Appendix D-2

Results of Infiltration Testing, Proposed Redlands West Development, Redlands Avenue, South of Rider Street Perris, California, for Lake Creek Industrial, LLC

Southern California Geotechnical

October 30, 2020

October 30, 2020

Lake Creek Industrial, LLC
1302 Brittany Cross Road
Santa Ana, California 92705

Attention: Mr. Bob Kubichek

Project No.: **20G179-2**

Subject: **Results of Infiltration Testing**
Proposed Redlands West Development
Redlands Avenue, South of Rider Street
Perris, California

References: Geotechnical Investigation, Proposed Warehouse, Redlands Avenue, South of Rider Street, Perris, California, prepared for Black Creek Group by Southern California Geotechnical, Inc. (SCG), SCG Project No. 19G213-1, dated October 25, 2019.

Results of Infiltration Testing, Proposed Warehouse, Redlands Avenue, South of Rider Street, Perris, California, prepared for Black Creek Group, by Southern California Geotechnical, Inc. (SCG), SCG Project No. 19G213-2, dated October 31, 2019.

Mr. Kubichek:

In accordance with your request, we have conducted infiltration testing at the subject site. We are pleased to present this report summarizing the results of the infiltration testing and our design recommendations.

Scope of Services

The scope of services performed for this project was in general accordance with our Proposal No. 20P209R, dated June 17, 2020 and Change Order No. 20G179-CO, dated October 1, 2020. The scope of services included site reconnaissance, subsurface exploration, field testing, and engineering analysis to determine the infiltration rates of the on-site soils. The infiltration testing was performed in general accordance with the guidelines published in Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A, prepared for the Riverside County Department of Environmental Health (RCDEH), dated December, 2013.

Site and Project Description

The subject site is located on the west side of Redlands Avenue, 720± feet south of Rider Street in Perris, California. The site is bounded to the north by an existing warehouse and a vacant lot, to the west by a Southern California Edison easement, to the south by a vacant lot, and to the east by Redlands Avenue. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 of this report.

The subject site consists of eight (8) rectangular to trapezoidal-shaped parcels which total 18.07± acres. The site is currently vacant and undeveloped. Ground surface cover consists of exposed soil with moderate native grass and weed growth, and localized areas of scattered debris and trash, such as clothes, tires, and concrete fragments.

Detailed topographic information was not available at the time of this report. However, based on topographic information obtained from Google Earth, the overall site topography slopes gently downward to the south at a gradient of less than 1± percent.

Proposed Development

The most current preliminary site plan, prepared by RGA, was provided to our office by the client. The plan indicates that the new development will consist of one (1) new commercial/industrial building, 305,780± ft² in size, located in the eastern region of the subject site. Dock-high doors and a truck court will be constructed on the west side of the proposed building. The new building is expected to be surrounded by asphaltic concrete pavements in the parking and drive areas and Portland cement concrete pavements in the loading dock areas. Several landscaped planters and concrete flatwork are also expected to be included throughout the site.

The proposed development will include on-site infiltration to dispose of storm water. Based on the infiltration test exhibit provided by Webb Associates, the project civil engineer, the infiltration system will consist of a below-grade chamber system located in the eastern area of the site. The bottom of the chamber system will be 10± feet below the existing site grades.

Previous Studies

SCG previously conducted a geotechnical investigation at the subject site referenced above. As part of this investigation, seven (7) borings were advanced to depths of 15 to 25± feet below the existing site grades. Native alluvial soils were encountered at the ground surface of all boring locations, extending to at least the maximum depth explored of 25± feet. The near-surface alluvium, in the upper 3 to 9± feet, generally consisted of loose to dense silty fine sands and fine sandy silts with variable amounts of medium to coarse sands and clay content. At greater depths, the alluvial soils generally consisted of stiff to hard clayey silts, medium stiff to very stiff silty clays, and medium dense to dense fine sandy silts. Three (3) of the borings encountered soil strata consisting of medium dense fine to coarse sands at depths ranging from 5½ to 9± feet. Groundwater was not encountered during the drilling of any of the borings.

SCG previously conducted infiltration testing at the subject site, referenced above. The infiltration testing was performed in general accordance with the ASTM Test Method D-3385-03, Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer. As part of this investigation, subsurface exploration for the infiltration testing consisted of three (3) backhoe-excavated, trenches, (identified as I-1 through I-3), each extending to a depth of 10± feet below existing site grades. Native alluvium was encountered at the ground surface at all three (3) of the infiltration trench locations. The near-surface alluvial soils, extending from the ground surface to 1± foot below the existing site grades, consisted of loose silty fine to medium sands with trace to little coarse sand. At greater depths, the alluvial soils generally consisted of medium dense to very dense silty fine sands and fine to medium sandy silts with variable amounts of medium to coarse sands and clay content, and loose to medium dense fine to coarse sands, extending to at

least the maximum depth explored of 10± feet below the existing site grades. Based on the results of Infiltration Test Nos. I-1 and I-2, we recommend an infiltration rate of 0.3 inches per hour be used for the design of the proposed below-grade chamber system located in the south-central area of the site. Based on the results of Infiltration Test No. I-3, we previously recommended an infiltration rate of 1.3 inches per hour be used for the design of the proposed chamber system located in the east-central area of the site. Infiltration test results are summarized as follows:

Infiltration Test No.	Soil Description	Infiltration Rate (inches/hour)
I-1	Fine to medium Sandy Silt, little Clay, little coarse Sand	0.4
I-2	Fine to medium Sandy Silt, little Clay, trace to little coarse Sand	0.3
I-3	Fine to medium Sandy Silt, trace Clay, trace coarse Sand	1.3

Subsurface Exploration

Scope of Exploration

The subsurface exploration conducted for the infiltration testing consisted of six (6) infiltration test borings advanced to depths of 10± feet below the existing site grades. The infiltration borings were advanced using a truck-mounted drilling rig, equipped with 8-inch diameter hollow stem augers and were logged during drilling by a member of our staff. The approximate locations of the infiltration test borings (identified as I-1 through I-6) are indicated on the Infiltration Test Location Plan, enclosed as Plate 2 of this report.

Upon the completion of the infiltration borings, the bottom of each test boring was covered with 2± inches of clean ¾-inch gravel. A sufficient length of 3-inch-diameter perforated PVC casing was then placed into each test hole so that the PVC casing extended from the bottom of the test hole to the ground surface. Clean ¾-inch gravel was then installed in the annulus surrounding the PVC casing.

Geotechnical Conditions

Native alluvium was encountered at the ground surface at all six (6) infiltration testing locations. In general, the alluvial soils consist of loose to very dense silty fine to medium sands with trace coarse sands and fine sandy silts extending to at least the maximum depth explored of 10± feet below the existing site grades. The Boring Logs, which illustrate the conditions encountered at the infiltration test locations, are included with this report.

Infiltration Testing

As previously mentioned, the infiltration testing was performed in general accordance with the guidelines published in Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A.

Pre-soaking

In accordance with the county infiltration standards, both of the infiltration test borings were pre-soaked prior to the infiltration testing. The pre-soaking process consisted of filling the test borings by inverting a full 5-gallon bottle of clear water supported over each hole so that the water level reaches a level of at least 5 times the hole's radius above the gravel at the bottom of each hole. The pre-soaking was completed after all of the water had percolated through each test hole or after 15 hours since initiating the pre-soak.

Infiltration Testing

Following the pre-soaking process of the infiltration test borings, SCG performed the infiltration testing. Each test hole was filled with water to a depth of at least 5 times the hole's radius above the gravel at the bottom of each test hole, and less than or equal to the water level used during the pre-soaking process. In accordance with the Riverside County guidelines, since "non-sandy soils" were encountered at the bottom of all infiltration test borings (where less than 6 inches of water infiltrated into the surrounding soils for two consecutive 25-minute readings), readings were taken at 30-minute intervals for a total of 6 hours at the six (6) test locations. After each reading, the borings were refilled to the correct water level above the gravel at the bottom of each test hole. The water level readings are presented on the spreadsheets enclosed with this report. The infiltration rates for each of the timed intervals are also tabulated on the spreadsheets.

