



AGENCY COMMENT REQUEST

Date 5/2/25

We request your comments regarding the attached application currently under review.

DISTRIBUTION

INTERNAL

☒ Building Inspection Grading Inspection
☒ Advance Planning ☒ Housing Programs
☒ Trans. Planning Telecom Planner
ALUC Staff HCP/NCCP Staff
County Geologist

HEALTH SERVICES DEPARTMENT

☒ Environmental Health Hazardous Materials

PUBLIC WORKS DEPARTMENT

☒ Engineering Services Special Districts
Traffic
Flood Control (Full-size)

LOCAL

Fire District _____
☒ San Ramon Valley – (email) rwendel@srvfire.ca.gov
Consolidated – (email) fire@cccfdpd.org

☒ Sanitary District Central Sanitary
☒ Water District EBMUD
City of _____
School District(s) _____
LAFCO
Reclamation District # _____
East Bay Regional Park District
Diablo/Discovery Bay/Crockett CSD

☒ MAC/TAC Alamo
Improvement/Community Association

☒ CC Mosquito & Vector Control Dist (email)

OTHERS/NON-LOCAL

☒ CHRIS (email only: nwic@sonoma.edu)
CA Fish and Wildlife, Region 3 – Bay Delta
Native American Tribes

ADDITIONAL RECIPIENTS
Alamo Improvement Association (AIA)

Please submit your comments to:

Project Planner Grant Farrington
Phone # 925-655-2868
E-mail grant.farrington@dcd.cccounty.us
County File # CDSD25-09717
Prior to May 30, 2025

We have found the following special programs apply to this application:

☒ Landslide Active Fault Zone (A-P)
☒ Liquefaction Flood Hazard Area
60-dBA Noise Control
CA EPA Hazardous Waste Site
☒ High or Very High FHSZ

AGENCIES: Please indicate the applicable code section for any recommendation required by law or ordinance. Please send copies of your response to the Applicant and Owner.

Comments: None Below ____ Attached

Print Name _____

Signature _____ DATE _____

Agency phone # _____



CONTRA COSTA

CONSERVATION & DEVELOPMENT

Planning Application Summary

County File Number: CDS25-09717

File Date: 5/1/2025

Applicant:

Adam Nieting
812 Trotter Ct
Walnut Creek, CA 94596

adam@nietingdevelopment.com
(415) 963-2326

Property Owner:

ARTHUR ANDERSON
5303 PINE HOLLOW RD
CONCORD, CA 945214602

Art@stonevalleyfarm.com
(925) 997-2599

Project Description:

The applicant requests approval of a Vesting Tentative Map for a proposed subdivision of approximately 13.65 acres into eight single-family residential lots.

Project Location: (Address: 455 LIVORNA RD, ALAMO, CA 945071469), (APN: 193010014)

Additional APNs: APN: 193-010-014, 193-010-039

General Plan Designation(s): RVL

Zoning District(s): A-2

Flood Hazard Areas: X

AP Fault Zone: NO

60-dBA Noise Control: NO

MAC/TAC: Alamo

Sphere of Influence: N/A

Fire District: SAN RAMON VLY FIRE

Sanitary District: CENTRAL SANITARY

Housing Inventory Site: NO

Specific Plan: N/A

Fees:

Fee Item	Description	Account Code	Total Fee	Paid
052B	Notification Fee (\$30)	002606-9660-REV-000-5B052B	30.00	30.00
HSDR	Environmental Health Fee (\$57)	002606-9660-REV-000-5BHSDR \$5.00	57.00	57.00
SDS0033	Tentative Subdivision Map Review Major	000350-9665-REV-000-5B0033	10000.00	10000.00
Total:			10087.00	10087.00

Art Anderson
34 Alamo Square, Suite 200
Alamo, CA 94507

April 28, 2025

Joseph W. Lawlor, Jr.
Senior Planner
Contra Costa County Department of
Conservation and Development
30 Muir Road
Martinez, CA 94553

**Re: Filing of Development Applications under SB 330 for
Tentative Subdivision Map/Density Bonus Information
County File No. CDPC24-00005/APN: 193-010-014, 193-010-039**

Dear Mr. Lawlor:

I am the owner of property at 455 Livorna Road in Contra Costa County. I am submitting a housing development project application under SB 330 for a tentative subdivision map which includes a density bonus request ("Project Application"), to develop 8 dwelling units on 13.5 gross acres (or 7.7 net acres) ("Proposed Project"). One of the eight units is proposed as affordable for a moderate-income household.

An SB 330 Preliminary Application ("Preliminary Application") for the Proposed Project was filed on November 6, 2024. On December 5, 2024, you acknowledged receipt of the Preliminary Application. The Project Application was submitted within the required 180 days from the date the Preliminary Application was filed.

The purpose of this letter is to explain the filing of the Project Application and provide the information necessary for the density bonus request.

