October 26, 2018

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Duke Realty
200 Spectrum Center Drive, Suite 1600
Irvine, California 92618

Attention: Mr. Adam Schmid
Development Services Manager

Project No.: **18G160-2**

Subject: **Results of Infiltration Testing**
Proposed Warehouse
Perry Street, East of Indian Avenue
Perris, California

Reference: Geotechnical Investigation, Proposed Warehouse, Perry Street, East of Indian Avenue, Perris, California, prepared by Southern California Geotechnical, Inc. (SCG) for Duke Realty, SCG Project No. 18G160-1, dated July 19, 2018.

Gentlemen:

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 Change Order 18G160-CO, dated October 2, 2018. The scope of services included site reconnaissance, subsurface exploration, field testing, and engineering analysis to determine the infiltration rates of the onsite soils. The infiltration testing was performed in general accordance with ASTM Test Method D-3385-03, Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer.

Site and Project Description

The subject site is located on the south side of Perry Street, east of Indian Avenue in Perris, California. The site is bounded to the north by Perry Street, to the west by a vacated street (Barrett Avenue), and to the south and east by residential lots and vacant property. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 of this report.

The site consists of a nearly rectangular-shaped parcel, 7.26± acres in size. The site is currently vacant and undeveloped. The ground surface consists of exposed soil with areas of sparse to moderate native grass and weed growth. Topographic information was not available at the time of this report. Based on visual observations, the site topography within the area of the proposed development appears to be relatively level ground, sloping gently downward to the south at a gradient of less than 1± percent.

Proposed Development

Based on a site plan provided to our office by the client, the site will be developed with a new warehouse. The building will be located in the north-central area of the site and will be 148,297± ft^2 in size. The building will be constructed with dock-high doors along the south side of the building. It is expected that the building will be surrounded by asphaltic concrete pavements for parking and drive lanes and Portland cement concrete pavements for the loading dock areas. Several landscape planters and concrete flatwork will be included throughout the site.

We understand that the proposed development will include on-site infiltration to dispose of storm water. Based on an infiltration test location plan provided, the proposed infiltration systems will consist of a below-grade chamber system located in the proposed loading dock areas and a detention basin located in the southeastern area of the site. The proposed infiltration systems will extend to depths ranging from 5 to 10± feet below the existing site grades.

Concurrent Study

Southern California Geotechnical, Inc. (SCG) recently conducted a geotechnical investigation at the subject site, which is referenced above. As part of this study, seven (7) borings were advanced to depths of 5 to 25± feet below the existing site grades. Native alluvium was encountered at the ground surface at all of the boring locations. The near-surface alluvial soils generally consist of loose to medium dense silty fine sands with varying clay content, extending to depths of up to 4 to 6½± feet below existing site grades. One of the borings encountered a dense fine to medium sand stratum, extending to depths of 6½ to 8½± feet. At greater depths, the alluvium consists of medium dense to very dense clayey sands, fine to medium sands, silty fine sands, and medium stiff to hard fine sandy clays, silty clays, and clayey silts, extending to the maximum depth explored of 25± feet.

Groundwater

Free water was not encountered during drilling of any of the borings. In addition, delayed readings taken within the open boreholes did not identify any free water. Based on the lack of any water within the borings and the moisture contents of the recovered soil samples, the static groundwater table is considered to have existed at a depth in excess of 25± feet at the time of the subsurface exploration. As part of our research, we reviewed available groundwater data in order to determine the historic high groundwater level for the site. The primary reference used to determine the groundwater depths in this area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. The nearest monitoring well is located 550± feet southwest from the site. Water level readings within this monitoring well indicates a high groundwater level of 81± feet (April 2017) below the ground surface.

Subsurface Exploration

Scope of Exploration

The subsurface exploration for the infiltration testing consisted of five (5) backhoe-excavated trenches, extending to depths of 5 to 10± feet below existing site grades. The trenches were

logged during excavation by a member of our staff. The approximate locations of the infiltration trenches (identified as I-1 through I-5) are indicated on the Infiltration Test Location Plan, enclosed as Plate 2 of this report.

Geotechnical Conditions

Disturbed alluvial soils were encountered at the ground surface at all five (5) of the infiltration trenches, extending to depths of ½ to 1± foot below existing grades. These soils consist of loose fine to medium sandy silts with trace to little coarse sand. These soils possess a disturbed, loose appearance from possible tillage of the soils, resulting in their classification as disturbed alluvial soils. Native alluvial soils were encountered beneath the disturbed alluvial soils at all of the infiltration trenches, extending to the maximum depth explored of 10± feet below existing site grades. The native alluvial soils generally consist of medium dense to dense clayey fine sands and silty fine sands, and stiff to hard silty clays and fine sandy clays with varying amounts of medium to coarse sands, silt, and clay content. Free water was not encountered during the excavation of any of the trenches. The Trench Logs, which illustrate the conditions encountered at the infiltration test locations, are included with this report.

Infiltration Testing

The infiltration testing was performed in general accordance with ASTM Test Method D-3385-03, Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer. Two stainless steel infiltration rings were used for the infiltration testing. The outer infiltration ring is 2 feet in diameter and 20 inches in height. The inner infiltration ring is 1 foot in diameter and 20 inches in height. At the test locations, the outer ring was driven 3± inches into the soil at the base of each trench. The inner ring was centered inside the outer ring and subsequently driven 3± inches into the soil at the base of the trench. The rings were driven into the soil using a ten-pound sledge hammer. The soil surrounding the wall of the infiltration rings was only slightly disturbed during the driving process.

Infiltration Testing Procedure

The infiltration testing was performed at all five (5) of the test locations. The infiltration testing consisted of filling the inner ring and the annular space (the space between the inner and outer rings) with water, approximately 3 to 4 inches above the soil. To prevent the flow of water from one ring to the other, the water level in both the inner ring and the annular space between the rings was maintained using constant-head float valves. The volume of water that was added to maintain a constant head in the inner ring and the annular space during each time interval was determined and recorded. A cap was placed over the rings to minimize the evaporation of water during the tests.

The schedule for readings was determined based on the observed soil type at the base of each backhoe-excavated trench. Based on the existing soils at each infiltration test location, the volumetric measurements were made at increments of 20 and 30 minutes. The water volume measurements are presented on the spreadsheets enclosed with this report. The infiltration rates for each of the timed intervals are also tabulated on these spreadsheets.

The infiltration rates for the infiltration tests are calculated in centimeters per hour and then converted to inches per hour. The rates are summarized below:

Infiltration Test No.	Depth (feet)	Soil Description	Infiltration Rate (inches/hour)
I-1	5½	Fine Sandy Clay, trace medium Sand	0.2
I-2	10	Fine Sandy Clay, little medium Sand, trace Silt	0.4
I-3	5	Fine Sandy Clay, trace medium Sand	0.2
I-4	5	Fine Sandy Clay, trace medium Sand, trace Silt	0.3
I-5	10	Clayey fine to medium Sand, trace Silt	1.1

Laboratory Testing

Moisture Content

The moisture contents for selected soil samples taken from the trenches were determined in accordance with ASTM D-2216 and are expressed as a percentage of the dry weight. These test results are presented on the Trench Logs.

Grain Size Analysis

The grain size distribution of selected soils collected from the base of each infiltration test trench 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-5 of this report.

Design Recommendations

Five (5) infiltration tests were performed at the subject site. As noted above, the calculated infiltration rates at the infiltration test locations range from **0.2** to **1.1** inches per hour. The primary factors affecting the infiltration rates are the varying relative densities and the silt and clay content of the encountered soils, which vary at different depths and locations at the subject site.

Based on the infiltration test results from Infiltration Test Nos. I-1 through I-3, we recommend a design infiltration rate of 0.4 inches per hour be used for the proposed below-grade chamber system located in the proposed loading dock areas, if the bottom of the system extends to a depth of 10± feet below the existing site grades.

Based on the infiltration test results from Infiltration Test Nos. I-4 and I-5, we recommend a design infiltration rate of 0.3 inches per hour be used for the proposed detention basin located in the southeastern area of the site, if the bottom of the system extends to a depth of 5± feet below the existing site grades and a design rate of 1.1 inches per hour if the system extends to a depth of 10± feet below the existing site grades.

We recommend that a representative from the geotechnical engineer be on-site during the construction of the proposed infiltration systems to identify the soil classification at the base of each system. It should be confirmed that the soils at the base of the proposed infiltration systems correspond with those presented in this report to ensure that the performance of the systems will be consistent with the rates reported herein.