The infiltration rates from the test are tabulated in inches per hour. In accordance with the typically accepted practice, it is recommended that the most conservative reading from the latter part of the infiltration tests be used as the design infiltration rate. The rates are summarized below:

Infiltration Test No.	**Soil Description**	**Infiltration Rate (inches/hour)**
I-1	Silty fine to medium Sand, trace coarse Sand	0.9
I-2	Silty fine to medium Sand, trace coarse Sand	0.4
I-3	Silty fine to medium Sand, trace coarse Sand	0.5
I-4	Fine Sandy Silt, trace medium Sand	0.6
I-5	Fine Sandy Silt	1.1
I-6	Fine Sandy Silt	1.1

Laboratory Testing

Grain Size Analysis

The grain size distribution of selected soils from the base of each infiltration test boring has been determined using a range of wire mesh screens. These tests were performed in general accordance with ASTM D-422 and/or ASTM D-1140. The weight of the portion of the sample retained on each screen is recorded and the percentage finer or coarser of the total weight is

calculated. The results of these tests are presented on Plates C-1 through C-6 of this report.

Design Recommendations

A total of six (6) infiltration tests were performed at the subject site. As noted above, the calculated infiltration rates at the infiltration test locations range from 0.4 to 1.1 inches per hour due to the varying relative densities, and the silt content of the soil encountered at the bottom of each infiltration boring.

Based on the infiltration test results, we recommend a design infiltration rate of 0.4 inches per hour to be used for the proposed infiltration/detention system located in the northern portion of the subject site and 0.6 inches per hour to be used in the southern portion.

The design of the proposed storm water infiltration systems should be performed by the project civil engineer, in accordance with the City of Perris and/or County of Riverside guidelines. However, it is recommended that the systems be constructed so as to facilitate removal of silt and clay, or other deleterious materials from any water that may enter the systems. The presence of such materials would decrease the effective infiltration rates. **It is recommended that the project civil engineer apply an appropriate factor of safety. The infiltration rates recommended above are based on the assumption that only clean water will be introduced to the subsurface profile. Any fines, debris, or organic materials could significantly impact the infiltration rates.** It should be noted that the recommended infiltration rates are based on infiltration testing at six (6) discrete locations and the overall infiltration rates of the storm water infiltration systems could vary considerably.

Construction Considerations

The infiltration rates presented in this report are specific to the tested locations and tested depths. Infiltration rates can be significantly reduced if the soils are exposed to excessive disturbance or compaction during construction. Therefore, the subgrade soils within proposed infiltration system areas should not be overexcavated, undercut or compacted in any significant manner. **It is recommended that a note to this effect be added to the project plans and/or specifications.**

Infiltration versus Permeability

Infiltration rates are based on unsaturated flow. As water is introduced into soils by infiltration, the soils become saturated and the wetting front advances from the unsaturated zone to the saturated zone. Once the soils become saturated, infiltration rates become zero, and water can only move through soils by hydraulic conductivity at a rate determined by pressure head and soil permeability. The infiltration rates presented herein were determined in accordance with the ASTM Test Method D-3385-03 standard, and are considered valid for the time and place of the actual test. Changes in soil moisture content will affect these infiltration rates. Infiltration rates should be expected to decrease until the soils become saturated. Soil permeability values will then govern groundwater movement. Permeability values may be on the order of 10 to 20 times less than infiltration rates. The system designer should incorporate adequate factors of safety

and allow for overflow design into appropriate traditional storm drain systems, which would transport storm water off-site.

Location of Infiltration Systems

The use of on-site storm water infiltration systems carries a risk of creating adverse geotechnical conditions. Increasing the moisture content of the soil can cause the soil to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. Overlying structures and pavements in the infiltration areas could potentially be damaged due to saturation of subgrade soils. **The proposed infiltration systems for the site should be located at least 25 feet away from any structures, including retaining walls.** Even with this provision of locating the infiltration systems at least 25 feet from any building, it is possible that infiltrating water into the subsurface soils could have an adverse effect on any proposed or existing structure. It should also be noted that utility trenches which happen to collect storm water can also serve as conduits to transmit storm water toward the structure, depending on the slope of the utility trench. Therefore, consideration should also be given to the proposed locations of underground utilities which may pass near the proposed infiltration system.

General Comments

This report has been prepared as an instrument of service for use by the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, structural engineer, and/or civil engineer. The design of the infiltration system is the responsibility of the civil engineer. The role of the geotechnical engineer is limited to determination of infiltration rate only. By using the design infiltration rates contained herein, the civil engineer agrees to indemnify, defend, and hold harmless the geotechnical engineer for all aspects of the design and performance of the infiltration system. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and testing depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also

recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

Closure

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

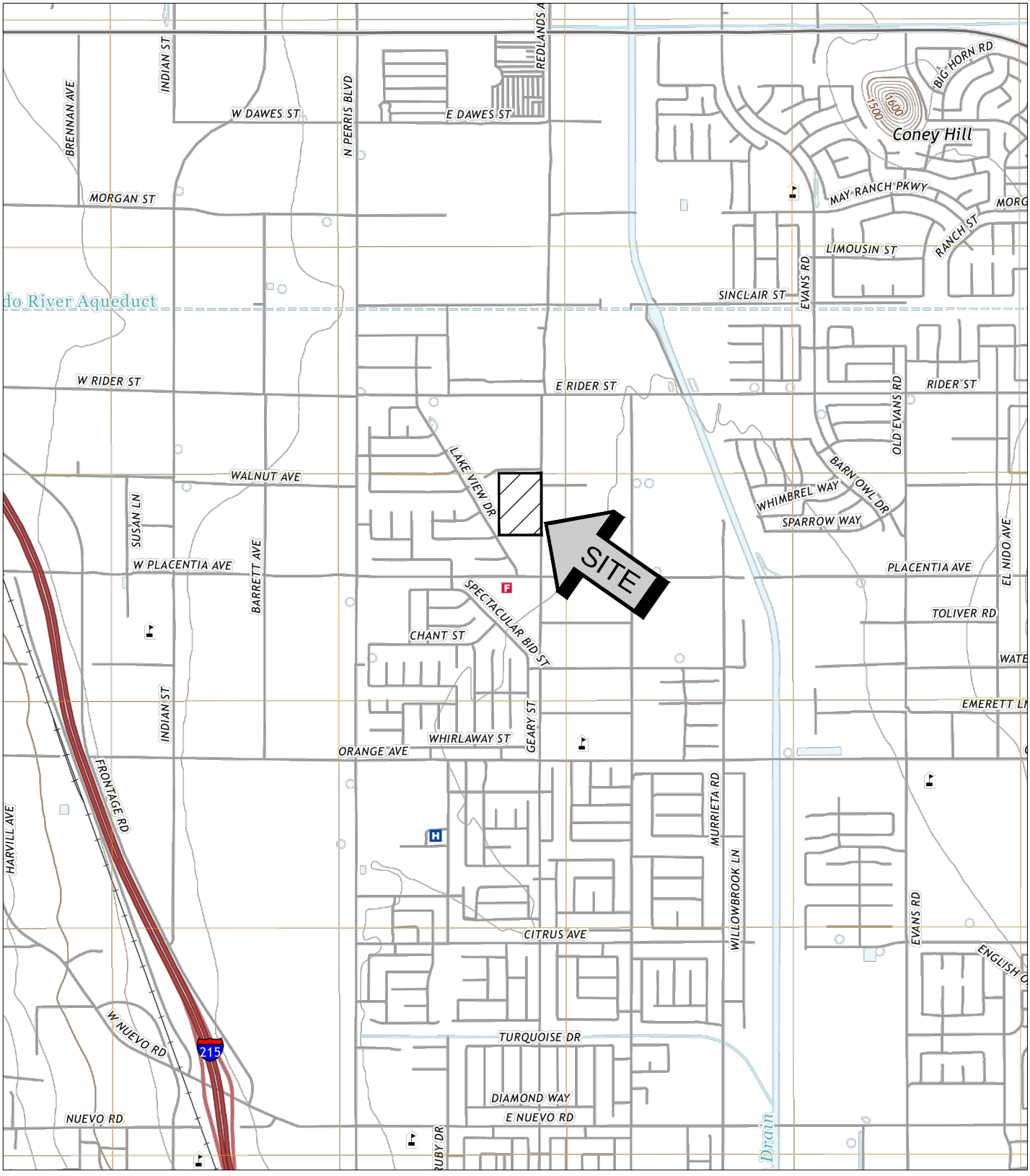
SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Jose Zuniga
Staff Engineer