I. FILING OF HOUSING DEVELOPMENT APPLICATIONS.

A. Preliminary Application.

As you know, SB 330 was approved in an effort to address the housing shortage and limits a local government's ability to deny housing projects that comply with the General Plan and/or zoning designation. SB 330 strengthens the Housing Accountability Act ("HAA") and requires counties to approve a housing development that is consistent with the General Plan and zoning standards that are in effect at the time a preliminary application is filed, unless there is an unavoidable public health or safety impact. Our due diligence confirms that the Proposed Project will not result in any such impacts.

The property has land use designations of RVL (Residential Very Low) and RC (Resource Conservation). Approximately 8.74 gross acres are designated RVL allowing 1

du/acre. The remaining 4.83 gross acres are designated RC. The net acreage of RVL as defined by the County after land is dedicated for rights of ways, and other public uses is 7.7 acres.

The zoning designation across the property is A2. This designation is inconsistent with the RVL General Plan designation. A rezoning can not required since the Project is consistent with the objective standards in the General Plan (Gov't Code Sect 65589.5 (j)(4)). In this instance, per General Plan Table LU-1, the Project is applying the R-40 zoning which is consistent with land use designation RVL. The Proposed Project includes eight units consistent with the density allowed in the General Plan and supported by the zoning.

B. Project Application.

The County has 30 days from the filing date to inform the applicant if the Project Application is complete since the project proposes less than 150 units. If the County determines the Project Application is incomplete, it must specify those parts of the application which are incomplete (limited to those items required on the County's checklist) and include a list and thorough description of specific information needed to complete the Project Application.

We will then have 90 days to resubmit and respond to the list of incomplete items. This resubmittal allows the County 30 days to determine if the resubmittal is complete. The County cannot request new information from the applicant that was not identified during its first round of review. If the County determines a Project Application is still incomplete, the applicant has the right to appeal the completeness review pursuant to the process established by the County.

Another provision in SB 330 to assist in promoting the construction of needed housing requires a final determination on the Proposed Project to be made in no more than five public hearings. We do not believe this will be difficult to accomplish since the Project is consistent with the General Plan.

II. DENSITY BONUS PROPOSAL.

A. Density Bonus Calculation.

The Proposed Project includes a density bonus request. The base density is 7.7 (using gross acreage¹) rounded up to 8 units. Out of the eight proposed units, one unit will be restricted for a moderate-income household. The applicant agrees to construct 12.5% (which rounds to 13%) of the total units for a moderate-income household. With the inclusion of at least 10% of the units in the for-sale development restricted to moderate income, the Proposed Project is allowed one bonus unit; however the applicant will not use this bonus unit.

¹ State Density Bonus Law allows "maximum allowable gross residential density" to be used in calculating a density bonus (Gov't Code Sect. 65589.5(f)). The calculation of base density in using gross or net acreage produces the same result (eight units).

The Proposed Project is eligible for an unlimited number of waivers to development standards that have the effect of physically precluding the construction of a development under Gov't Code Sect. 65915(b)(1). The Project also qualifies for an incentive or concession under Gov't Code Sect. 65915(d)(1) and is additionally eligible for a vehicular parking reduction pursuant to Gov't Code Sect. 65915(p)(1).

B. Requested Waivers.

Waivers (deviations from a development standard) must be granted if imposition of the standards would physically preclude the construction of a project at the proposed density. Gov't Code section 65915(e)(1). We need not show the waivers are needed for economic feasibility, but just that if imposed they will have the effect of physically precluding construction of the development.

Waivers can only be denied if the County finds that they would have a "specific, adverse impact upon the health, safety, or the physical environment, and for which there is no feasible way to mitigate or avoid the specific adverse impact." Gov't Code section 65915(e)(1). A "specific, adverse impact" means a "significant, quantifiable, direct, and unavoidable impact, based on objective, identified written public health or safety standards, policies, or conditions as they existed on the date the application was deemed complete." Gov't Code section 65589.5(d)(2). An inconsistency with the general plan designation, a zoning requirement or development standard does not constitute a specific, adverse impact upon the public health or safety. Gov't Code section 65589.5(d)(2).

The following waivers are requested:

WAIVERS		
WAIVER #	COUNTY STANDARD/CODE	WAIVER NEEDED
WAIVER 1	84-16.602	LOT-AREA
WAIVER 2	84-16.604	LOT-WIDTH
WAIVER 3	84-16.606	LOT-DEPTH
WAIVER 4	84-16.10002	YARD-SIDE
WAIVER 5	84-14.1004	YARD-SETBACK
WAIVER 6	84-16.1006	YARD-REAR
WAIVER 7	82-4.214	BUILDING HEIGHT

CONCESSIONS	
CONCESSION	NOTES
CONCESSION #1	WE RESERVE THE RIGHT TO IDENTIFY A CONCESSION AS NECESSARY TO ACCOMMODATE THE PROJECT AS DESIGNED.

If these waivers are not granted, we will be physically precluded from constructing the project as proposed. I am also reserving the right to request additional waivers if needed.

