EXHIBIT H
SURFACE RETENTION INFILTRATION TEST

SITE PLAN NO. PLAN 19-00029

November 2019

ALTEC ENGINEERING CORP.
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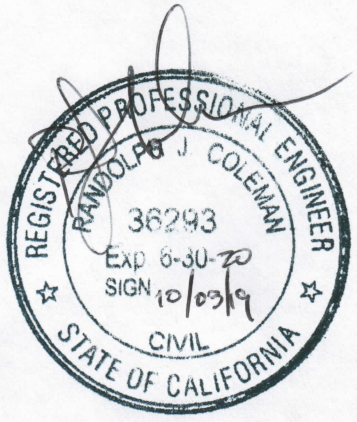
October 7, 2019

SURFACE RETENTION INFILTRATION TEST

PROPOSED MANUFACTURING FACILITY
A PORTION OF APN 0472-131-17
National Trails Highway
Victorville

PREPARED AT THE REQUEST OF:

MARTINEZ OKAMOTO ARCHITECTS
15487 Seneca Road, # 203
Victorville, CA. 92392



W.O. NO. 19-174

DESCRIPTION OF SITE AND PROPOSAL

This report has been prepared for the site of a proposed concrete manufacturing facility development. The site is located on the west side of National Trails Highway (D Street) approximately 1,500 feet southeast of Air Expressway in Victorville. The legal description of the site is APN 0472-131-03,04,08,10,13,16,& 17.

The on-site retention for the site will be utilizing a surface retention basin located near the west right-of-way of National Trails Highway on Parcel 0472-131-17. Per the site plan provided to this office, this system is to be placed in an undeveloped area of the site.

There has been grading on the site. There are various commercial/industrial/manufacturing facilities to the east and vacant land to the south, west, and north. The natural grade of the existing site slopes generally east at approximately 5% to 8%. Only minor grading will be required to prepare the site for construction.

METHODOLOGY AND PROCEDURES

The infiltration tests for retention system were performed at the proposed location of the system. The testing was performed based upon the procedures for Percolation Test Procedure as outlined by the San Bernardino County Stormwater Program Technical Guidance Document for Water Quality Management Plans (WQMP) dated July 28, 2011.

An exploratory trench was excavated to a depth of approximately 12 feet. The soil profile consists of fine silty sand over coarse to fine grained sand (Drawing No. 6). The test holes were located approximately at the location of the proposed retention facility (Drawing No. 5). The test holes were excavated to a depth of approximately 24 inches below the existing natural grade to the approximate proposed depth of the retention basin.

The test holes were not presoaked with clear water prior to testing as they both as both holes seeped more than 6 inches of water in two consecutive 25 minute intervals. During the initial test measurements, it was determined the soils met the "Sandy Soil Requirements" as described in the guidance document. Measurements continued for an additional 60 minutes until the fall rate was uniform. The fall was then timed to determine a rate in minutes per inch (Drawing No. 7 and 8). This rate was then used to determine the infiltration rate in inches per hour. (Drawing No. 7 and 8).

RESULTS

The sandy soils encountered at the test site did infiltrate at an acceptable rate.