The design of the proposed storm water infiltration system 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 rate. **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 five (5) discrete locations and the overall infiltration rates of the storm water infiltration systems could vary considerably.

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 this 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 the building, it is possible that infiltrating water into the subsurface soils could have an adverse effect on the proposed or existing structures. 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 systems.

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 trench 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,

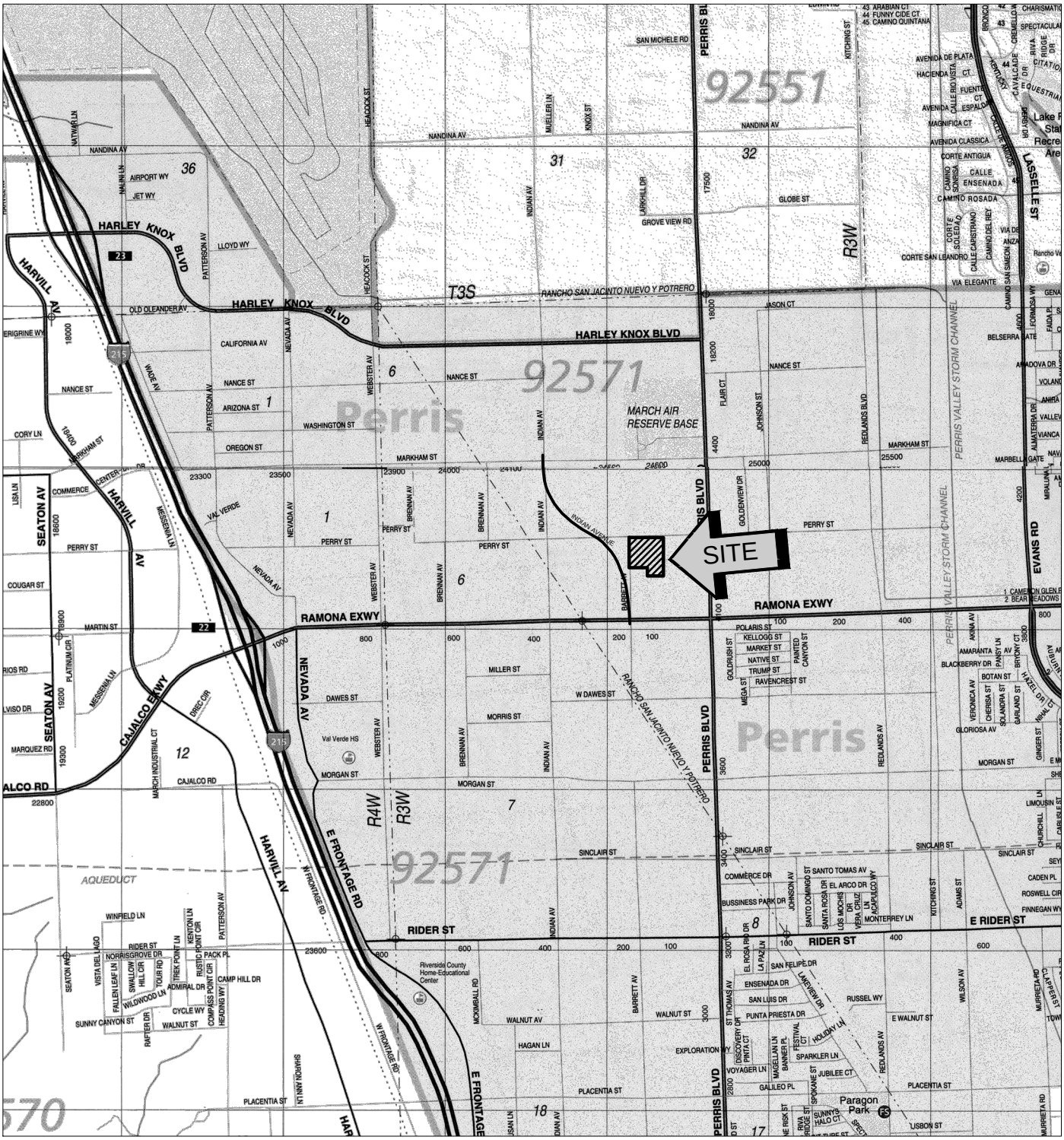
SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Scott McCann
Staff Scientist

Robert G. Trazo, GE 2655
Project Engineer

Distribution: (1) Addressee

Enclosures: Plate 1 - Site Location Map
Plate 2 - Infiltration Test Location Plan
Trench Logs (5 pages)
Infiltration Test Results Spreadsheets (5 pages)
Grain Size Distribution Graphs (5 pages)



SOURCE: RIVERSIDE COUNTY
THOMAS GUIDE, 2013

SITE LOCATION MAP

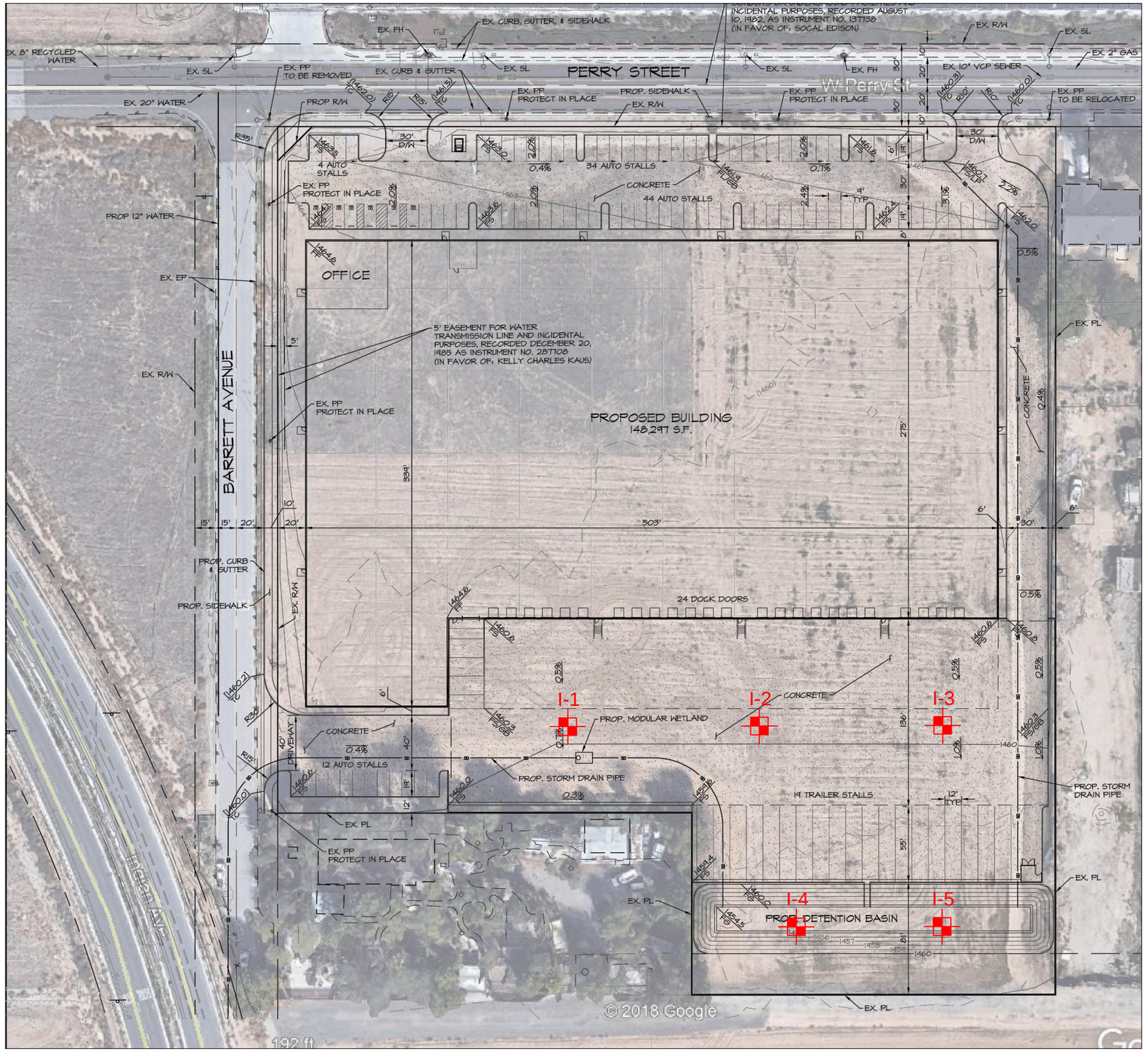
PROPOSED WAREHOUSE

PERRIS, CALIFORNIA

SCALE: 1" = 2400'	
DRAWN: SAM CHKD: RGT	
SCG PROJECT 18G160-2	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