C. Requested Concession.

A concession is a regulatory incentive or relaxation of development standards that results in identifiable cost reductions for the Proposed Project. I am not requesting a concession currently, but I am reserving the right to request a concession, if needed.

D. Parking Reduction.

I am meeting the parking requirements under the R-40 zone and if additional parking is required, I may seek a reduction.

E. Additional Information Requested on County's Application Form.

1. Vicinity/Location Map.

Included with Project Application

2. Site Plan.

Included with Project Application.

3. Location of Affordable Unit.

See Site Plan. Lot 2 is the affordable unit.

4. Existing Residence on Site.

A residence exists on the site which is owned and inhabited by owner.

5. Deed Restrictions.

There are no deed restrictions on the Property that will restrict the ownership of the affordable unit.

6. Distribution of Affordable Unit.

The affordable unit on Lot 2 is four bedrooms with 2.5 bathrooms and is approximately 2,063 sq ft. (gross of 2,570 sq ft.).

7. Phasing of development.

The affordable unit on Lot 2 will be constructed with the other 7 units.

8. Inclusionary Housing Plan.

As required by Chapter 822-4 of the County's Code, below is the required Inclusionary Housing Plan:

- (a) A brief description of the residential development, including the number of market rate units and inclusionary units proposed, and the basis for the calculation of the number of units.

See above.

- (b) The unit mix, location, structure type, and size (including number of bedrooms) of the market rate and inclusionary units. A site plan depicting the location of the inclusionary units must be provided.

UNIT BREAKDOWN							
	BEDROOMS	BATHROOMS	TOTAL LIVING AREA	GARAGE AREA	COVERED PORCH/BALCONY	GROSS SQUARE FOOTAGE	COVERED PARKING
LOT 1 (PLAN B)	5	5.5	5,234 SQ/FT	872 SQ/FT	546 SQ/FT	6,652 SQ/FT	3 SPACES
LOT 2 (PLAN D)	4	2.5	2,063 SQ/FT	437 SQ/FT	70 SQ/FT	2,570 SQ/FT	2 SPACES
LOT 3 (PLAN A)	5	4.5	5,207 SQ/FT	989 SQ/FT	203 SQ/FT	6,399 SQ/FT	4 SPACES
LOT 4 (PLAN B REVERSED)	5	5.5	5,234 SQ/FT	872 SQ/FT	546 SQ/FT	6,652 SQ/FT	3 SPACES
LOT 5 (PLAN A)	5	4.5	5,207 SQ/FT	989 SQ/FT	203 SQ/FT	6,399 SQ/FT	4 SPACES
LOT 6 (PLAN C)	5	5.5	4,456 SQ/FT	842 SQ/FT	838 SQ/FT	6,136 SQ/FT	4 SPACES
LOT 7 (PLAN C REVERSED)	5	5.5	4,456 SQ/FT	842 SQ/FT	838 SQ/FT	6,136 SQ/FT	4 SPACES
LOT 8 (PLAN B)	5	5.5	5,234 SQ/FT	872 SQ/FT	546 SQ/FT	6,652 SQ/FT	3 SPACES

- (c) The targeted household income levels of the inclusionary units.

Moderate income.

- (d) For a phased project, a phasing plan that provides for the timely development of the inclusionary units as the residential development is built out.

The affordable unit on Lot 2 will be built concurrently with the remaining units.

- (e) Any proposed density bonus and a description of any incentives requested of the county.

See above.

- (f) If the developer intends to satisfy the inclusionary unit requirement by payment of an in-lieu fee, a statement to that effect, and a calculation of the total in-lieu fee payment required.

The Proposed Project includes one affordable unit on-site and will pay a fee for any remaining obligation.

- (g) If an alternative compliance method is proposed, information sufficient to allow the county to determine either that on-site construction of inclusionary units is infeasible or that an alternative method of compliance could provide equivalent or greater benefit than would result from providing those inclusionary units on-site.

N/A

My team and I look forward to processing the Proposed Project with the County. Please call if you have any questions.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'Art Anderson', with a long horizontal line extending to the right.