Robert G. Trazo, M.Sc., GE 2655
Principal Engineer

Distribution: (1) Addressee

Enclosures: Plate 1 - Site Location Map
Plate 2 - Infiltration Test Location Plan
Boring Log Legend and Logs (8 pages)
Infiltration Test Results Spreadsheets (6 pages)
Grain Size Distribution Graphs (6 pages)



SOURCE: USGS TOPOGRAPHIC MAP OF THE PERRIS QUADRANGLE, RIVERSIDE COUNTY, CALIFORNIA, 2018.

SITE LOCATION MAP

PROPOSED REDLANDS WEST DEVELOPMENT

PERRIS, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: JAZ CHKD: RGT	
SCG PROJECT 20G179-2	
PLATE 1	

SoCalGeo

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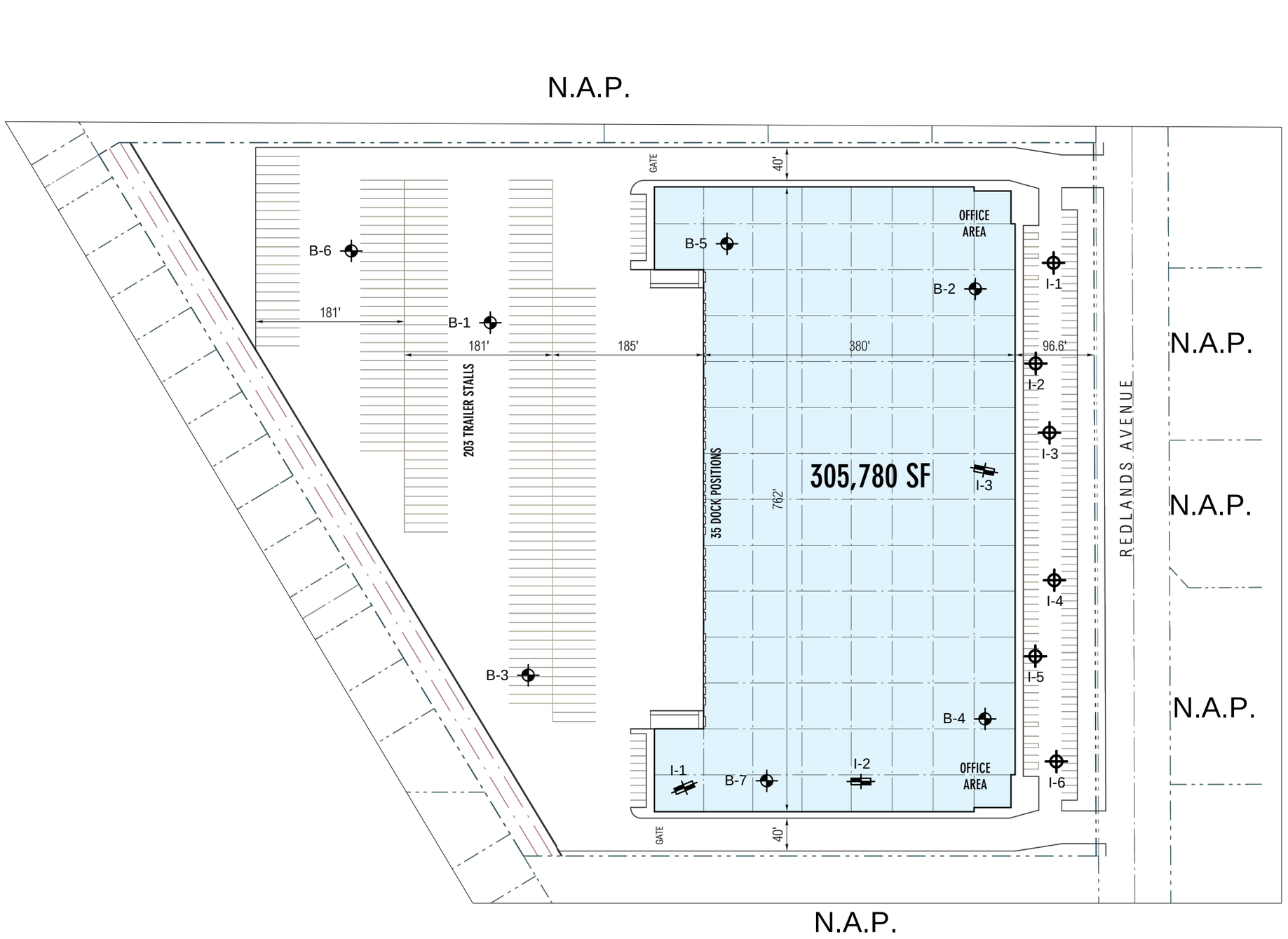

NORTH
SoCalGeo

GEOTECHNICAL LEGEND

- APPROXIMATE INFILTRATION TEST LOCATION
- PREVIOUS BORING LOCATION (SCG PROJECT NO. 19G213-1)
- PREVIOUS BORING LOCATION (SCG PROJECT NO. 19G213-2)

NOTE: PRELIMINARY SITE PLAN PREPARED BY RGA.

INFILTRATION TEST LOCATION PLAN

PROPOSED REDLANDS WEST DEVELOPMENT

PERRIS, CALIFORNIA

SCALE: 1" = 120'	
DRAWN: JAZ CHKD: RGT	
SCG PROJECT 20G179-2	
PLATE 2	

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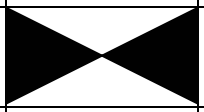
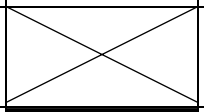
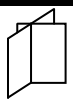
BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

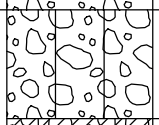
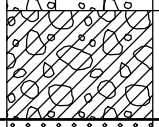
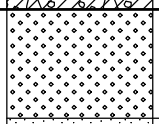
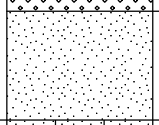
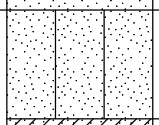
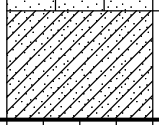
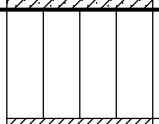
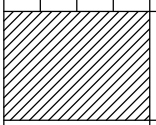
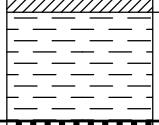
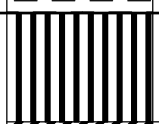
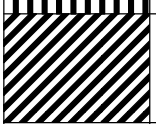
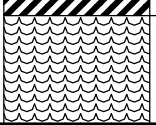
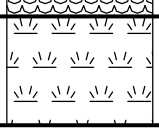
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION 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 WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	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 PLASTICITY
	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
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-1

JOB NO.: 20G179-2 | DRILLING DATE: 10/7/20 | WATER DEPTH: ---
PROJECT: Proposed Redlands West Development | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Perris, California | LOGGED BY: Jose Zuniga | READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		17			ALLUVIUM: Brown Silty fine Sand, medium dense - dry to damp		4					
		63			@ 3.5 feet, very dense		5					
5												
		26			Brown Silty fine Sand, trace fine to coarse Gravel, medium dense - dry		1					
		15			Brown Silty fine to medium Sand, trace coarse Sand, medium dense - dry to damp		5			33		
10					Boring Terminated at 10'							

