

APPENDIX C

STORMWATER CONTROL PLAN

STORMWATER CONTROL PLAN

for

ROCKETSHIP
1700 Cavallo Road
Antioch, California 94509

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Stormwater Control Plan Exhibit 1

This Stormwater Control Plan was prepared using the template dated February 15, 2012.

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Rocketship Cavallo Road / J16127
Application Submittal Date	April 24, 2017
Project Location	1700 Cavallo Road, Antioch, CA 94509 APN: 065-151-049-7
Name of Developer	Launchpad Development Eighteen LLC
Project Phase No.	NA
Project Type and Description	Construction of a new Rocketship Charter School in Antioch.
Project Watershed	East Antioch Creek
Total Project Site Area (acres)	1.717
Total Area of Land Disturbed (acres)	1.183
Total New Impervious Surface Area (sq. ft.)	0
Total Replaced Impervious Surface Area	31,828 sq. ft.
Total Pre-Project Impervious Surface Area	66,708 sq. ft.
Total Post-Project Impervious Surface Area	21,216 sq. ft.
50% Rule [*]	Doesn't Apply
Project Density	NA
Applicable Special Project Categories [Complete even if all treatment is LID]	NA
Percent LID and non-LID treatment	Impervious areas on the site, including all roofs, parkings, and playgrounds have been divided and diverted runoff to 4 distinct areas to be treated with bio-retentions, see Stormwater Control Plan Exhibit.
HMP Compliance [†]	NA

[*50% rule applies if:

Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HMP applies if:

(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

II.A. Project Location and Description

Rocketship Education is a non-profit network of public elementary charter schools serving primarily low-income students in neighborhoods where access to excellent schools is limited. The Rocketship Antioch school will be built at 1700 Cavallo Road in Antioch, California (APN: 065-151-049-7).

The project will include redeveloping the approximately 1 3/4-acre site for a new school campus. The existing office/warehouse building and appurtenances will be demolished prior to new construction. The campus will include a new school building, covered lunch area, parking lot, drop-off drive aisles, play area and an open space area. The school building will be two stories and a total of 23,000 square feet, with 13,000 square-foot first floor and a 10,000 square -foot second floor. The covered lunch area will be 2,500 square feet, and the parking lot will have 42 parking stalls. The replaced impervious area runoffs will be treated in accordance with Stormwater C.3 Guidebook. In addition, associated utility and other site infrastructures will also be constructed as part of the overall project.

II.B. Existing Site Features and Conditions

The site is located within an alluvial plain in the northern bay area within a few miles north of the northeast bay hills. Alluvial fan sediment typically includes sand, gravel, silt, and clay, and is moderately to poorly sorted, and moderately to poorly bedded. The soils are classified per Soil Report as group D.

The existing site has been used as an office/warehouse building. Topography is generally flat with a mild slope (approximately 3.5' across the length of the site) toward Cavallo Road. Currently, all impervious area runoffs are sheet flow to the collective catch basins located behind the existing driveways. The catch basins then discharge through the curb drain onto the City's gutter; which flows and empties into City's curb inlet located north of Cavallo Road from the site.

The project will remove 88% of the impervious area and to replace with smaller impervious area of 62%, a total area of land disturbed. The replaced impervious area will be divided into four distinct areas. Each distinct area will be graded to drain into a bio-retention area (4 total) to be treated before discharge into the City's storm drain system. A smaller replacement of impervious area of this project will decrease stormwater runoff from the site to the City's storm drain system.

II.C. Opportunities and Constraints for Stormwater Control

Constraints: The proposed bio-retention areas will not have a subdrain drain system, due to shallow discharge invert elevations at the street. Per Soil Report, the site has clayey native soils, hydrologic group D, the infiltration rate test will be determined by the Corner Stone Earth Group at a later time.