Art Anderson

POR SEC 6 T1S R1W MDB&M

A- TRACT 7744 MB 446-3 8-5-02

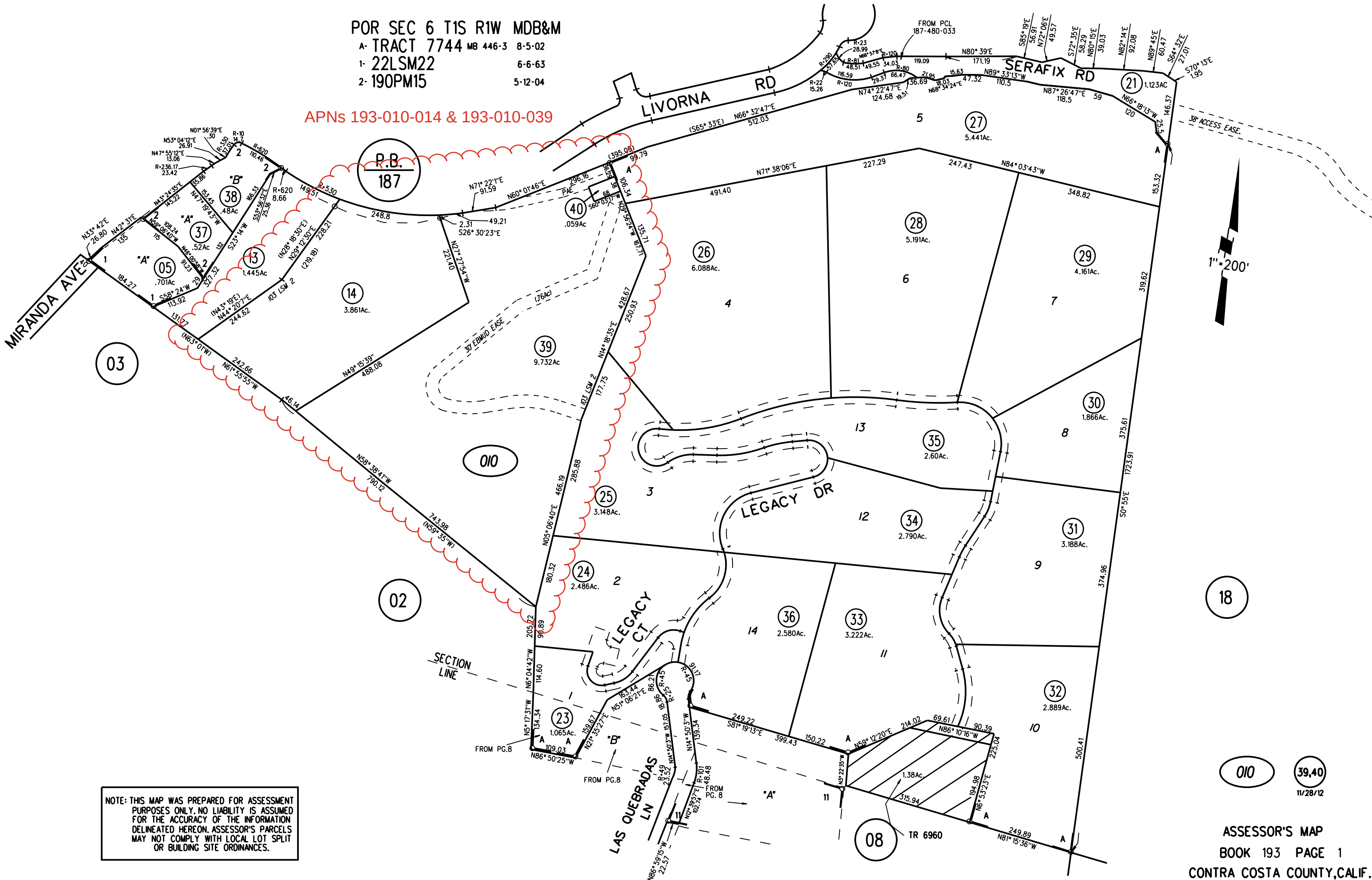
1- 22LSM22

6-6-63

2- 190PM15

5-12-04

APNs 193-010-014 & 193-010-039



NOTE: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE INFORMATION DELINEATED HEREON. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL LOT SPLIT OR BUILDING SITE ORDINANCES.

General Plan



Map Legend

Assessment
Parcels

General Plan

RVL (Residential
Very-Low
Density) (≤1 du/
na)

RL (Residential
Low Density)
(1-3 du/na)

PS (Public and
Semi-Public)

PR (Park and
Recreation)

RC (Resource
Conservation)

Unincorporated

Board of
Supervisors'
Districts

This map is a user generated, static output from an internet mapping application and is intended for reference use only.
Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION.
CCMap is maintained by Contra Costa County Department of Information Technology, County GIS.
Data layers contained within the CCMap application are provided by various Contra Costa County Departments.
Please direct all data inquiries to the appropriate department.

Spatial Reference
PCS: WGS 1984 Web Mercator Auxiliary Sphere
Datum: WGS 1984

Zoning



Map Legend

Assessment
Parcels

Zoning

ZONE_OVER

R-20 (Single
Family
Residential)