NORTH

SoCalGeo

GEOTECHNICAL LEGEND

APPROXIMATE INFILTRATION LOCATION

NOTE: BASE MAP PREPARED BY WEBB AND ASSOCIATES

INFILTRATION LOCATION PLAN

PROPOSED WAREHOUSE

PERRIS, CALIFORNIA

SCALE: 1" = 80'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 18G160-2	
PLATE 2	

SOUTHERN CALIFORNIA GEOTECHNICAL

SOUTHERN CALIFORNIA GEOTECHNICAL

TRENCH NO. I-1

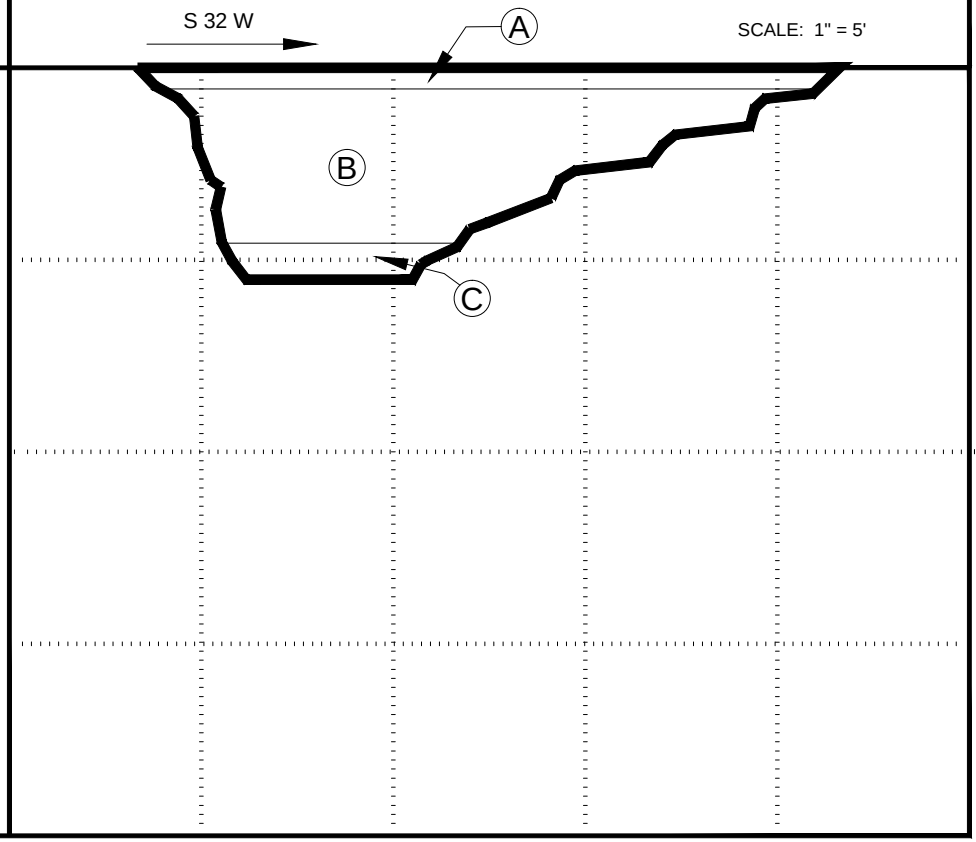
JOB NO.: 18G160-2
PROJECT: Proposed Warehouse
LOCATION: Perris, CA
DATE: 10-10-2018

EQUIPMENT USED: Backhoe
LOGGED BY: Scott McCann
ORIENTATION: S 32 W
ELEVATION:

WATER DEPTH: Dry
SEEPAGE DEPTH: Dry
READINGS TAKEN: At Completion

DEPTH	SAMPLE	DRY DENSITY (PCF)	MOISTURE (%)	EARTH MATERIALS DESCRIPTION
5	b		6	A: DISTURBED ALLUVIUM: Light Brown fine to medium Sandy Silt, trace coarse Sand, abundant fine root fibers, loose - dry B: ALLUVIUM: Brown Clayey fine Sand, little medium Sand, little Silt, trace calcareous veining, medium dense to dense - damp
	b		9	C: ALLUVIUM: Brown fine Sandy Clay, trace medium Sand, little calcareous veining, very stiff to hard - damp Trench Terminated @ 5.5 feet
10				
15				

GRAPHIC REPRESENTATION



KEY TO SAMPLE TYPES:
B - BULK SAMPLE (DISTURBED)
R - RING SAMPLE 2-1/2" DIAMETER (RELATIVELY UNDISTURBED)

TRENCH LOG

PLATE B-1

SOUTHERN CALIFORNIA GEOTECHNICAL

TRENCH NO. I-2

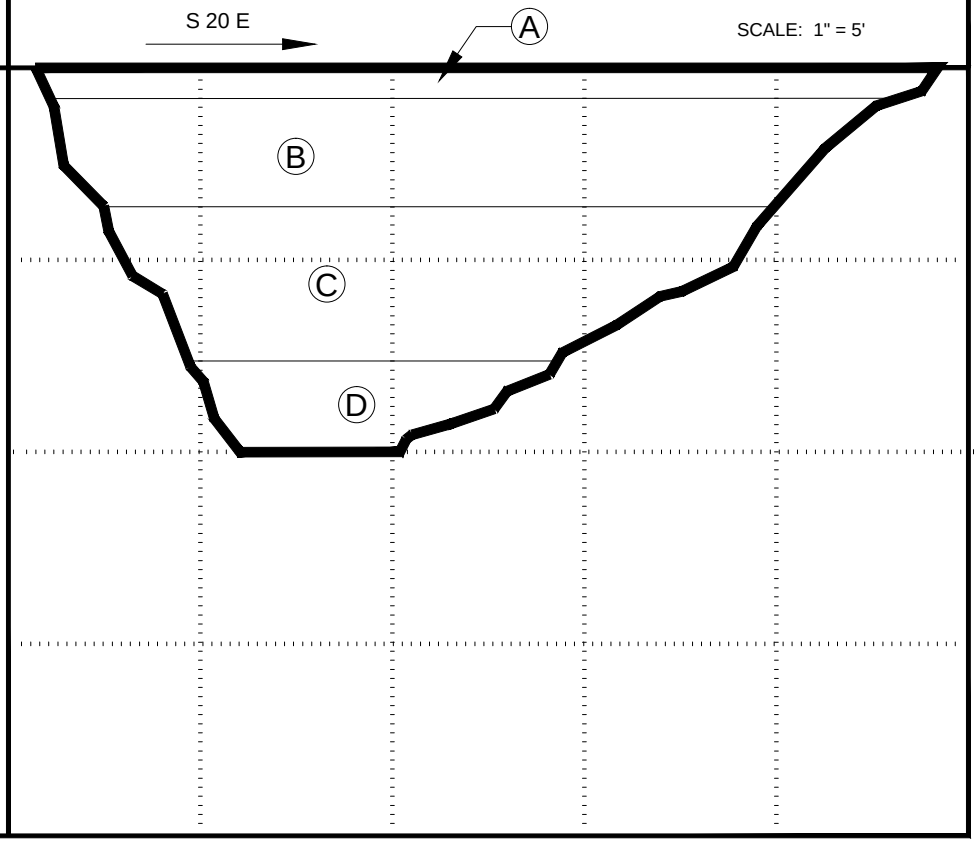
JOB NO.: 18G160-2
PROJECT: Proposed Warehouse
LOCATION: Perris, CA
DATE: 10-9-2018

EQUIPMENT USED: Backhoe
LOGGED BY: Scott McCann
ORIENTATION: S 20 E
ELEVATION:

WATER DEPTH: Dry
SEEPAGE DEPTH: Dry
READINGS TAKEN: At Completion

DEPTH	SAMPLE	DRY DENSITY (PCF)	MOISTURE (%)	EARTH MATERIALS DESCRIPTION
	b		2	A: DISTURBED ALLUVIUM: Light Brown fine to medium Sandy Silt, trace to little coarse Sand, abundant fine root fibers, loose - dry B: ALLUVIUM: Light Brown Silty fine to medium Sand, little coarse Sand, trace fine root fibers, dense - dry to damp
5	b		9	C: ALLUVIUM: Brown Silty fine to coarse Sand, medium dense - damp to moist
				D: ALLUVIUM: Brown fine Sandy Clay, little medium Sand, trace Silt, very stiff - moist
10	b		11	Trench Terminated @ 10 feet
15				

