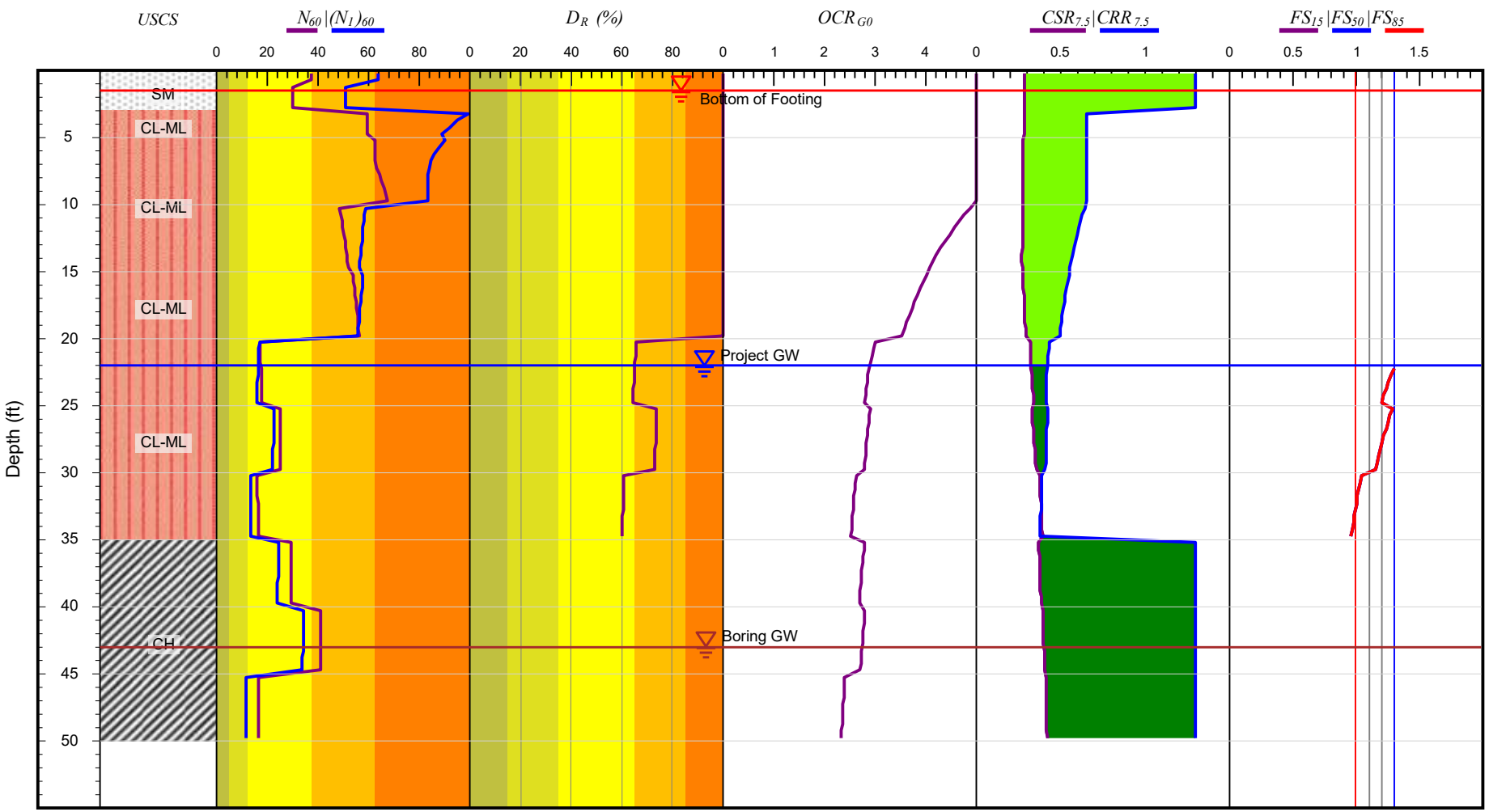
APPENDIX D

Liquefaction Potential – SPT Data



SM

CH

CL-ML

Silt Correction:
UCLA method

Earthquake & Groundwater Information:
Magnitude = 7
Max. Acceleration = 0.583 g
Project GW = 22 ft
Max. Seismic Settlement = 0.00 in
Settl. @ Bottom of Footing = 0.00 in

Liquefaction: Boulanger & Idriss (2010-16)
Settl.: [dry] Yi (2022)[CPT]; [sat] Idriss & Boulanger (2008)
Lateral spreading: Idriss & Boulanger (2008)
M correction: [Sand; Clay] Boulanger & Idriss(2004)
σv correction: Idriss & Boulanger (2008)
Stress reduction: Idriss & Boulanger (2008)

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Liquefaction Potential - SPT Data

Project:	Desert Horizons II, General Atomics				
Location:	Adelanto, CA				
Project No.:	24185P1	Boring No.:	1	Figure:	-1

C:\Users\JD\Documents\24185P1 GeoAdv\GeoSuite_24185P1_1.csv

Prepared at 3/21/2025 9:17:32 PM

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