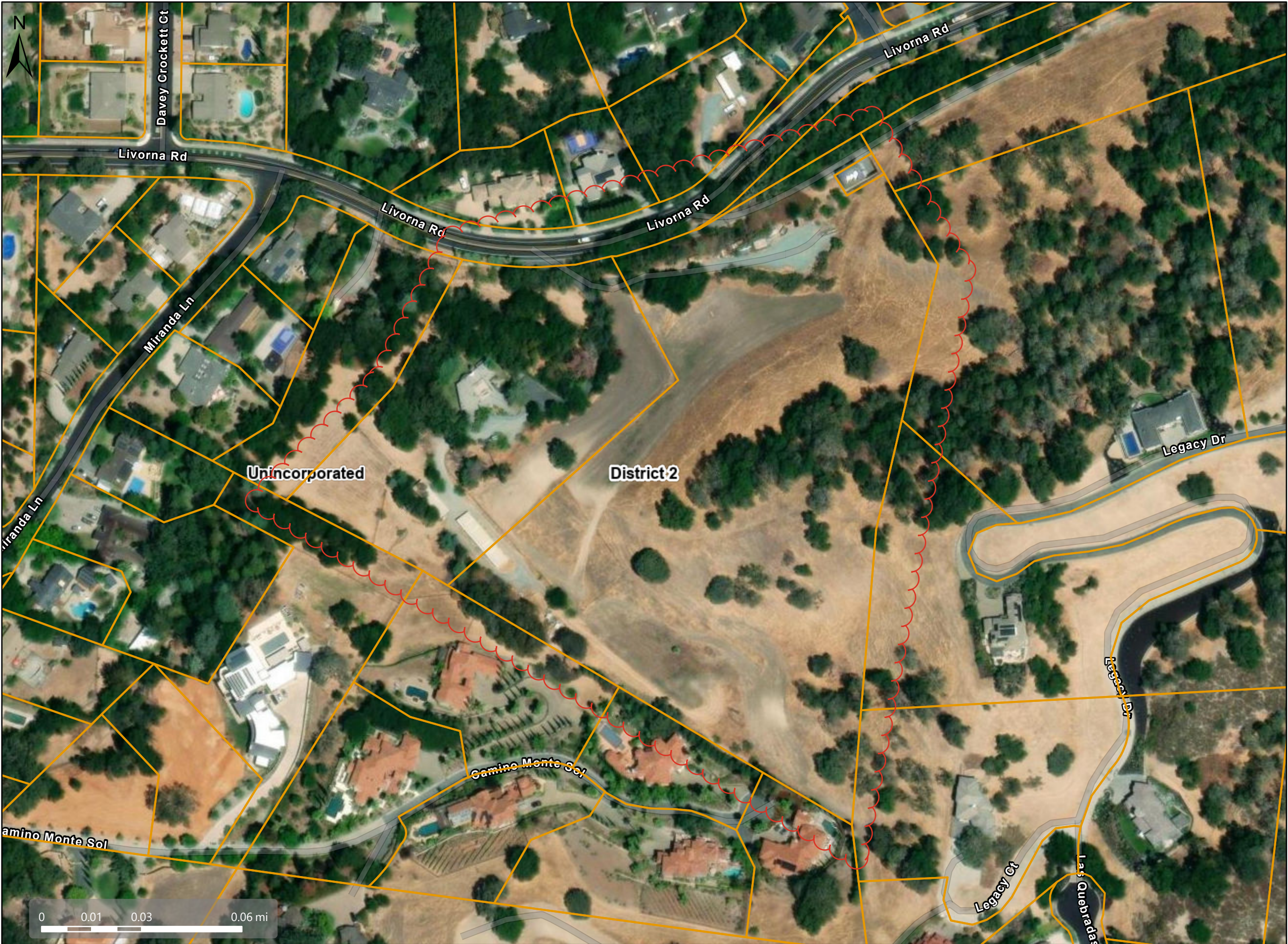
A-2 (General
Agriculture)

P-1 (Planned
Unit)