TBL 20G179-2.GPJ SOCALGEO.GDT 10/30/20

TEST BORING LOG **PLATE B-1**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-2

JOB NO.: 20G179-2 | DRILLING DATE: 10/7/20 | WATER DEPTH: ---
PROJECT: Proposed Redlands West Development | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Perris, California | LOGGED BY: Jose Zuniga | READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		13			ALLUVIUM: Brown Silty fine to medium Sand, trace coarse Sand, medium dense - damp		4					
		10			@ 3.5 feet, loose to medium dense		4					
5		25			@ 6.0 feet, medium dense		5					
		19					6			35		
10					Boring Terminated at 10'							

TBL 20G179-2.GPJ SOCALGEO.GDT 10/30/20

TEST BORING LOG **PLATE B-2**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-3

JOB NO.: 20G179-2 | DRILLING DATE: 10/7/20 | WATER DEPTH: ---
PROJECT: Proposed Redlands West Development | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Perris, California | LOGGED BY: Jose Zuniga | READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		24			ALLUVIUM: Brown Silty fine Sand, cemented, medium dense - dry to damp		4					
		58			@ 3.5 feet, very dense		5					
5		8			Brown Silty fine to medium Sand, trace coarse Sand, loose - dry to damp		3					
		18			@ 8.5 feet, medium dense, damp		11			46		
10					Boring Terminated at 10'							

TBL 20G179-2.GPJ SOCALGEO.GDT 10/30/20

TEST BORING LOG **PLATE B-3**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-4

JOB NO.: 20G179-2 | DRILLING DATE: 10/7/20 | WATER DEPTH: ---
PROJECT: Proposed Redlands West Development | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Perris, California | LOGGED BY: Jose Zuniga | READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		21			ALLUVIUM: Brown Silty fine Sand, medium dense - dry to damp		4					
		27					5					
5												
		14			Brown fine to coarse Sand, little Silt, medium dense - dry to damp		6					
		22			Brown fine Sandy Silt, trace medium Sand, medium dense - damp		11			66		
10					Boring Terminated at 10'							

TBL 20G179-2.GPJ SOCALGEO.GDT 10/30/20

TEST BORING LOG **PLATE B-4**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-5

JOB NO.: 20G179-2 | DRILLING DATE: 10/7/20 | WATER DEPTH: ---
PROJECT: Proposed Redlands West Development | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Perris, California | LOGGED BY: Jose Zuniga | READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		10			ALLUVIUM: Brown Silty fine Sand, little to some medium Sand, loose to medium dense - dry to damp		4					
		27			@ 3.5 feet, cemented, medium dense - damp		12					
5												
		15			Brown fine Sandy Silt, medium dense - damp		8					
		10			@ 8.5 feet, loose to medium dense, damp to moist		14			81		
10					Boring Terminated at 10'							

TBL 20G179-2.GPJ SOCALGEO.GDT 10/30/20

TEST BORING LOG **PLATE B-5**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-6

JOB NO.: 20G179-2 | DRILLING DATE: 10/7/20 | WATER DEPTH: ---
PROJECT: Proposed Redlands West Development | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Perris, California | LOGGED BY: Jose Zuniga | READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		35			ALLUVIUM: Brown Silty fine to medium Sand, cemented, dense - dry to damp		4					
		68			@ 3.5 feet, very dense		4					
5		15			@ 3.5 feet, medium dense		5					
		29			Brown fine Sandy Silt, cemented, medium dense - damp to moist		14			78		
10					Boring Terminated at 10'							

TBL 20G179-2.GPJ SOCALGEO.GDT 10/30/20

TEST BORING LOG **PLATE B-6**

INFILTRATION CALCULATIONS

Project Name	Proposed Redlands West Development
Project Location	Perris, California
Project Number	20G179-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	10	(ft)

Infiltration Test Hole: I-1

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)	
P1	Initial	7:57 AM	25.0	8.19	0.51	1.56	1.42	Pre-Soak
	Final	8:22 AM		8.70				
P2	Initial	8:24 AM	25.0	8.74	0.32	1.10	1.21	
	Final	8:49 AM		9.06				
1	Initial	8:54 AM	30.0	8.35	0.45	1.43	1.13	Infiltration Testing
	Final	9:24 AM		8.80				
2	Initial	9:27 AM	30.0	8.21	0.42	1.58	0.96	
	Final	9:57 AM		8.63				
3	Initial	11:00 AM	30.0	8.26	0.40	1.54	0.94	
	Final	11:30 AM		8.66				
4	Initial	11:32 AM	30.0	8.66	0.32	1.18	0.95	
	Final	12:02 PM		8.98				
5	Initial	12:03 PM	30.0	8.44	0.39	1.37	1.02	
	Final	12:33 PM		8.83				
6	Initial	12:34 PM	30.0	8.16	0.38	1.65	0.84	
	Final	1:04 PM		8.54				
7	Initial	1:06 PM	30.0	8.11	0.36	1.71	0.77	
	Final	1:36 PM		8.47				
8	Initial	1:38 PM	30.0	7.88	0.42	1.91	0.81	
	Final	2:08 PM		8.30				
9	Initial	2:10 PM	30.0	7.87	0.40	1.93	0.76	
	Final	2:40 PM		8.27				
10	Initial	2:42 PM	30.0	7.70	0.48	2.06	0.86	
	Final	3:12 PM		8.18				
11	Initial	3:14 PM	30.0	7.92	0.42	1.87	0.82	
	Final	3:44 PM		8.34				
12	Initial	3:46 PM	30.0	7.98	0.41	1.82	0.83	
	Final	4:16 PM		8.39				
13	Initial	4:18 PM	30.0	8.04	0.43	1.75	0.90	
	Final	4:48 PM		8.47				

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Redlands West Development
Project Location	Perris, California
Project Number	20G179-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	10	(ft)

Infiltration Test Hole: I-2

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)	
P1	Initial	7:53 AM	25.0	8.30	0.16	1.62	0.43	Pre-Soak
	Final	8:18 AM		8.46				
P2	Initial	8:20 AM	25.0	8.47	0.12	1.47	0.35	
	Final	8:45 AM		8.59				
1	Initial	9:32 AM	30.0	8.32	0.14	1.61	0.32	Infiltration Testing
	Final	10:02 AM		8.46				
2	Initial	10:03 AM	30.0	8.18	0.17	1.74	0.36	
	Final	10:33 AM		8.35				
3	Initial	10:33 AM	30.0	8.35	0.11	1.60	0.25	
	Final	11:03 AM		8.46				
4	Initial	11:04 AM	30.0	8.17	0.17	1.75	0.36	
	Final	11:34 AM		8.34				
5	Initial	11:35 AM	30.0	8.11	0.14	1.82	0.28	
	Final	12:05 PM		8.25				
6	Initial	12:06 PM	30.0	8.10	0.16	1.82	0.32	
	Final	12:36 PM		8.26				
7	Initial	12:38 PM	30.0	8.01	0.17	1.91	0.33	
	Final	1:08 PM		8.18				
8	Initial	1:09 PM	30.0	8.06	0.16	1.86	0.32	
	Final	1:39 PM		8.22				
9	Initial	1:41 PM	30.0	8.00	0.19	1.91	0.37	
	Final	2:11 PM		8.19				
10	Initial	2:12 PM	30.0	8.05	0.17	1.87	0.33	
	Final	2:42 PM		8.22				
11	Initial	2:43 PM	30.0	8.00	0.18	1.91	0.35	
	Final	3:13 PM		8.18				
12	Initial	3:15 PM	30.0	8.05	0.18	1.86	0.36	
	Final	3:45 PM		8.23				

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Redlands West Development
Project Location	Perris, California
Project Number	20G179-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	10	(ft)