Opportunities: The stormwater runoff from the replaced impervious areas will surface flow to the bio-retention areas, and to be treated prior to entering the conveyance system before discharging into the City's storm drain system. A smaller replaced impervious area will reduce onsite stormwater runoff from discharging into the City's storm drain system. Other existing impervious areas are replaced with pervious surface and self-retaining.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

III.A.1. Limitation of development envelope

III.A.2. Preservation of natural drainage features

III.A.3. Setbacks from creeks, wetlands, and riparian habitats

III.A.4. Minimization of imperviousness

III.A.5. Use of drainage as a design element

III.B. Dispersal of Runoff to Pervious Areas

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

<i>DMA Name</i>	<i>Surface Type</i>	<i>Area (square feet)</i>
<i>DMA1</i>	<i>Asphalt</i>	<i>3,763</i>
<i>DMA2</i>	<i>Asphalt</i>	<i>2,580</i>
<i>DMA3</i>	<i>Asphalt, Concrete, Roof</i>	<i>5,015</i>
<i>DMA4</i>	<i>Asphalt, Concrete, Roof</i>	<i>20,470</i>

IV.A.2. Drainage Management Area Descriptions

DMA1, totaling 3,763 square feet, drains [Asphalt]. DMA1 drains to [TCM #1].

DMA2, totaling 2,580 square feet, drains [Asphalt]. DMA2 drains to [TCM #2].

DMA3, totaling 5,015 square feet, drains [Asphalt, Concrete, Roof]. DMA3 drains to [TCM #3].

DMA4, totaling 20,470 square feet, drains [Asphalt, Concrete, Roof]. DMA4 drains to [TCM #4].

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

Total Project Area (Square Feet)	74,792.52 sq. ft.
Mean Annual Precipitation	14.0 in.
IMPs Designed For:	Treatment Only

IV.B.2. *Self-Treating Areas-Table 2.*

DMA Name Area (square feet)

#5	3,667
#6	2,142

IV.B.3. *Self-Retaining Areas-Table 3.*

DMA Name Area (square feet)

#7	4,800
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IV.B.4. *Areas Draining to IMPs*

Table 3. IMP Sizing Calculations

<i>DMA Name</i>	<i>DMA Area (square feet)</i>	<i>Post-project surface type</i>	<i>DMA Runoff factor</i>	<i>DMA Area × runoff factor</i>	<i>Soil Type:</i>	<i>IMP Name</i>			
						<i>IMP Sizing factor</i>	<i>Rain Adjust-ment Factor</i>	<i>Minimum Area or Volume</i>	<i>Proposed Area or Volume</i>
<i>DMA1</i>	3,763	<i>Concrete or Asphalt</i>	1.00	3,763					
			Total	3,763	0.040	1.000	151	172	IMP Area
									V or V1
									V2
								Orifice Size:	

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Soil Type:	IMP Name			
						IMP Sizing factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA2	2,580	Concrete or Asphalt	1.00	2,580					
Total				2,580	0.040	1.000	103	120	IMP Area
								V or V1	
								V2	
								Orifice Size:	

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Soil Type:	IMP Name			
						IMP Sizing factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA3	5,015	Concrete or Asphalt	1.00	5,015					
Total				5,015	0.040	1.000	201	247	IMP Area
								V or V1	
								V2	
								Orifice Size:	

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Soil Type:	IMP Name			
						IMP Sizing factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA44	20,470	Conventional Roof	1.00	20,470					
				Total	0.040	1.000	819	827	IMP Area
									V or V1
									V2
									Orifice Size:

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

V.B. Source Control Table 5.

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
On-site drain inlets	Mark all inlets with the words "No Dumping-Flows to Creek"	Maintain and periodically repaint or replace inlet markings.
Interior floor drains and elevator shaft sump pumps	Interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	Inspect and maintain drains to prevent blockage and overflow.
Food service	On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	Provide brochure "Water Pollution Prevention Tips to Protect Water Quality and Keep Your Food Service Facility Clean" to new site owners, lessees and operators.
Refuse areas	All dumpster will be marked with a "Do Not Dump Hazardous Material Here"	Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles.

Fire Sprinkler Test Water	Provide a means to drain fire sprinkler test water to the sanitary sewer.	
Condensate drain lines		Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.
Roofing, gutters, and trim	No roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
Plazas, sidewalks, and parking lots		Sweep plazas, sidewalk, and parking lots regularly to prevent accumulation of litter and debris.