GRAPHIC REPRESENTATION



KEY TO SAMPLE TYPES:
B - BULK SAMPLE (DISTURBED)
R - RING SAMPLE 2-1/2" DIAMETER (RELATIVELY UNDISTURBED)

TRENCH LOG

PLATE B-2

SOUTHERN CALIFORNIA GEOTECHNICAL

TRENCH NO. I-3

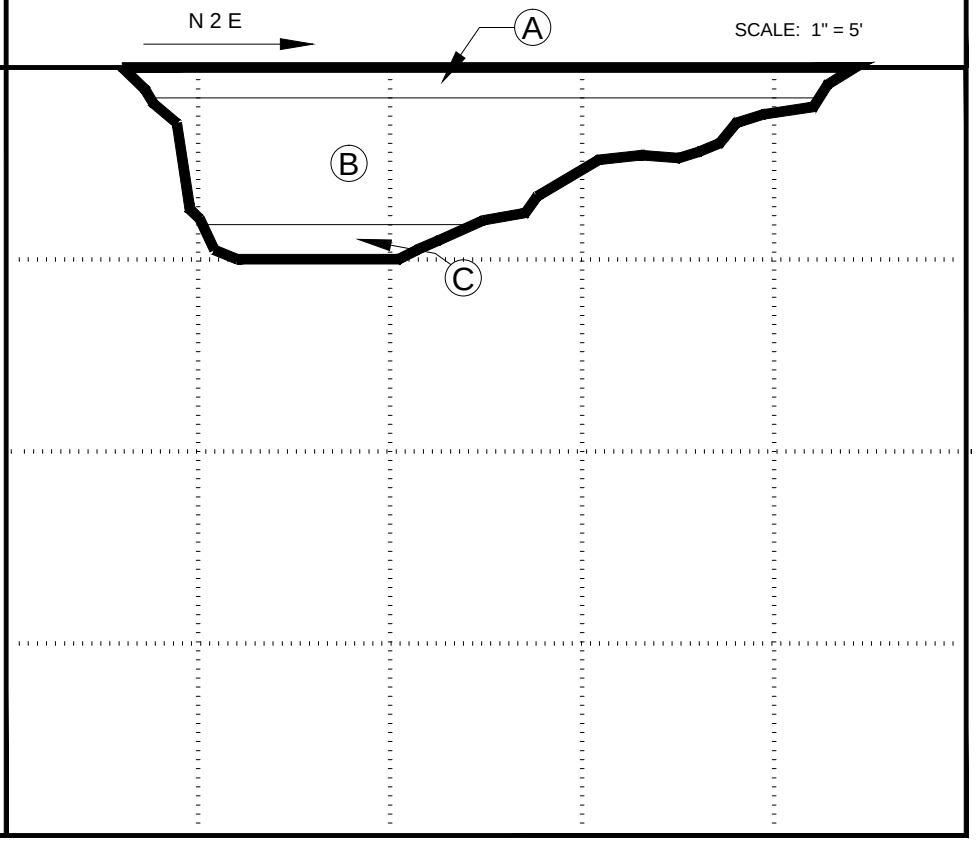
JOB NO.: 18G160-2
PROJECT: Proposed Warehouse
LOCATION: Perris, CA
DATE: 10-10-2018

EQUIPMENT USED: Backhoe
LOGGED BY: Scott McCann
ORIENTATION: N 2 E
ELEVATION:

WATER DEPTH: Dry
SEEPAGE DEPTH: Dry
READINGS TAKEN: At Completion

DEPTH	SAMPLE	DRY DENSITY (PCF)	MOISTURE (%)	EARTH MATERIALS DESCRIPTION
	b		4	A: DISTURBED ALLUVIUM: Light Brown fine to medium Sandy Silt, trace coarse Sand, abundant fine root fibers, loose - dry B: ALLUVIUM: Light Brown Clayey fine Sand, little medium Sand, little Silt, trace calcareous veining, dense - damp
5	b		9	C: ALLUVIUM: Brown fine Sandy Clay, trace medium Sand, little calcareous veining, very stiff to hard - damp Trench Terminated @ 5 feet
10				
15				

GRAPHIC REPRESENTATION



KEY TO SAMPLE TYPES:
B - BULK SAMPLE (DISTURBED)
R - RING SAMPLE 2-1/2" DIAMETER (RELATIVELY UNDISTURBED)

TRENCH LOG

PLATE B-3

SOUTHERN CALIFORNIA GEOTECHNICAL

TRENCH NO. I-4

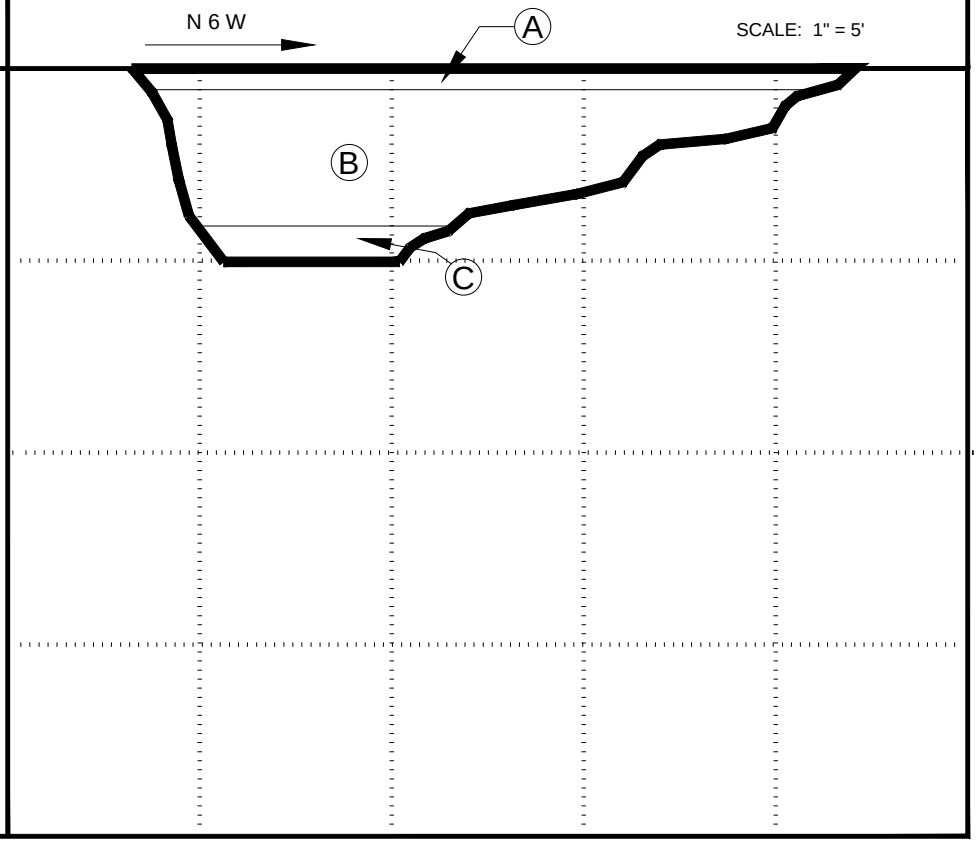
JOB NO.: 18G160-2
PROJECT: Proposed Warehouse
LOCATION: Perris, CA
DATE: 10-10-2018

EQUIPMENT USED: Backhoe
LOGGED BY: Scott McCann
ORIENTATION: N 6 W
ELEVATION:

WATER DEPTH: Dry
SEEPAGE DEPTH: Dry
READINGS TAKEN: At Completion

DEPTH	SAMPLE	DRY DENSITY (PCF)	MOISTURE (%)	EARTH MATERIALS DESCRIPTION
	b		3	A: DISTURBED ALLUVIUM: Light Brown fine to medium Sandy Silt, little coarse Sand, abundant fine root fibers, loose - dry B: ALLUVIUM: Brown Silty fine to medium Sand, trace to little coarse Sand, trace fine root fibers, medium dense to dense - damp
5	b		12	C: ALLUVIUM: Brown fine Sandy Clay, trace medium Sand, trace Silt, little calcareous veining, very stiff - moist Trench Terminated @ 5 feet
10				
15				