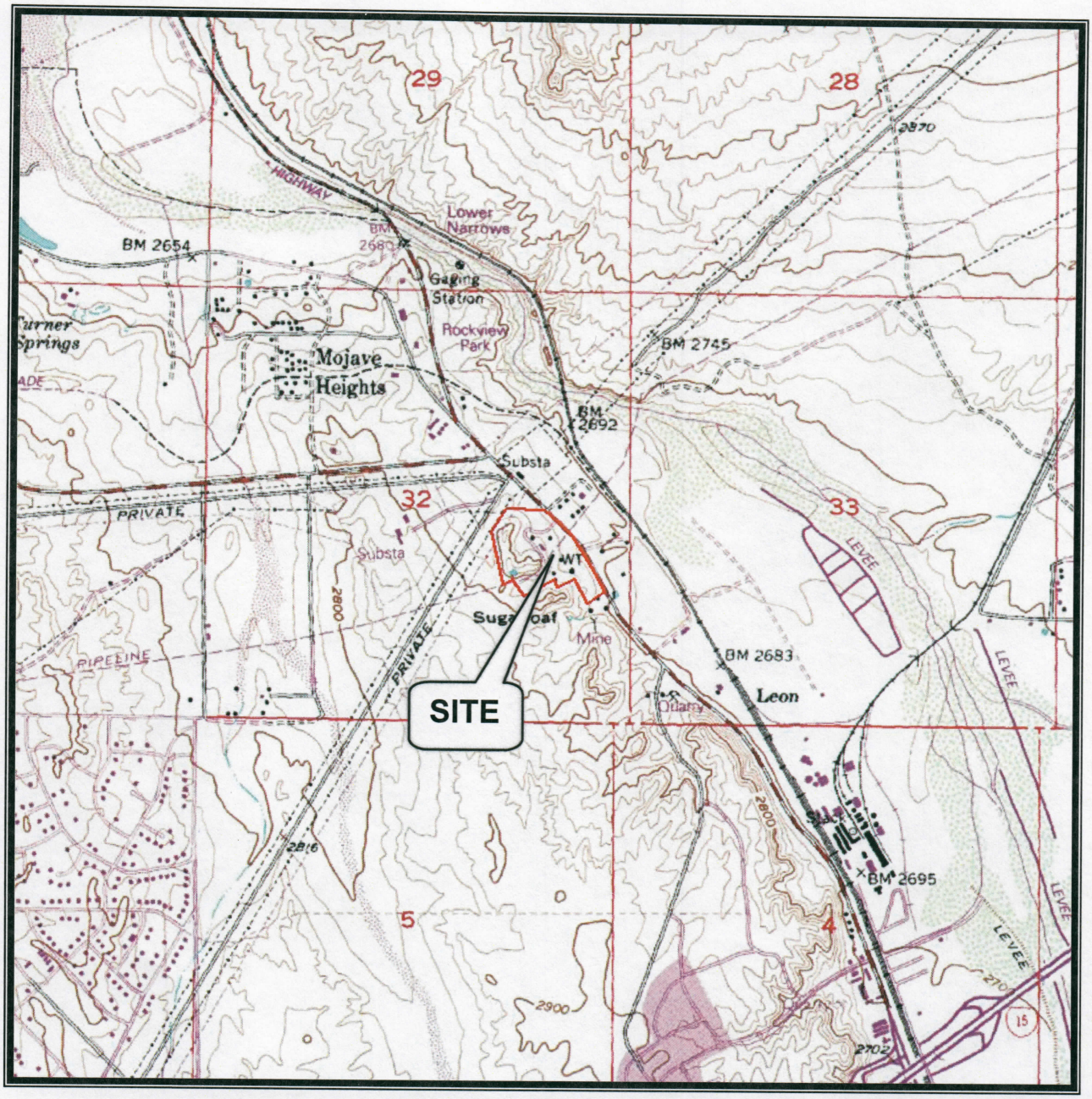
DESIGN

The percolation rate of 1.43 minutes per inch (mpi) will be used for this site. This rate equates to an infiltration rate of 4.54 inches per hour. The design rate to be used for this site is 2.27 inches per hour. Assuming a depth of the retention basin to be 24 inches. If the basin is completely full, it will drain completely in approximately 12 hours, which is within the 72-hour requirement.