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

All stormwater treatment facilities (bio-retention) in this plan will be owned and maintained in perpetuity by the private owner of the subject property. The applicant accepts responsibility for operation and maintenance of the facilities until such time as this responsibility is formally transferred to a subsequent owner.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

Bio-retentions remove pollutants primarily by filtering runoff slowly through an active layer of soil. Routine maintenance is needed to insure flow is unobstructed, erosion is prevented, and soils are held together by plant roots and are biologically active. Typical routine maintenance consists of the following:

- Inspect inlets, exposure of soils or other evidence of erosion. Clear any obstructions and remove any accumulation of sediment. Examine rock or other material used as a splash pad and replenish if necessary.
- Inspect outlets for erosion or plugging.
- Inspect side slopes for evidence of instability or erosion and correct as necessary.
- Observe soil at the bottom of the swale or filter for uniform percolation throughout. If portions of the swale or filter do not drain with 48 hours after the end of the storm, the soil should be tilled and replanted. Remove any debris or accumulations of sediment.
- Examine the vegetation to insure it is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees and mow turf areas. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation.

- Abate any potential vectors by filling in the ground and around the bio-retention and by insuring there are no areas where water stands longer than 48 hours following a storm. If mosquito larvae are present and persistent, contact the County Vector Control District for information and advice. Mosquito larvicides should be applied only when absolutely necessary, and then only by a licensed individual or contractor.

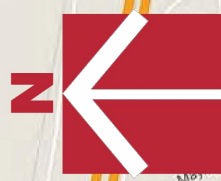
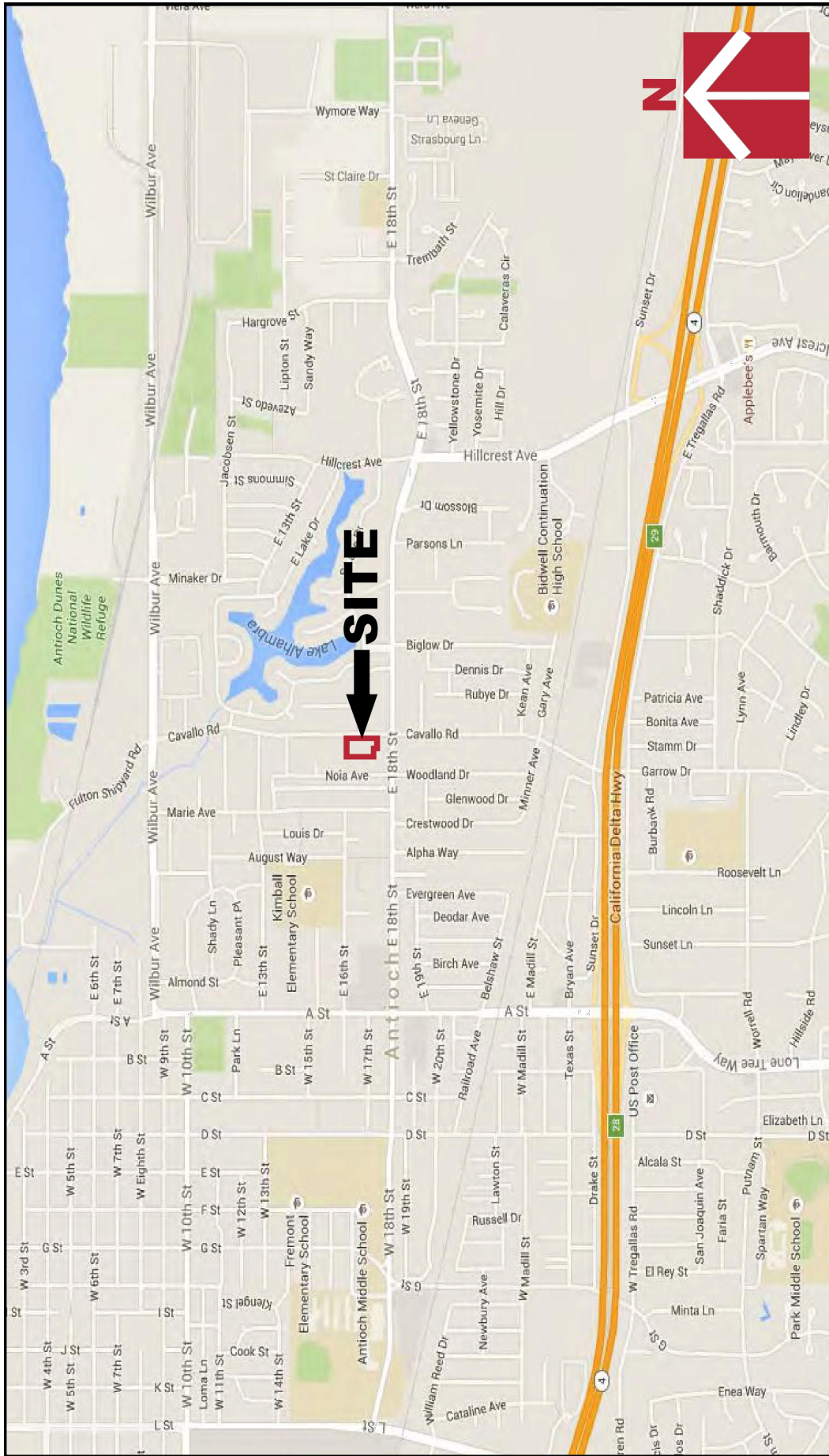
VII. CONSTRUCTION PLAN C.3 CHECKLIST