GRAPHIC REPRESENTATION



KEY TO SAMPLE TYPES:
B - BULK SAMPLE (DISTURBED)
R - RING SAMPLE 2-1/2" DIAMETER (RELATIVELY UNDISTURBED)

TRENCH LOG

PLATE B-4

SOUTHERN CALIFORNIA GEOTECHNICAL

TRENCH NO.
I-5

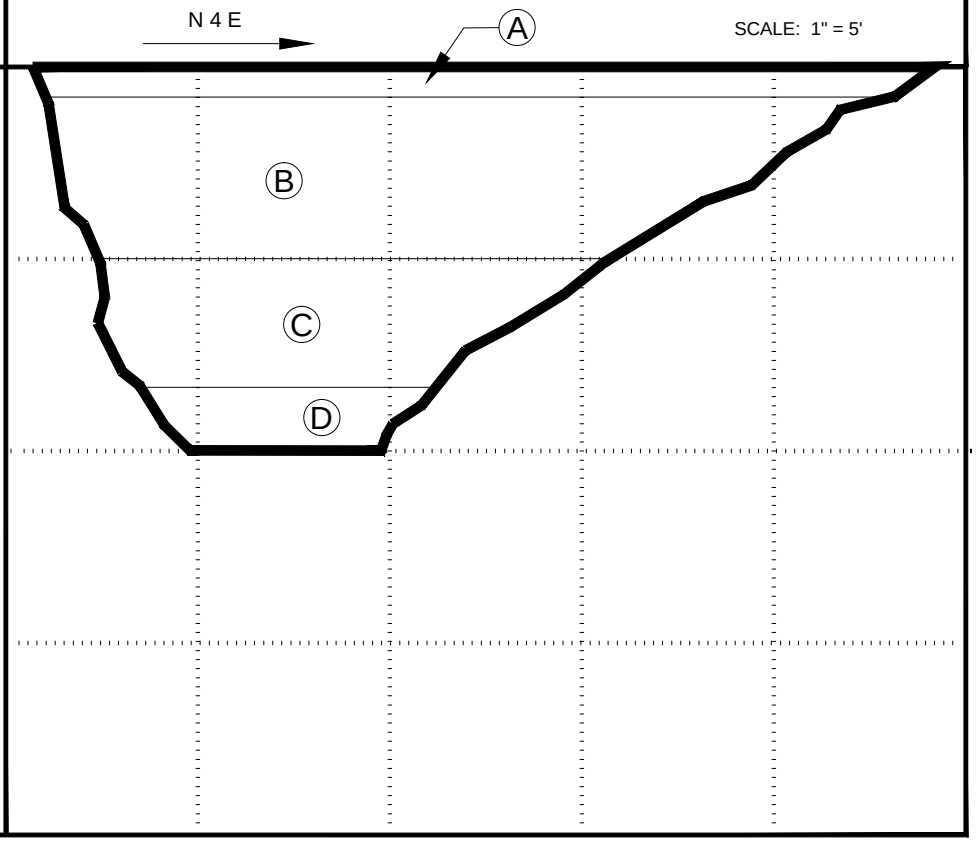
JOB NO.: 18G160-2
PROJECT: Proposed Warehouse
LOCATION: Perris, CA
DATE: 10-9-2018

EQUIPMENT USED: Backhoe
LOGGED BY: Scott McCann
ORIENTATION: N 4 E
ELEVATION:

WATER DEPTH: Dry
SEEPAGE DEPTH: Dry
READINGS TAKEN: At Completion

DEPTH	SAMPLE	DRY DENSITY (PCF)	MOISTURE (%)	EARTH MATERIALS DESCRIPTION
	b		5	A: DISTURBED ALLUVIUM: Light Brown fine to medium Sandy Silt, little coarse Sand, abundant fine root fibers, loose - dry B: ALLUVIUM: Brown Silty Clay, little fine Sand, trace medium Sand, trace fine root fibers, stiff - damp
5	b		16	C: ALLUVIUM: Brown fine Sandy Clay, trace medium Sand, trace Silt, little calcareous veining, very stiff - very moist
10	b		9	D: ALLUVIUM: Brown Clayey fine to medium Sand, trace Silt, medium dense to dense - damp Trench Terminated @ 10 feet
15				

GRAPHIC REPRESENTATION



KEY TO SAMPLE TYPES:
B - BULK SAMPLE (DISTURBED)
R - RING SAMPLE 2-1/2" DIAMETER (RELATIVELY UNDISTURBED)

TRENCH LOG

PLATE B-5

INFILTRATION CALCULATIONS

Project Name	Proposed Warehouse
Project Location	Perris, CA
Project Number	18G160-2
Engineer	Scott McCann

Infiltration Test No: I-1

Constants

	Diameter (ft)	Area (ft^2)	Area (cm^2)
Inner	1	0.79	730
Anlr. Spac	2	2.36	2189

*Note: The infiltration rate was calculated based on current time interval

Test Interval		Time (hr)	Interval **Elapsed** (min)	Flow Readings: Inner Ring (ml)	Flow Readings: Ring Flow (cm^3)	Flow Readings: Annular Ring (ml)	Flow Readings: Space Flow (cm^3)	Infiltration Rates: Inner Ring* (cm/hr)	Infiltration Rates: Annular Space* (cm/hr)	Infiltration Rates: Inner Ring* (in/hr)	Infiltration Rates: Annular Space* (in/hr)
1	Initial	1:00 PM	30	250	600	950	2100	1.64	1.92	0.65	0.76
	Final	1:30 PM	**30**	850		3050					
2	Initial	1:30 PM	30	50	325	200	1600	0.89	1.46	0.35	0.58
	Final	2:00 PM	**60**	375		1800					
3	Initial	2:00 PM	30	100	300	400	1450	0.82	1.32	0.32	0.52
	Final	2:30 PM	**90**	400		1850					
4	Initial	2:30 PM	30	100	225	450	1350	0.62	1.23	0.24	0.49
	Final	3:00 PM	**120**	325		1800					
5	Initial	3:00 PM	30	150	200	300	1300	0.55	1.19	0.22	0.47
	Final	3:30 PM	**150**	350		1600					

INFILTRATION CALCULATIONS

Project Name	Proposed Warehouse
Project Location	Perris, CA
Project Number	18G160-2
Engineer	Scott McCann

Infiltration Test No: I-2

Constants

	Diameter (ft)	Area (ft^2)	Area (cm^2)
Inner	1	0.79	730
Anlr. Spac	2	2.36	2189

*Note: The infiltration rate was calculated based on current time interval

Test Interval		Time (hr)	Interval **Elapsed** (min)	Flow Readings: Inner Ring (ml)	Flow Readings: Ring Flow (cm^3)	Flow Readings: Annular Ring (ml)	Flow Readings: Space Flow (cm^3)	Infiltration Rates: Inner Ring* (cm/hr)	Infiltration Rates: Annular Space* (cm/hr)	Infiltration Rates: Inner Ring* (in/hr)	Infiltration Rates: Annular Space* (in/hr)
1	Initial	1:00 PM	30	200	800	900	3600	2.19	3.29	0.86	1.30
	Final	1:30 PM	**30**	1000		4500					
2	Initial	1:30 PM	30	550	750	1150	3250	2.06	2.97	0.81	1.17
	Final	2:00 PM	**60**	1300		4400					
3	Initial	2:00 PM	30	50	600	600	3000	1.64	2.74	0.65	1.08
	Final	2:30 PM	**90**	650		3600					
4	Initial	2:30 PM	30	750	425	200	2950	1.16	2.70	0.46	1.06
	Final	3:00 PM	**120**	1175		3150					
5	Initial	3:00 PM	30	300	425	550	2850	1.16	2.60	0.46	1.03
	Final	3:30 PM	**150**	725		3400					
6	Initial	3:30 PM	30	200	400	500	2850	1.10	2.60	0.43	1.03
	Final	4:00 PM	**180**	600		3350					

INFILTRATION CALCULATIONS

Project Name	Proposed Warehouse
Project Location	Perris, CA
Project Number	18G160-2
Engineer	Scott McCann