RANDOLPH J. COLEMAN, RCE 36293
EXP 6-30-2020

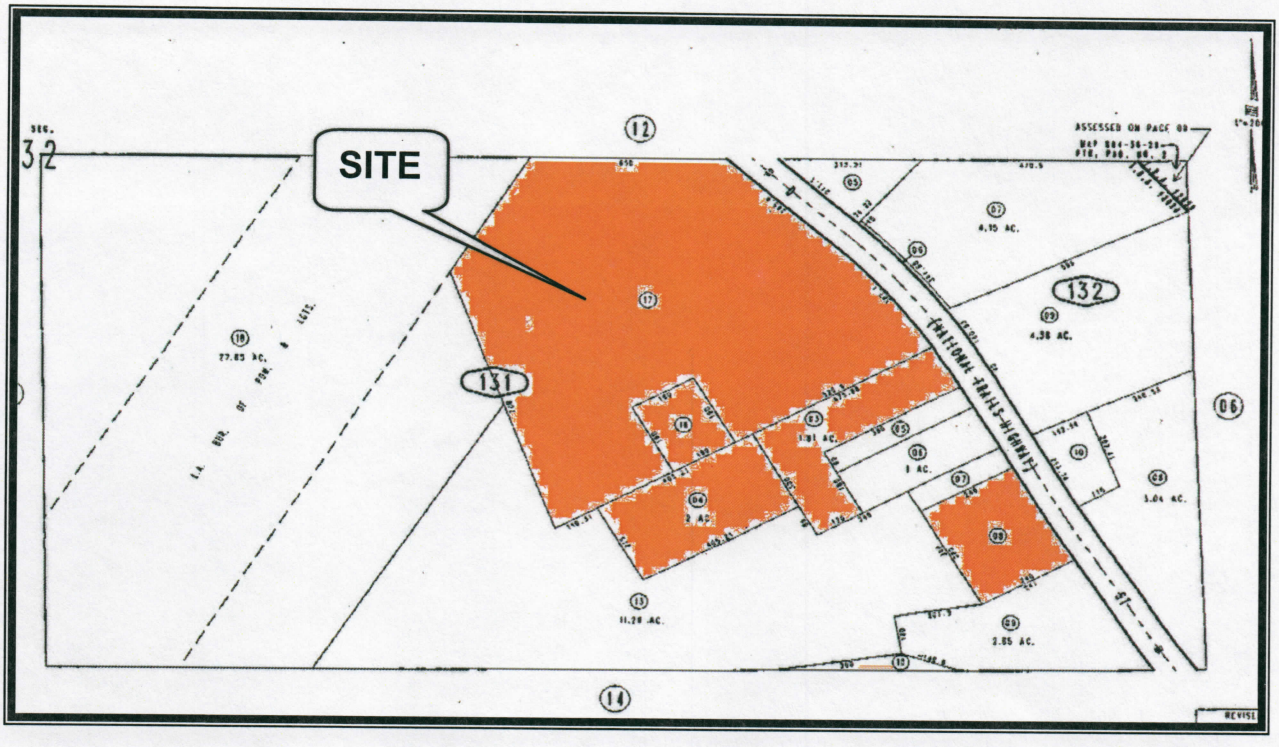
LOCATION MAP - SOUTHWEST SIDE OF NATIONAL TRAILS HIGHWAY SOUTHEAST OF AIR EXPRESSWAY VICTORVILLE