Infiltration Test Hole: I-3

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)	
P1	Initial	7:44 AM	25.0	8.18	0.15	1.75	0.38	Pre-Soak
	Final	8:09 AM		8.33				
P2	Initial	8:10 AM	25.0	8.34	0.11	1.61	0.30	
	Final	8:35 AM		8.45				
1	Initial	8:37 AM	30.0	7.91	0.34	1.92	0.65	Infiltration Testing
	Final	9:07 AM		8.25				
2	Initial	9:37 AM	30.0	8.08	0.18	1.83	0.36	
	Final	10:07 AM		8.26				
3	Initial	10:08 AM	30.0	7.90	0.30	1.95	0.57	
	Final	10:38 AM		8.20				
4	Initial	10:39 AM	30.0	8.20	0.15	1.73	0.32	
	Final	11:09 AM		8.35				
5	Initial	11:10 AM	30.0	7.97	0.22	1.92	0.42	
	Final	11:40 AM		8.19				
6	Initial	11:41 AM	30.0	8.03	0.19	1.88	0.37	
	Final	12:11 PM		8.22				
7	Initial	12:11 PM	30.0	7.96	0.24	1.92	0.46	
	Final	12:41 PM		8.20				
8	Initial	12:43 PM	30.0	8.00	0.20	1.90	0.39	
	Final	1:13 PM		8.20				
9	Initial	1:14 PM	30.0	7.93	0.24	1.95	0.45	
	Final	1:44 PM		8.17				
10	Initial	1:45 PM	30.0	7.90	0.26	1.97	0.49	
	Final	2:15 PM		8.16				
11	Initial	2:17 PM	30.0	7.94	0.26	1.93	0.50	
	Final	2:47 PM		8.20				
12	Initial	2:48 PM	30.0	7.95	0.25	1.93	0.48	
	Final	3:18 PM		8.20				

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Redlands West Development
Project Location	Perris, California
Project Number	20G179-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	10	(ft)

Infiltration Test Hole: I-4

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)	
P1	Initial	7:32 AM	25.0	8.46	0.14	1.47	0.41	Pre-Soak
	Final	7:57 AM		8.60				
P2	Initial	7:59 AM	25.0	8.60	0.05	1.38	0.16	
	Final	8:24 AM		8.65				
1	Initial	8:28 AM	30.0	8.15	0.30	1.70	0.64	Infiltration Testing
	Final	8:58 AM		8.45				
2	Initial	9:42 AM	30.0	8.25	0.20	1.65	0.44	
	Final	10:12 AM		8.45				
3	Initial	10:13 AM	30.0	8.21	0.21	1.69	0.45	
	Final	10:43 AM		8.42				
4	Initial	10:44 AM	30.0	8.17	0.23	1.72	0.49	
	Final	11:14 AM		8.40				
5	Initial	11:15 AM	30.0	8.00	0.33	1.84	0.66	
	Final	11:45 AM		8.33				
6	Initial	11:46 AM	30.0	8.15	0.24	1.73	0.51	
	Final	12:16 PM		8.39				
7	Initial	12:17 PM	30.0	8.10	0.26	1.77	0.54	
	Final	12:47 PM		8.36				
8	Initial	12:48 PM	30.0	8.15	0.25	1.73	0.53	
	Final	1:18 PM		8.40				
9	Initial	1:20 PM	30.0	8.00	0.30	1.85	0.60	
	Final	1:50 PM		8.30				
10	Initial	1:51 PM	30.0	8.04	0.31	1.81	0.63	
	Final	2:21 PM		8.35				
11	Initial	2:22 PM	30.0	8.05	0.30	1.80	0.61	
	Final	2:52 PM		8.35				
12	Initial	2:53 PM	30.0	8.10	0.28	1.76	0.58	
	Final	3:23 PM		8.38				

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Redlands West Development
Project Location	Perris, California
Project Number	20G179-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	10	(ft)

Infiltration Test Hole: I-5

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)	
P1	Initial	7:38 AM	25.0	8.54	0.46	1.23	1.58	Pre-Soak
	Final	8:03 AM		9.00				
P2	Initial	8:05 AM	25.0	9.00	0.24	0.88	1.10	
	Final	8:30 AM		9.24				
1	Initial	8:32 AM	30.0	8.44	0.41	1.36	1.08	Infiltration Testing
	Final	9:02 AM		8.85				
2	Initial	9:47 AM	30.0	8.66	0.25	1.22	0.72	
	Final	10:17 AM		8.91				
3	Initial	10:18 AM	30.0	8.59	0.28	1.27	0.78	
	Final	10:48 AM		8.87				
4	Initial	10:49 AM	30.0	8.54	0.30	1.31	0.81	
	Final	11:19 AM		8.84				
5	Initial	11:20 AM	30.0	8.00	0.72	1.64	1.59	
	Final	11:50 AM		8.72				
6	Initial	11:51 AM	30.0	8.17	0.54	1.56	1.25	
	Final	12:21 PM		8.71				
7	Initial	12:23 PM	30.0	8.05	0.64	1.63	1.42	
	Final	12:53 PM		8.69				
8	Initial	12:55 PM	30.0	8.07	0.58	1.64	1.28	
	Final	1:25 PM		8.65				
9	Initial	1:27 PM	30.0	7.98	0.66	1.69	1.42	
	Final	1:57 PM		8.64				
10	Initial	2:00 PM	30.0	8.10	0.54	1.63	1.20	
	Final	2:30 PM		8.64				
11	Initial	2:32 PM	30.0	7.95	0.55	1.78	1.13	
	Final	3:02 PM		8.50				
12	Initial	3:08 PM	30.0	7.98	0.54	1.75	1.13	
	Final	3:38 PM		8.52				

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Redlands West Development
Project Location	Perris, California
Project Number	20G179-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	10	(ft)