Infiltration Test No: I-3

Constants

	Diameter (ft)	Area (ft^2)	Area (cm^2)
Inner	1	0.79	730
Anlr. Spac	2	2.36	2189

*Note: The infiltration rate was calculated based on current time interval

Test Interval		Time (hr)	Interval **Elapsed** (min)	Flow Readings: Inner Ring (ml)	Flow Readings: Ring Flow (cm^3)	Flow Readings: Annular Ring (ml)	Flow Readings: Space Flow (cm^3)	Infiltration Rates: Inner Ring* (cm/hr)	Infiltration Rates: Annular Space* (cm/hr)	Infiltration Rates: Inner Ring* (in/hr)	Infiltration Rates: Annular Space* (in/hr)
1	Initial	8:00 AM	30	100	500	100	2950	1.37	2.70	0.54	1.06
	Final	8:30 AM	**30**	600		3050					
2	Initial	8:30 AM	30	600	300	3050	1600	0.82	1.46	0.32	0.58
	Final	9:00 AM	**60**	900		4650					
3	Initial	9:00 AM	30	150	225	900	1350	0.62	1.23	0.24	0.49
	Final	9:30 AM	**90**	375		2250					
4	Initial	9:30 AM	30	300	200	800	1300	0.55	1.19	0.22	0.47
	Final	10:00 AM	**120**	500		2100					
5	Initial	10:00 AM	30	500	200	550	1250	0.55	1.14	0.22	0.45
	Final	10:30 AM	**150**	700		1800					

INFILTRATION CALCULATIONS

Project Name	Proposed Warehouse
Project Location	Perris, CA
Project Number	18G160-2
Engineer	Scott McCann

Infiltration Test No: I-4

Constants

	Diameter (ft)	Area (ft^2)	Area (cm^2)
Inner	1	0.79	730
Anlr. Spac	2	2.36	2189

*Note: The infiltration rate was calculated based on current time interval

Test Interval		Time (hr)	Interval **Elapsed** (min)	Flow Readings: Inner Ring (ml)	Flow Readings: Ring Flow (cm^3)	Flow Readings: Annular Ring (ml)	Flow Readings: Space Flow (cm^3)	Infiltration Rates: Inner Ring* (cm/hr)	Infiltration Rates: Annular Space* (cm/hr)	Infiltration Rates: Inner Ring* (in/hr)	Infiltration Rates: Annular Space* (in/hr)
1	Initial	11:00 AM	30	200	525	1100	2300	1.44	2.10	0.57	0.83
	Final	11:30 AM	**30**	725		3400					
2	Initial	11:30 AM	30	300	400	800	1750	1.10	1.60	0.43	0.63
	Final	12:00 PM	**60**	700		2550					
3	Initial	12:00 PM	30	50	325	200	1500	0.89	1.37	0.35	0.54
	Final	12:30 PM	**90**	375		1700					
4	Initial	12:30 PM	30	0	250	350	1500	0.69	1.37	0.27	0.54
	Final	1:00 PM	**120**	250		1850					
5	Initial	1:00 PM	30	100	250	900	1400	0.69	1.28	0.27	0.50
	Final	1:30 PM	**150**	350		2300					

INFILTRATION CALCULATIONS

Project Name	Proposed Warehouse
Project Location	Perris, CA
Project Number	18G160-2
Engineer	Scott McCann

Infiltration Test No: I-5

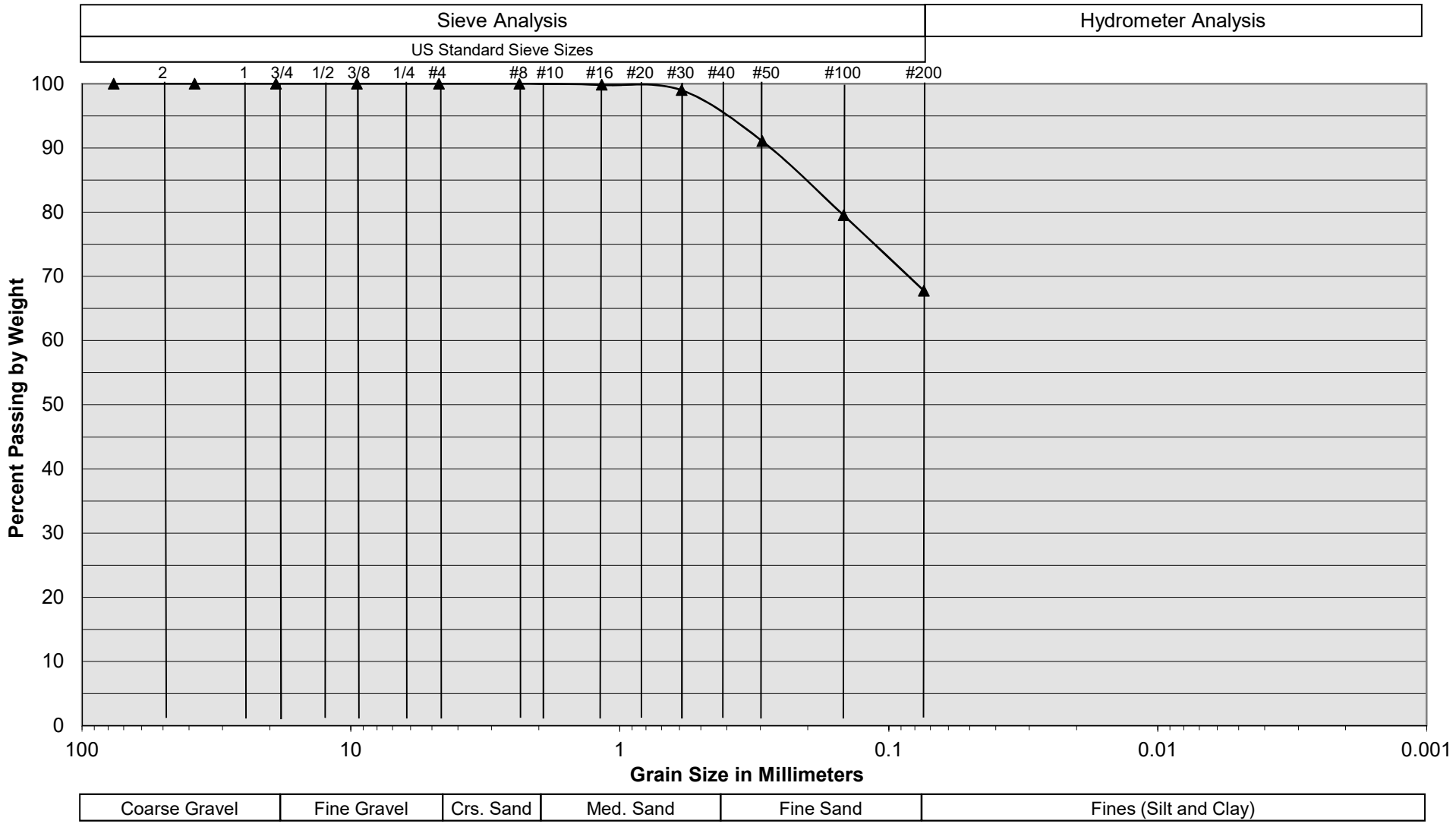
Constants

	Diameter (ft)	Area (ft^2)	Area (cm^2)
Inner	1	0.79	730
Anlr. Spac	2	2.36	2189

*Note: The infiltration rate was calculated based on current time interval

Test Interval		Time (hr)	Interval **Elapsed** (min)	Flow Readings: Inner Ring (ml)	Flow Readings: Ring Flow (cm^3)	Flow Readings: Annular Ring (ml)	Flow Readings: Space Flow (cm^3)	Infiltration Rates: Inner Ring* (cm/hr)	Infiltration Rates: Annular Space* (cm/hr)	Infiltration Rates: Inner Ring* (in/hr)	Infiltration Rates: Annular Space* (in/hr)
1	Initial	9:30 AM	20	100	825	800	5800	3.39	7.95	1.34	3.13
	Final	9:50 AM	**20**	925		6600					
2	Initial	9:50 AM	20	100	800	600	4900	3.29	6.72	1.30	2.64
	Final	10:10 AM	**40**	900		5500					
3	Initial	10:10 AM	20	125	775	650	3900	3.19	5.35	1.25	2.10
	Final	10:30 AM	**60**	900		4550					
4	Initial	10:30 AM	20	400	775	300	3550	3.19	4.87	1.25	1.92
	Final	10:50 AM	**80**	1175		3850					
5	Initial	10:50 AM	20	550	750	3900	3400	3.08	4.66	1.21	1.83
	Final	11:10 AM	**100**	1300		7300					
6	Initial	11:10 AM	20	1300	700	7300	3400	2.88	4.66	1.13	1.83
	Final	11:30 AM	**120**	2000		10700					