Table 6. Construction Plan C.3 Checklist

<i>Stormwater Control Plan Page #</i>	<i>BMP Description</i>	<i>See Plan Sheet #s</i>
C3.1	On-site storm drain inlets mark with the work “No Dumping! Flows to Creek”	
C3.1	Interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer	
C3.1	Food service drain will be connected to a grease interceptor before discharging to the sanitary sewer.	
C3.1	Refuse areas, dumpster will be marked with “No Dumping of Hazardous Materials Here”	
C3.1	Fire Sprinkler Test Water will drain to the sanitary sewer.	
C3.1	Condensate drain lines may not discharge to the storm drain system	
C3.1	Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
C3.1	Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris.	

VIII. CERTIFICATIONS


The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074 and Order R2-2011-0083.



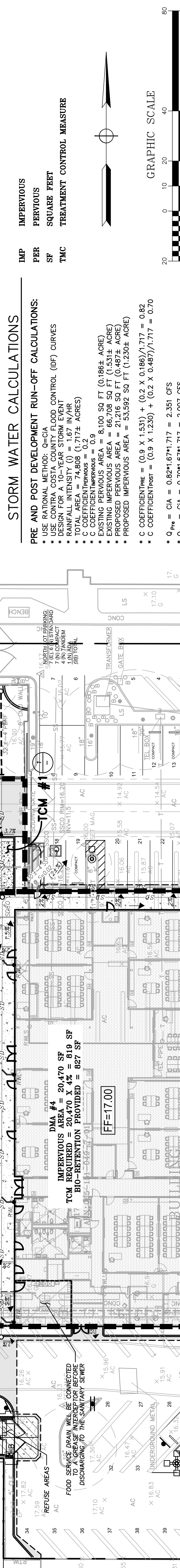
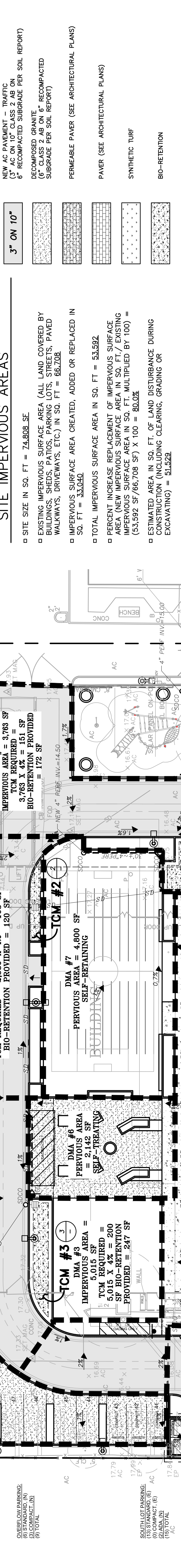