Infiltration Test Hole: I-6

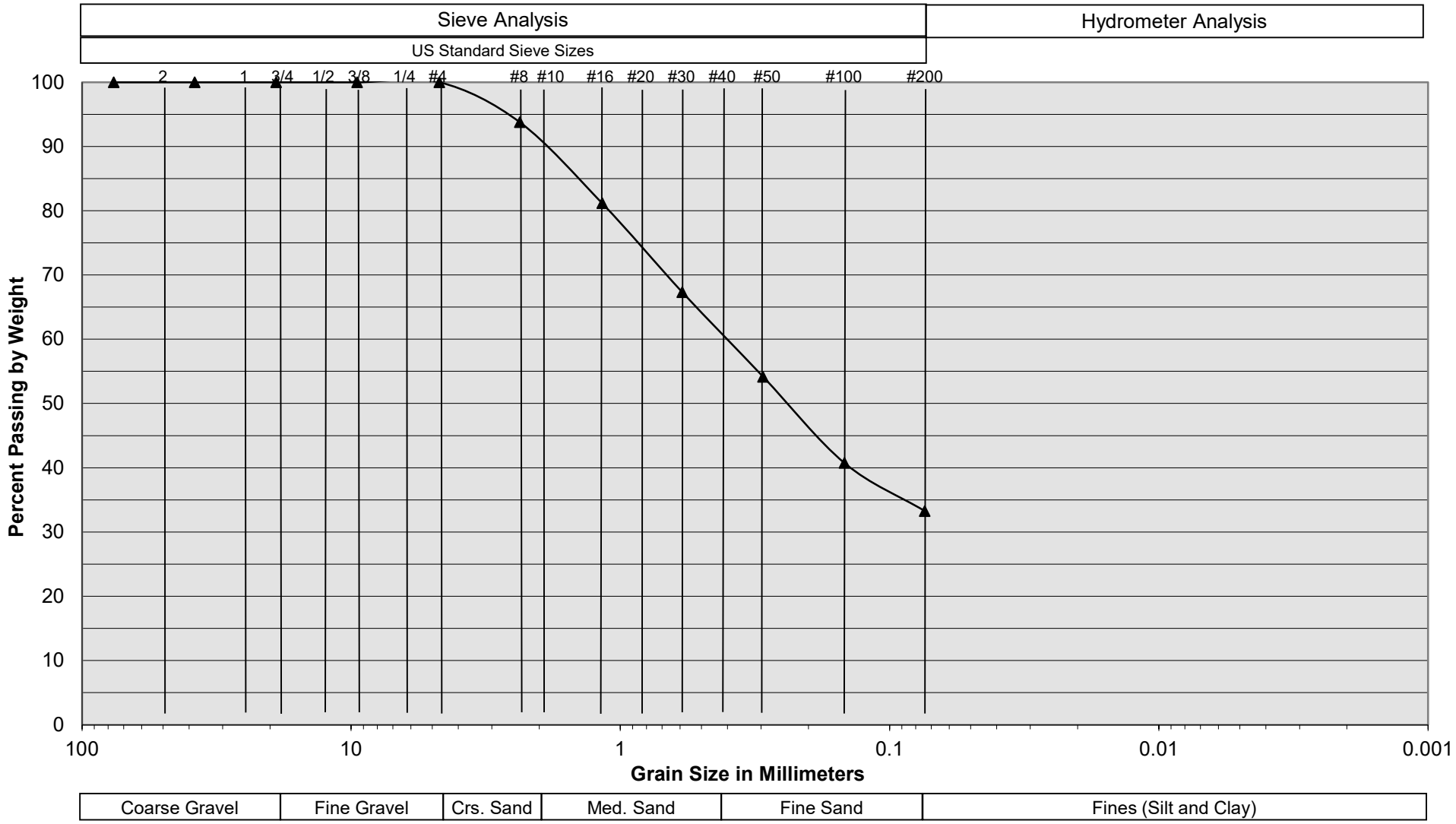
Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)	
P1	Initial	7:23 AM	25.0	8.54	0.46	1.23	1.58	Pre-Soak
	Final	7:48 AM		9.00				
P2	Initial	7:48 AM	25.0	9.00	0.24	0.88	1.10	
	Final	8:13 AM		9.24				
1	Initial	8:15 AM	30.0	8.44	0.41	1.36	1.08	Infiltration Testing
	Final	8:45 AM		8.85				
2	Initial	9:52 AM	30.0	8.66	0.25	1.22	0.72	
	Final	10:22 AM		8.91				
3	Initial	10:22 AM	30.0	8.59	0.28	1.27	0.78	
	Final	10:52 AM		8.87				
4	Initial	10:52 AM	30.0	8.54	0.30	1.31	0.81	
	Final	11:22 AM		8.84				
5	Initial	11:22 AM	30.0	8.00	0.72	1.64	1.59	
	Final	11:52 AM		8.72				
6	Initial	11:55 AM	30.0	8.17	0.54	1.56	1.25	
	Final	12:25 PM		8.71				
7	Initial	12:26 PM	30.0	8.05	0.64	1.63	1.42	
	Final	12:56 PM		8.69				
8	Initial	12:57 PM	30.0	8.07	0.58	1.64	1.28	
	Final	1:27 PM		8.65				
9	Initial	1:28 PM	30.0	7.98	0.66	1.69	1.42	
	Final	1:58 PM		8.64				
10	Initial	1:59 PM	30.0	8.10	0.54	1.63	1.20	
	Final	2:29 PM		8.64				
11	Initial	2:33 PM	30.0	7.95	0.55	1.78	1.13	
	Final	3:03 PM		8.50				
12	Initial	3:09 PM	30.0	7.98	0.54	1.75	1.13	
	Final	3:39 PM		8.52				

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

Grain Size Distribution



Sample Description	I-1 @ 8½ feet
Soil Classification	Brown Sity fine to medium Sand, trace coarse Sand

Proposed Redlands West Development
Perris, CA
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PLATE C-1

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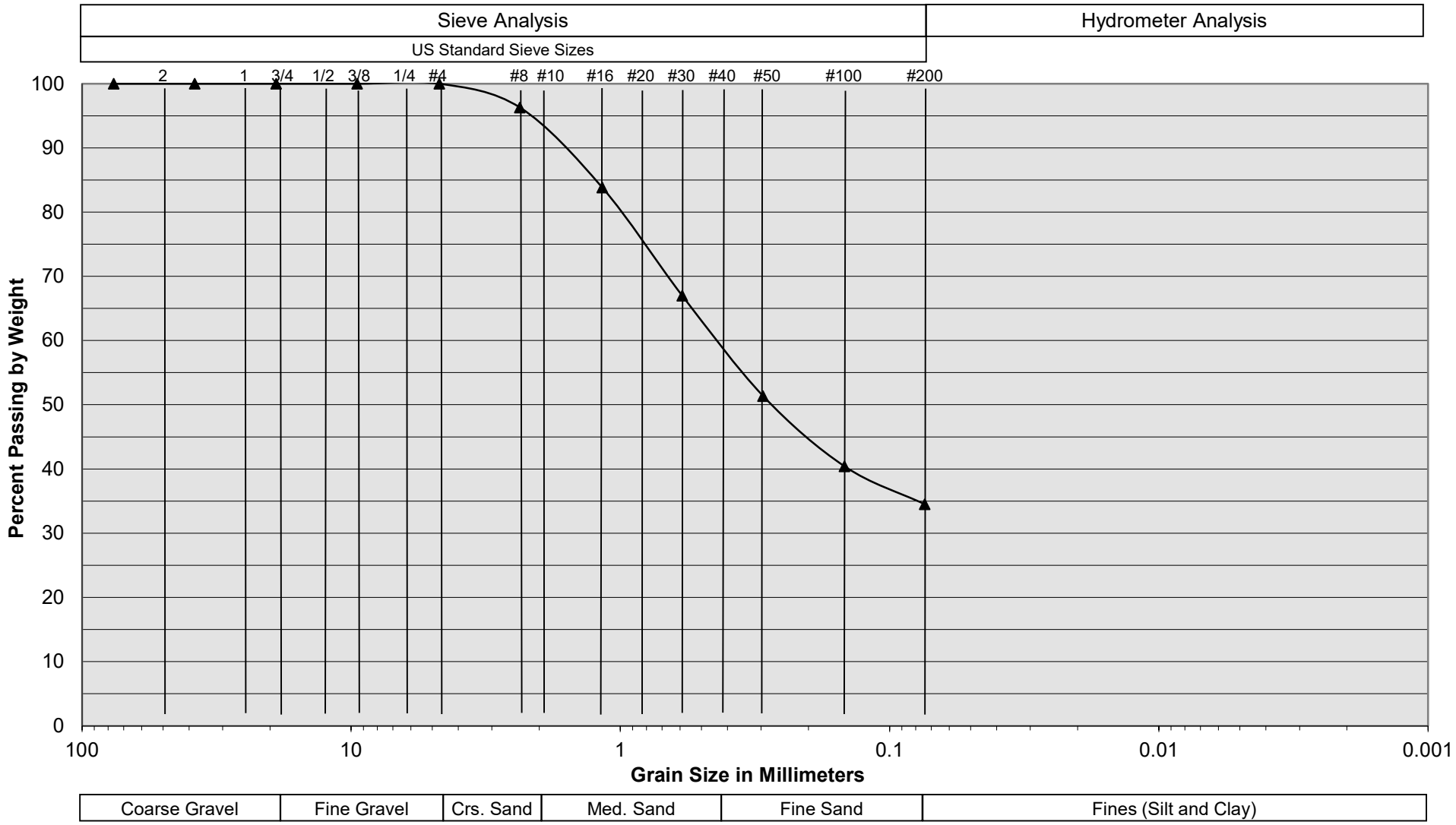
Grain Size Distribution



Sample Description	I-2 @ 8½ feet
Soil Classification	Brown Silty fine to medium Sand, trace coarse Sand