Unincorporated

Board of
Supervisors'
Districts

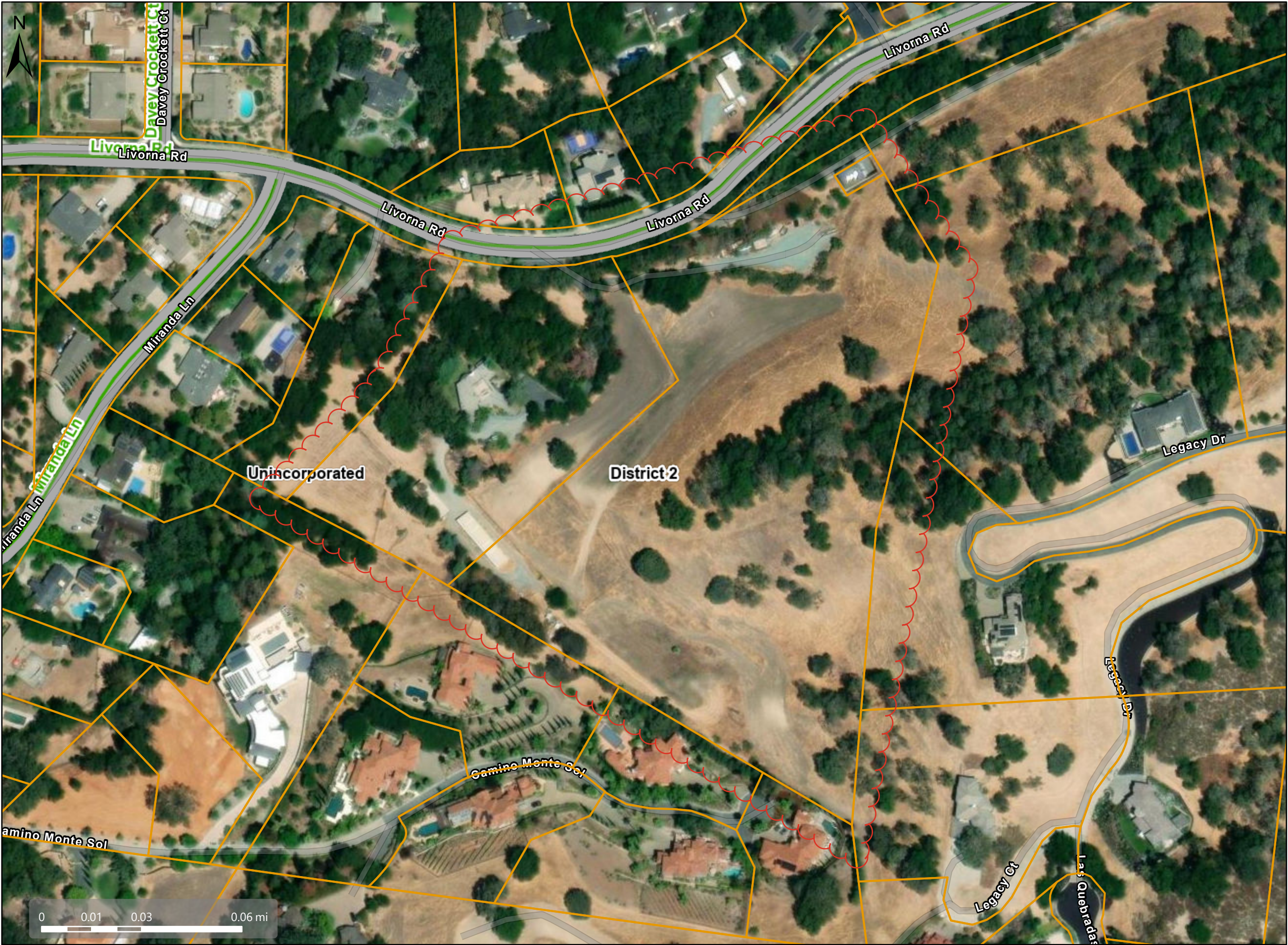
Orthophotography



Map Legend

- Assessment
- Parcels
- Unincorporated
- Board of
- Supervisors'
- Districts

PWD Maintained Roads



Map Legend

- Assessment Parcels
- Unincorporated
- Board of Supervisors' Districts
- Maintained Roads

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Spatial Reference
PCS: WGS 1984 Web Mercator Auxiliary Sphere
Datum: WGS 1984

STONE VALLEY FARM
455 LIVORNA ROAD

VESTING TENTATIVE MAP
COVER SHEET

CONTRA COSTA COUNTY, CA
APRIL 28, 2025

RECEIVED on 04/30/2025 CSDSD25-09717
By Contra Costa County
Department of Conservation and Development

SHEET INDEX – CIVIL

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
1	REGIONAL CONTEXT MAP
2	BOUNDARY & TOPOGRAPHY
3	TREE REMOVAL & DEMOLITION PLAN
4	PRELIMINARY SITE PLAN
5	PRELIMINARY UTILITY PLAN
6	PRELIMINARY GRADING & DRAINAGE PLAN
7	GRADING SECTIONS
8	STREET SECTIONS
9	VESTING TENTATIVE MAP
10	STORM WATER CONTROL PLAN
11	FIRE ACCESS PLAN
12	STRIPING & PARKING

SHEET INDEX – ARCHITECT

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
A1	COVER SHEET
A2	MASTER SITE PLAN
A3	PARTIAL SITE PLAN LOT 1&2
A4	PARTIAL SITE PLAN LOT 3-8
A5	PARTIAL SITE PLAN LOT 9
A6	FLOOR PLAN A
A7	EXTERIOR ELEVATIONS – PLAN A
A8	FLOOR PLAN B
A9	EXTERIOR ELEVATIONS – PLAN B
A10	FLOOR PLAN C
A11	EXTERIOR ELEVATIONS – PLAN C
A12	EXTERIOR ELEVATIONS – PLAN C (ALTERNATE)
A13	FLOOR PLAN D
A14	EXTERIOR ELEVATIONS – PLAN D
A15	COLOR BOARDS
A16	COLOR BOARDS

SHEET INDEX – LANDSCAPE

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
L-1	TREE PLAN
L-2	TREE PRESERVATION PLAN
L-3	WALL & FENCE PLAN
L-4	SCHEMATIC HYDROZONE PLAN
L-5	PLANTING TYPICALS – PLAN A
L-6	PLANTING TYPICALS – PLAN B
L-7	PLANTING TYPICALS – PLAN C
L-8	PLANT PALETTE
L-9	CHARACTER IMAGES
L-10	LANDSCAPE DETAILS