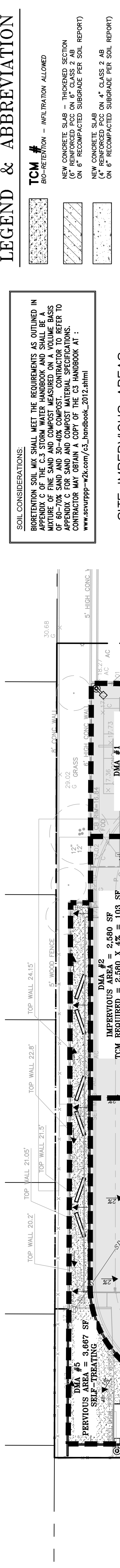
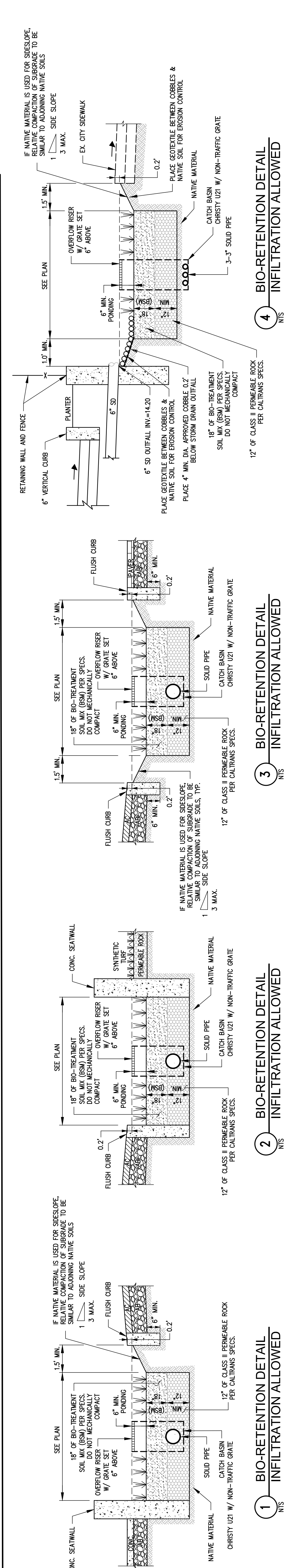
Project Number	PROJECT NO. J16127
Figure Number	Figure 1
Date	May 2017
Drawn By	VQ

Vicinity Map

Rocketship Cavallo Road School
1700 Cavallo Road
Antioch, CA



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TREATMENT CONTROL SUMMARY TABLE

DMA #	TYPE	BIORETENTION AREA PROVIDED	BIORETENTION VOLUME PROVIDED
1	BIORETENTION SEE DETAIL 1-	6.6' x 20.0' = 172 SF	172.0 SF x 0.5' = 86.0 CF 172.0 SF x 0.1' = 17.2 CF 172.0 SF x 0.4' = 68.8 CF
2	BIORETENTION SEE DETAIL 2-	4.0' x 30.0' = 120 SF	120.0 SF x 0.5' = 60.0 CF 120.0 SF x 0.1' = 12.0 CF 120.0 SF x 0.4' = 48.0 CF
3	BIORETENTION SEE DETAIL 3-	5.4' x 45.7' = 247 SF	247 SF x 0.5' = 123.5 CF 247 SF x 0.1' = 24.7 CF 247 SF x 0.4' = 98.8 CF
4	BIORETENTION SEE DETAIL 4-	69.5' x 67.0' = 827 SF	827 SF x 0.5' = 413.5 CF 827 SF x 0.1' = 82.7 CF 827 SF x 0.4' = 330.8 CF
5	SELF-TREATING		827.0 CF
6	SELF-TREATING		
7	SELF-RETAINING		