Grain Size Distribution



Sample Description	I-1 @ 5½ feet
Soil Classification	Brown fine Sandy Clay, trace medium Sand

Proposed Warehouse
Perris, CA
Project No. 18G160-2
PLATE C-1

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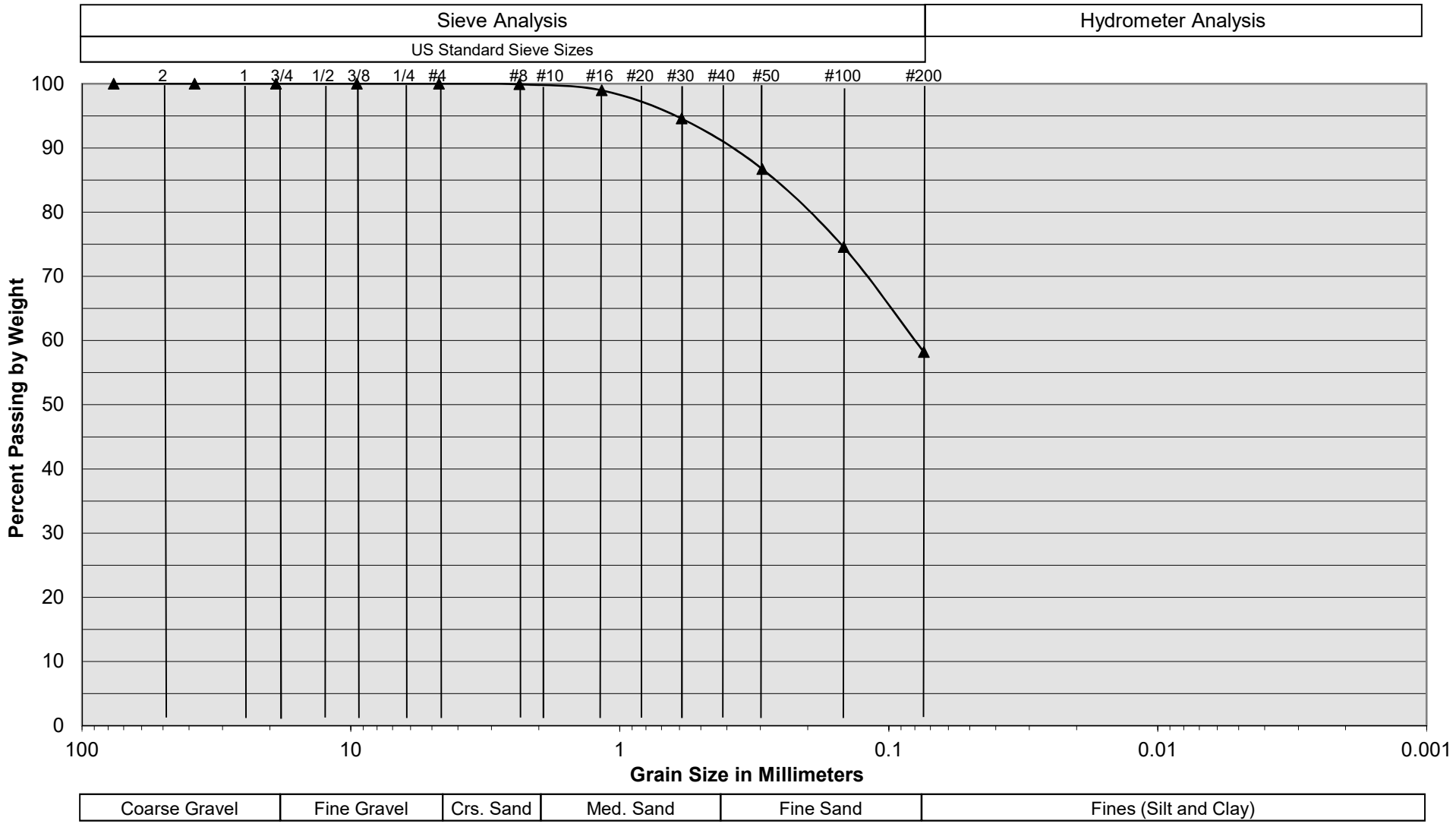
Grain Size Distribution



Sample Description	I-2 @ 10 feet
Soil Classification	Brown fine Sandy Clay, little medium Sand, trace Silt

Proposed Warehouse
Perris, CA
Project No. 18G160-2
PLATE C-2

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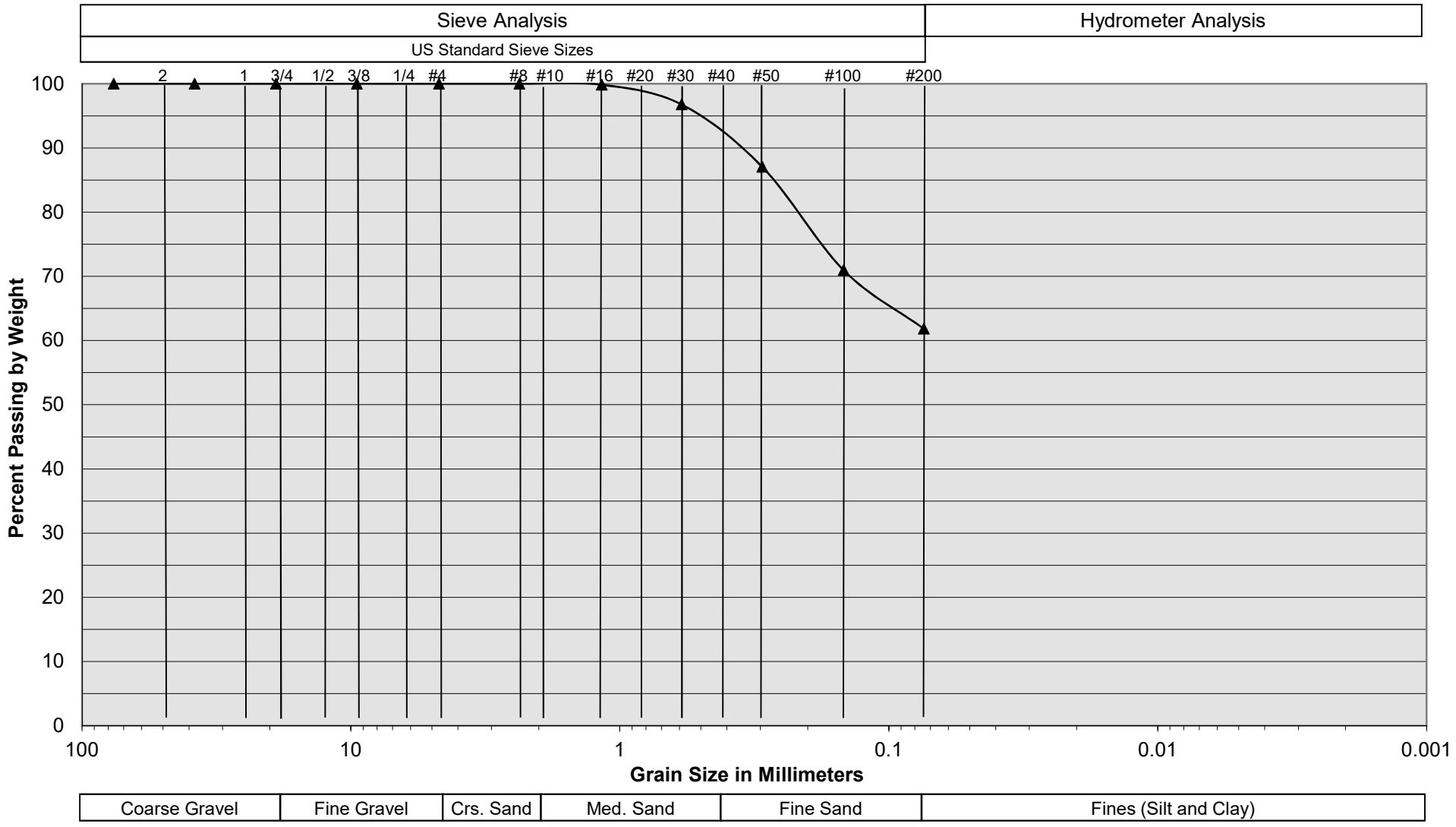
Grain Size Distribution