DRAWING 1



USGS QUAD SHEET - VICTORVILLE

DRAWING 2

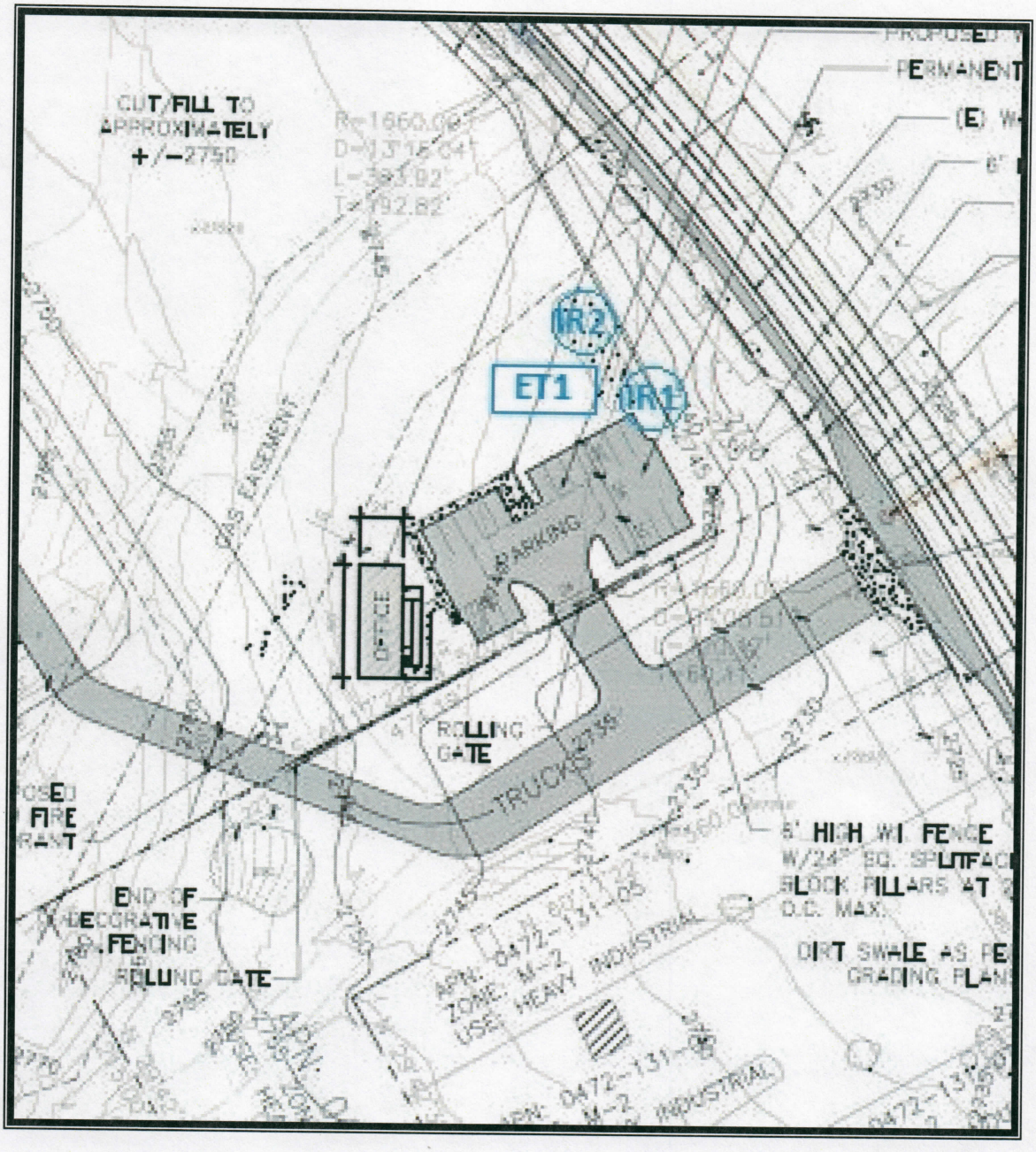


ASSESSOR'S MAP – APN 0472-131-03,04,08,10,13,16, & 17

DRAWING 3

AERIAL PHOTO OF SITE
AUGUST, 2018

DRAWING 4



EXPLORATORY TRENCH AND TEST LOCATIONS

DRAWING 5

TRENCH LOG

TRENCH NO. 1

DEPTH FT	DENSITY IN PLACE (PCF)	MOISTURE (%)	PERCENT COMPACTION	CLASSIF.	
1					Fine Silty Sand, Gray, Dry
2					Coarse to Fine Sand, Gray, Dry, Loose to Medium Dense
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					BOTTOM OF TRENCH NO GROUNDWATER NO VOIDS
14					
15					

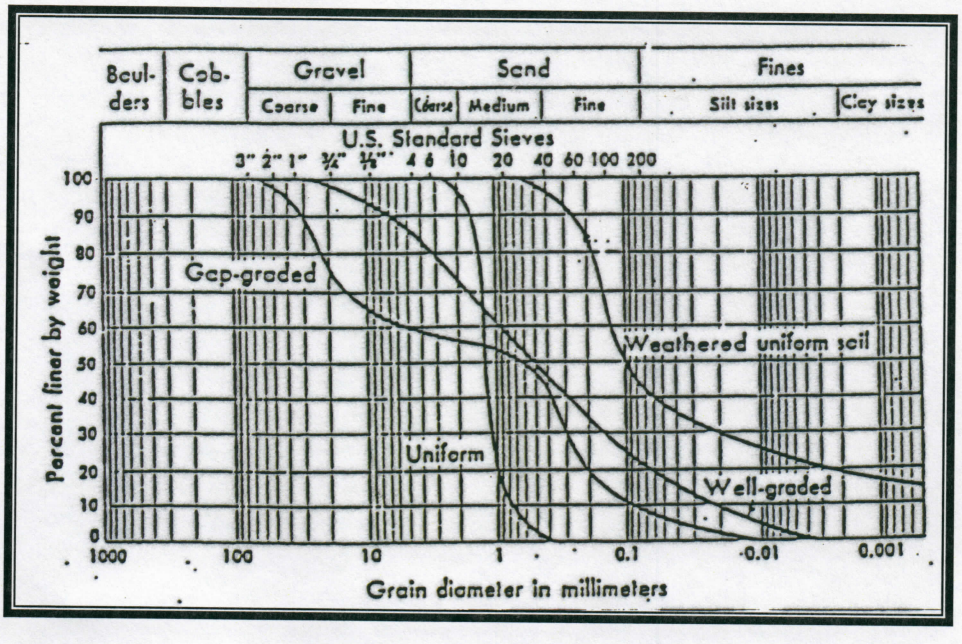
DRAWING 6

SIEVE ANALYSIS RESULTS

SAMPLE # 1 SAMPLE DEPTH 3.0' BORING/TRENCH # 1

SIEVE #	WEIGHT RETAINED	% RETAINED	% PASSING
4	0.04	3.0	97.0
10	0.22	14.0	86.0
20	0.60	39.0	61.0
40	0.88	58.0	42.0
80	1.23	80.0	20.0
100	1.29	84.0	16.0
200	1.42	93.0	7.0
PAN	1.53	100.0	0.0