PROJECT DESCRIPTION

THE STONE VALLEY FARM PROPERTY IS LOCATED AT 455 LIVORNA DRIVE IN ALAMO, CA 94507 WITH APNS 193-010-014 AND 193-010-039 IN CONTRA COSTA COUNTY AND IS APPROXIMATELY 13.5 GROSS ACRES. THE LAND OWNER IS PROPOSING EIGHT SINGLE FAMILY UNITS AND ONE OF THESE UNITS WILL BE RESTRICTED FOR A MODERATE INCOME HOUSEHOLD ("PROJECT") AS REQUIRED UNDER THE COUNTY'S INCLUSIONARY HOUSING ORDINANCE AND PERMITTED BY STATE DENSITY BONUS LAWS.

THE PROPERTY HAS LAND USE DESIGNATIONS OF RVL (RESIDENTIAL VERY LOW) AND RC (RESOURCE CONSERVATION). APPROXIMATELY 8.74 GROSS ACRES ARE DESIGNATED RVL ALLOWING 1 DU/ACRE. THE REMAINING 4.83 GROSS ACRES ARE UNDER THE RESOURCE CONSERVATION DESIGNATION. THE NET ACREAGE OF RVL AS DEFINED BY CONTRA COSTA COUNTY AFTER LAND IS DEDICATED FOR RIGHTS OF WAYS, AND OTHER PUBLIC USES IS 7.7 ACRES.

THE ZONING IS A2 ACROSS THE ENTIRE PROPERTY. THE ZONING DESIGNATION IS INCONSISTENT WITH THE RVL GENERAL PLAN. A REZONING CAN NOT BE REQUIRED SINCE THE PROJECT IS CONSISTENT WITH THE OBJECTIVE STANDARDS IN THE GENERAL PLAN (GOV'T CODE SECT 65589.5 (J)(4)). IN THIS INSTANCE, PER GENERAL PLAN TABLE LU-1, THE PROJECT IS APPLYING AN R-40 ZONING WHICH IS CONSISTENT WITH LAND USE DESIGNATION RVL. PURSUANT TO GOVERNMENT CODE SECTION 65589.5(H)(2) THE PROJECT IS A HOUSING DEVELOPMENT THAT COMPLIES WITH ALL APPLICABLE OBJECTIVE GENERAL PLAN AND SUBDIVISION STANDARDS AND CRITERIA IN EFFECT AT THE TIME THE SB 330 PRELIMINARY APPLICATION WAS FILED ON NOVEMBER 6, 2024 (GOV'T CODE SECT. 65589.5(O)(1)).

THE EXISTING SITE CONSISTS OF ONE SINGLE FAMILY HOME OCCUPIED BY THE CURRENT LANDOWNER. THE LAND OWNER PROPOSES TO SUBDIVIDE THE PORTIONS OF THE TWO-PARCEL SITE DESIGNATED AS RVL INTO EIGHT SINGLE FAMILY FOR SALE LOTS ON THE DEVELOPABLE AREA AND PRESERVING THE REMAINING AREA DESIGNATED AS RC. ONE OF THE LOTS WOULD BE RESTRICTED FOR-SALE TO MODERATE INCOME HOUSEHOLDS AND THE REMAINING SEVEN LOTS WOULD BE UNRESTRICTED.

A HOMEOWNER'S ASSOCIATION (HOA) WOULD BE CREATED PURSUANT TO DAVIS STERLING COMMON INTEREST DEVELOPMENT ACT TO OWN AND MAINTAIN THE COMMON AREAS SUCH AS ROADS, STREETLIGHTS AND OPEN SPACE.

AFFORDABILITY AND STATE DENSITY BONUS

IN COMPLIANCE WITH THE DENSITY BONUS LAW, THE APPLICANT SEEKS AND AGREES TO CONSTRUCT 12.5%(WHICH ROUNDS TO 13%) OF TOTAL UNITS IN THIS DEVELOPMENT FOR MODERATE INCOME HOUSEHOLDS. WITH THE INCLUSION OF AT LEAST 10% OF THE UNITS IN THE FOR-SALE DEVELOPMENT RESTRICTED TO MODERATE INCOME, THE PROJECT IS ALLOWED ONE BONUS UNIT AND ELIGIBLE FOR WAIVERS AND REDUCTIONS TO DEVELOPMENT STANDARDS THAT HAVE THE EFFECT OF PHYSICALLY PRECLUDING THE CONSTRUCTION OF A DEVELOPMENT UNDER GOV'T CODE SECT. 65915(B)(1). THE PROJECT QUALIFIES FOR AN INCENTIVE OR CONCESSION UNDER GOV'T CODE SECT. 65915(D)(1). THE PROJECT IS ADDITIONALLY ELIGIBLE FOR A VEHICULAR PARKING REDUCTION PURSUANT TO GOV'T CODE SECT. 65915(P)(1).