Proposed Redlands West Development
Perris, CA
Project No. 20G179-2
PLATE C-2

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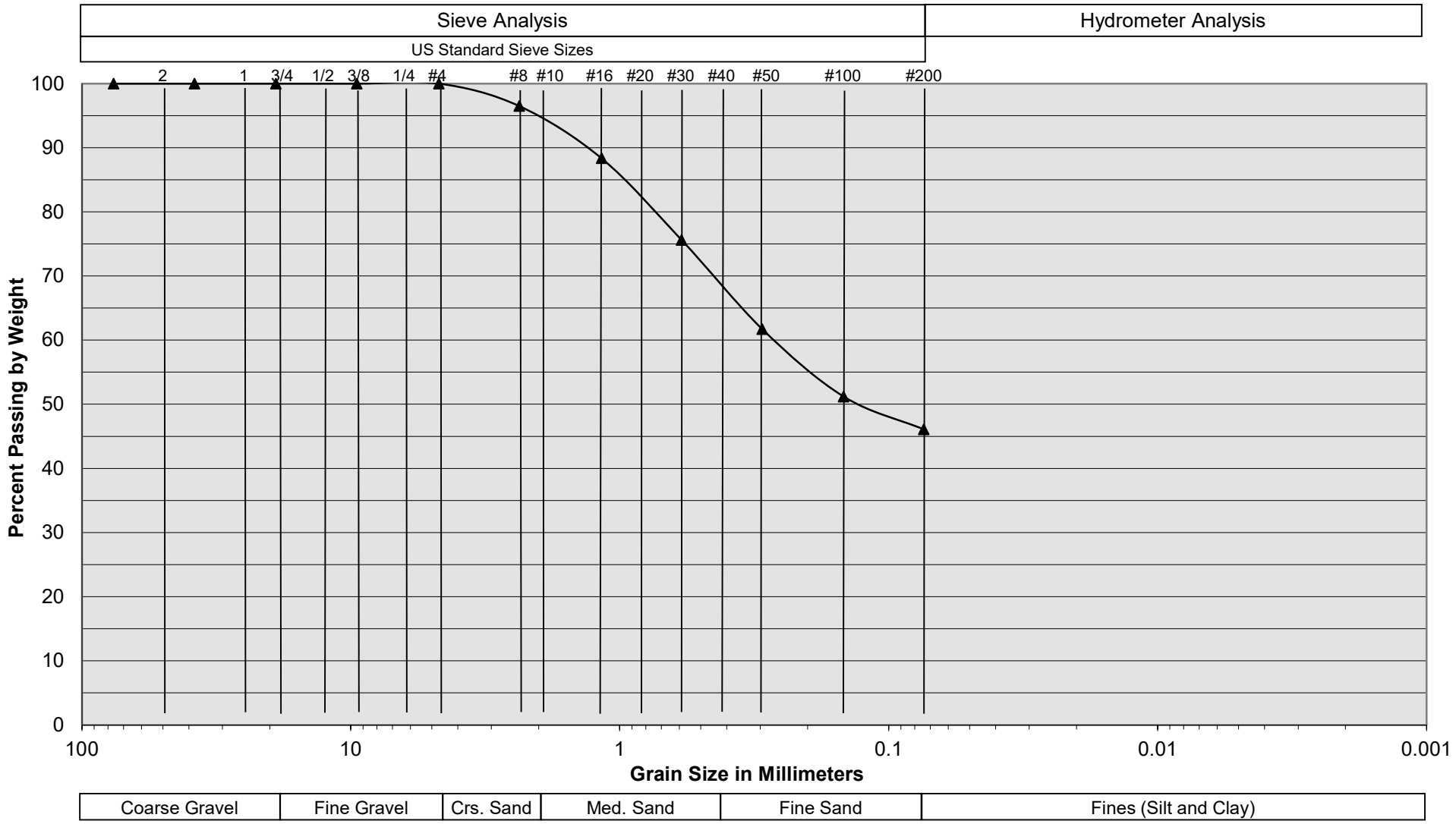
Grain Size Distribution



Sample Description	I-3 @ 8½ feet
Soil Classification	Brown Silty fine to medium Sand, trace coarse Sand

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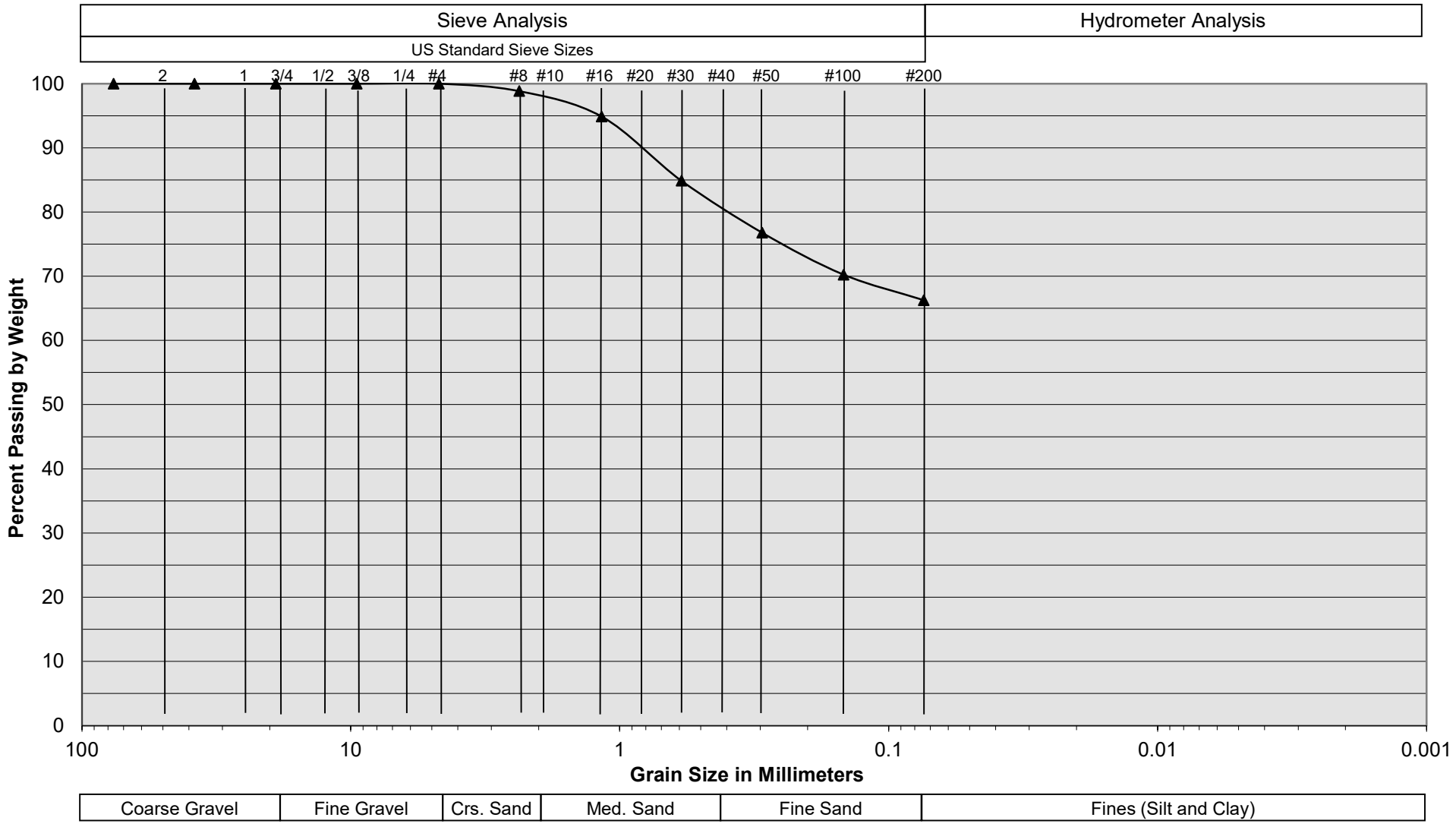

Sample Description	I-4 @ 8½ feet
Soil Classification	Brown fine Sandy Silt, trace medium Sand