Sample Description	I-3 @ 5 feet
Soil Classification	Brown fine Sandy Clay, trace medium Sand

Proposed Warehouse
Perris, CA
Project No. 18G160-2
PLATE C-3

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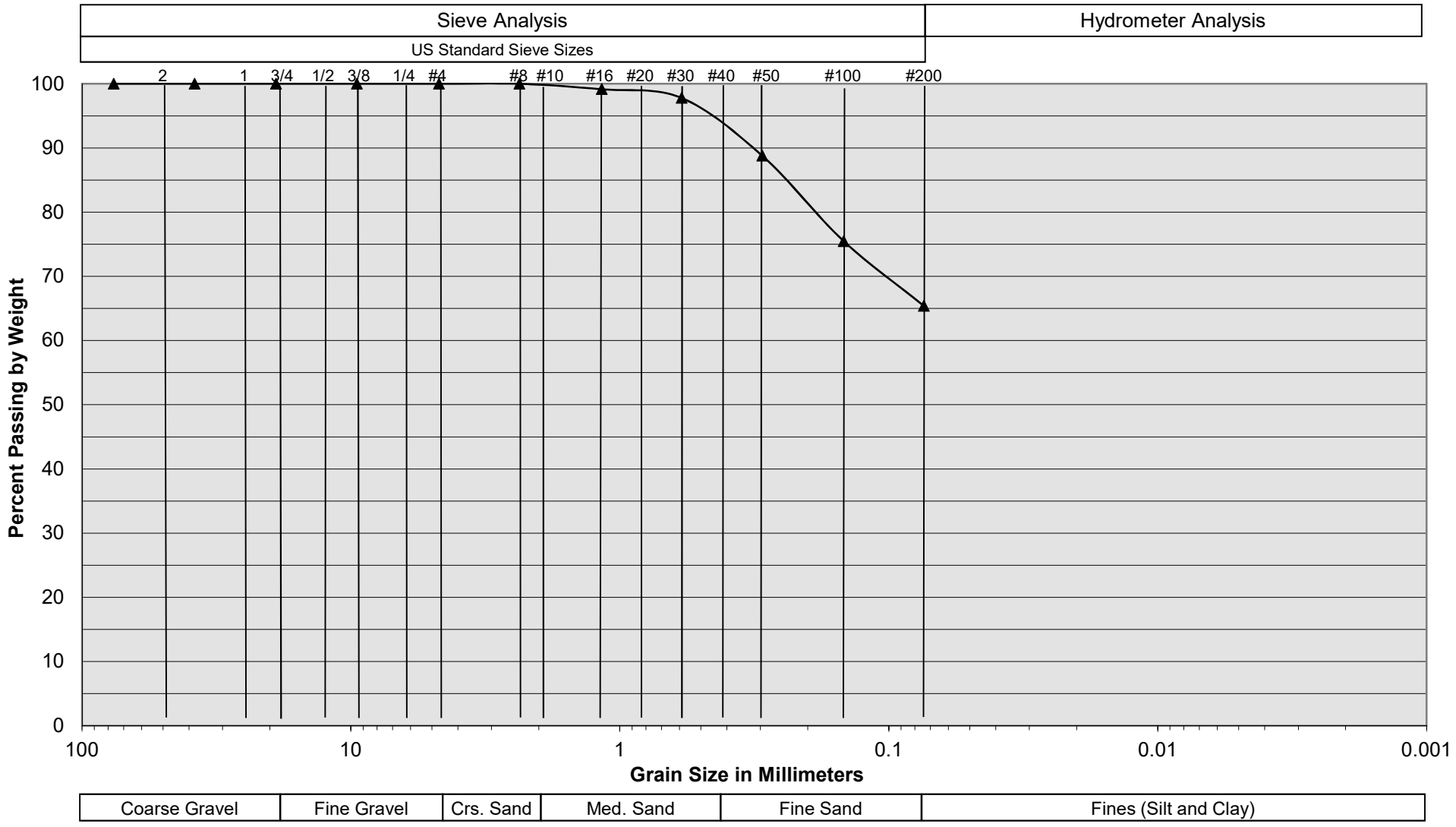
Grain Size Distribution



Sample Description	I-4 @ 5 feet
Soil Classification	Brown fine Sandy Clay, trace medium Sand, trace Silt

Proposed Warehouse
Perris, CA
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PLATE C-4

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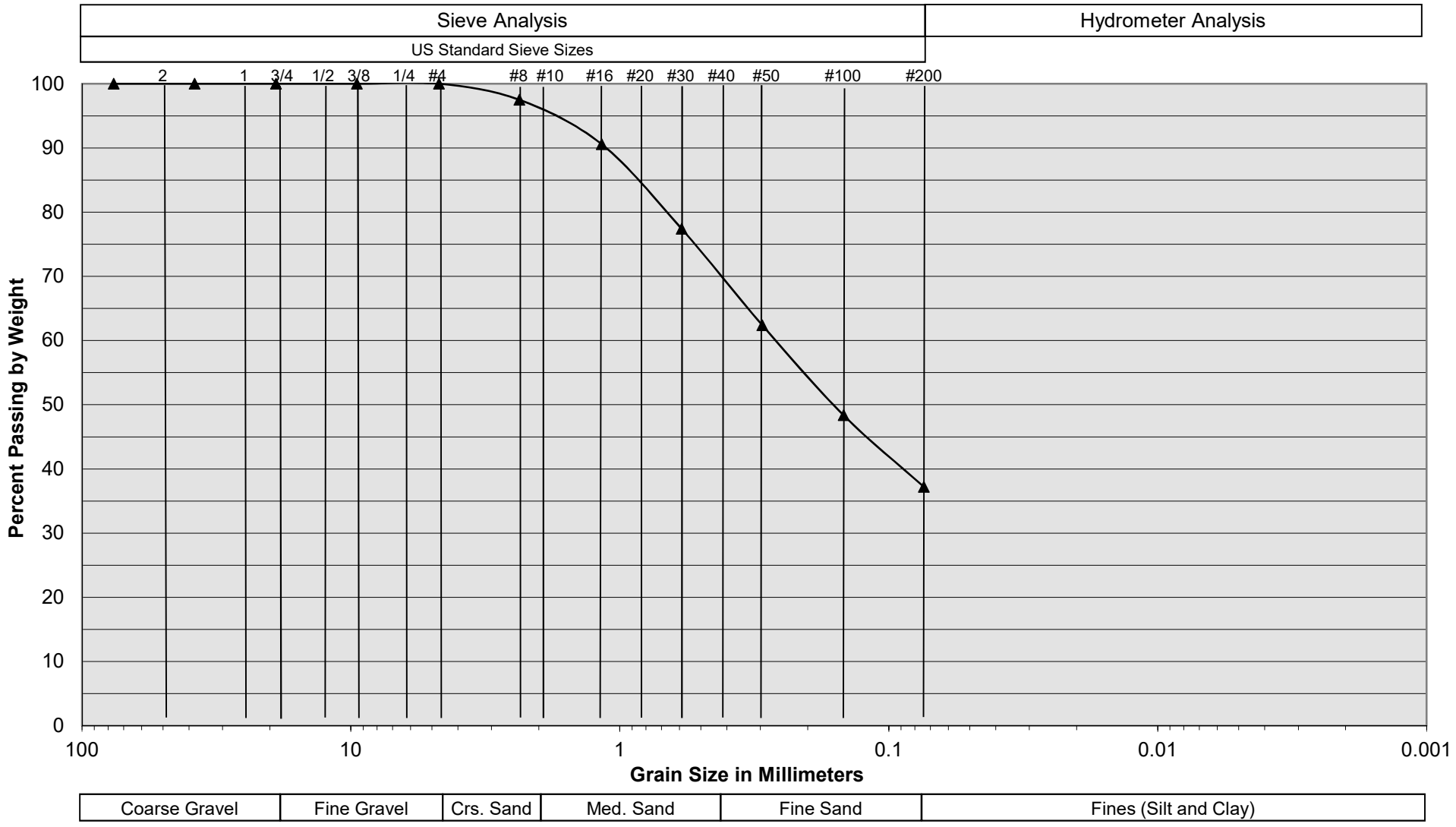
Grain Size Distribution



Sample Description	I-5 @ 10 feet
Soil Classification	Brown Clayey fine to medium Sand, trace Silt

Proposed Warehouse
Perris, CA
Project No. 18G160-2
PLATE C-5

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