TOTAL SAMPLE WEIGHT 1.53 LBS.
PERCENT FINES 7.0%



DRAWING 7

Percolation/Infiltration Test Data Sheet

Project:	Martinez Okamoto	Project #:	19-174	Date:	10/1/2019
Test Hole No:	1	Tested By:	R.H.		
Depth of Test Hole	24	USCS Soils Classification		Coarse to Fine Sand	
Test Hole Dimensions (inches)				Length	Width
Diameter in. (if round)	8	Sides in.(if rectangular) =			

Sandy Soil Criteria Test*

Trial No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1	10:13	10:28	25	4	19	15	Y
2	10:40	11:05	25	4	16.5	12.5	Y

* If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall runfor an additional hour with measurements taken every 10 minutes. Other wise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximate 30 minute intervals) with a precision of at least 0.25".

Trial No.	Start Time	Stop Time	Δt Time Interval (min)	D_o Initial Depth to Water (in.)	D_f Final Depth to Water (in.)	ΔD Change in Water Level (in.)	Percolation Rate (min./in.)
1	11:10	11:20	10	4	10.75	6.75	1.48
2	11:21	11:31	10	4	10.5	6.5	1.54
3	11:32	11:42	10	4	10.25	6.25	1.60
4	11:43	11:53	10	4	10.25	6.25	1.60
5	11:54	12:04	10	4	10.25	6.25	1.60
6	12:05	12:15	10	4	10.25	6.25	1.60
7						0	#DIV/0!
8						0	#DIV/0!
9						0	#DIV/0!
10						0	#DIV/0!
11						0	#DIV/0!
12						0	#DIV/0!
13						0	#DIV/0!
14						0	#DIV/0!
15						0	#DIV/0!

Infiltration Rate (inches per hour)

H_o =	20	**3.97**	
H_f =	13.75	**Design Infiltration Rate (F.S. = 2)**	
H_{avg} =	16.875	**1.99**	

DRAWING #8

Percolation/Infiltration Test Data Sheet

Project:	Martinez Okamoto	Project #:	19-174	Date:	10/1/2019
Test Hole No:	2	Tested By:	R.H.		
Depth of Test Hole	24	USCS Soils Classification		Coarse to Fine Sand Some Silt	
Test Hole Dimensions (inches)				Length	Width
Diameter in. (if round)	8	Sides in.(if rectangular) =			

Sandy Soil Criteria Test*

Trial No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1	10:14	10:39	25	4	22	18	Y
2	10:42	11:07	25	4	19	15	Y

* If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall runfor an additional hour with measurements taken every 10 minutes. Other wise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximate 30 minute intervals) with a precision of at least 0.25".

Trial No.	Start Time	Stop Time	Δt Time Interval (min)	D_o Initial Depth to Water (in.)	D_f Final Depth to Water (in.)	ΔD Change in Water Level (in.)	Percolation Rate (min./in.)
1	11:12	11:22	10	4	11.5	7.5	1.33
2	11:23	11:33	10	4	11.5	7.5	1.33
3	11:34	11:44	10	4	11.25	7.25	1.38
4	11:45	11:55	10	4	11	7	1.43
5	11:56	12:06	10	4	11	7	1.43
6	12:07	12:17	10	4	11	7	1.43
7						0	#DIV/0!
8						0	#DIV/0!
9						0	#DIV/0!
10						0	#DIV/0!
11						0	#DIV/0!
12						0	#DIV/0!
13						0	#DIV/0!
14						0	#DIV/0!
15						0	#DIV/0!

Infiltration Rate (inches per hour)

H_o =	20	**4.54**	
H_f =	13	**Design Infiltration Rate (F.S. = 2)**	
H_{avg} =	16.5	**2.27**	

DRAWING #9