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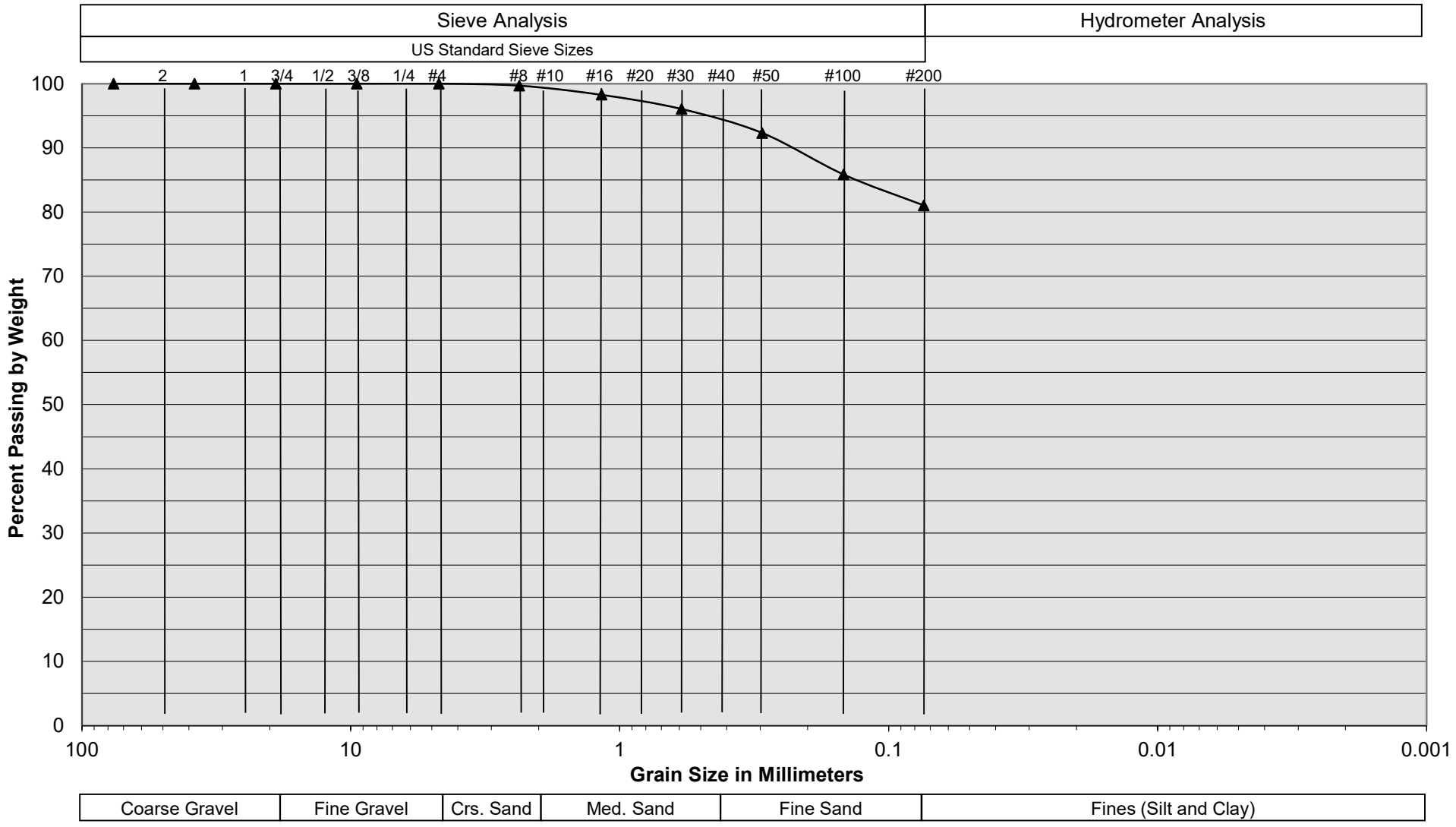
Grain Size Distribution



Sample Description	I-5 @ 8½ feet
Soil Classification	Brown fine Sandy Silt

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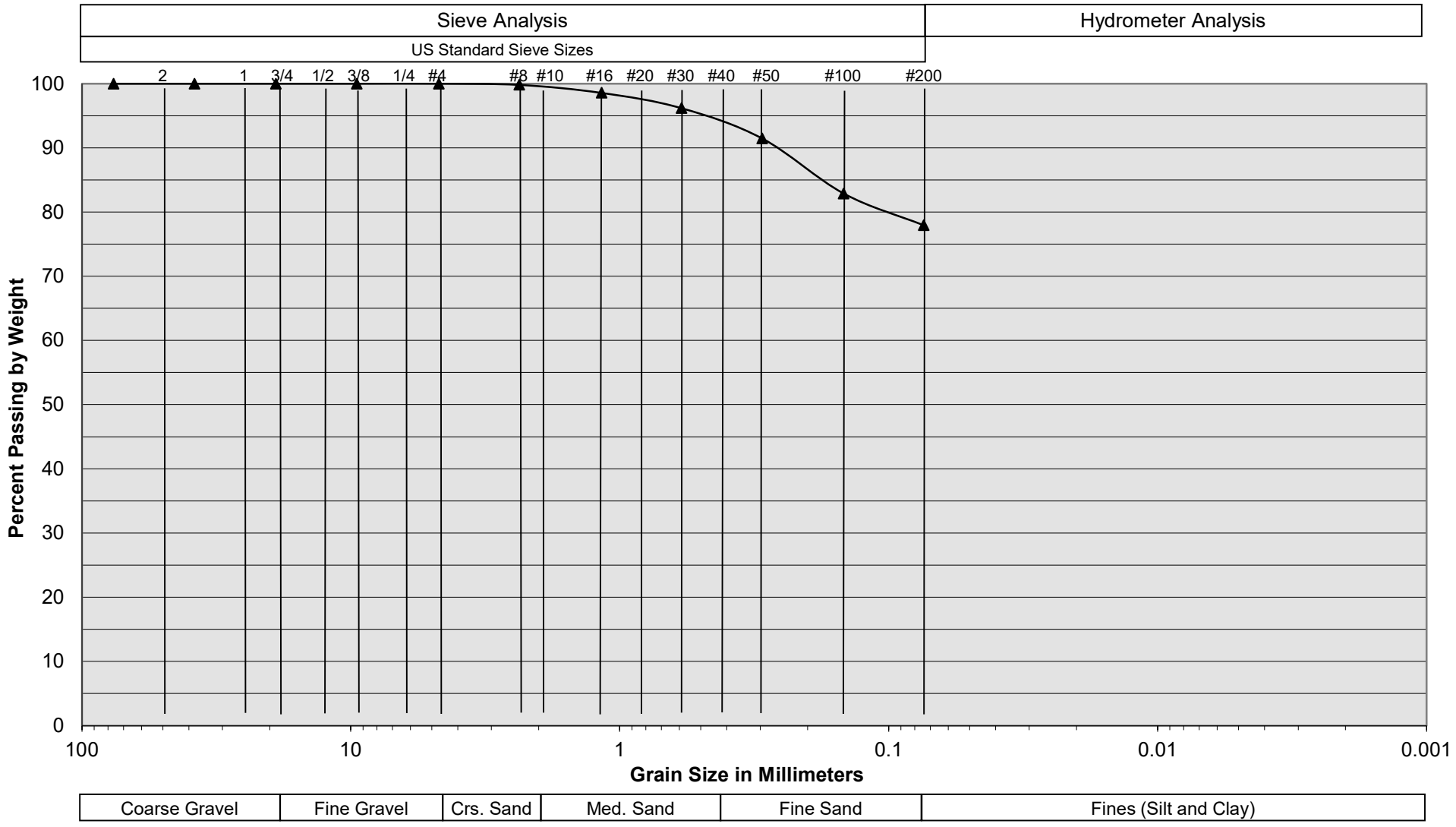
Grain Size Distribution



Sample Description	I-6 @ 8½ feet
Soil Classification	Brown fine Sandy Silt

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