THE AMOUNT OF THE DENSITY BONUS IS 8% PER GOV. CODE 65915(F)(4), I.E. 8 X 8% = .64 BONUS UNITS. FRACTIONAL UNITS ARE ROUNDED UP (PER 65915(F)(5)), SO THE PROJECT IS ENTITLED TO ONE BONUS UNIT TO THE BASE PROJECT OF 8 FOR 9 UNITS TOTAL. THE PROJECT APPLICANT IS ELECTING NOT TO USE THIS BONUS UNIT.

STONE VALLEY FARMS IS PROPOSING WAIVERS AS DEFINED ON THE COVER SHEET, WHILE RESERVING THE RIGHT TO USE ADDITIONAL WAIVERS AND CONCESSIONS IN THE FUTURE.

PROJECT TEAM

APPLICANT/OWNER:
STONE VALLEY FARM
455 LIVORNA ROAD
ALAMO, CA 94507

CIVIL ENGINEER:
dk ENGINEERING
1931 SAN MIGUEL DR, SUITE 100
WALNUT CREEK, CA 94596
(925) 932-6868
CONTACT: ANDREW PALFFY

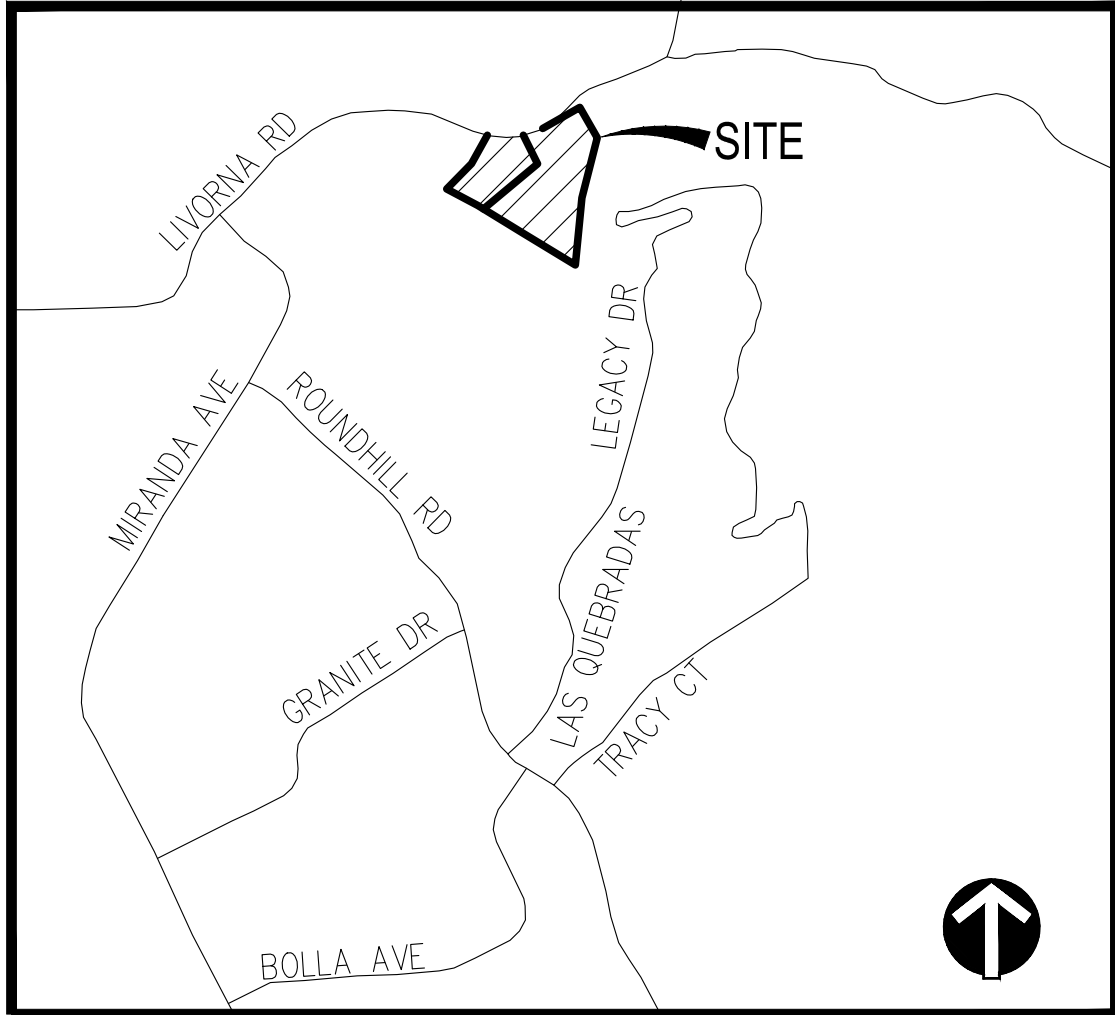
ARCHITECT:
WILLIAM WOOD ARCHITECTS
301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA 94526
(925) 820-8233
CONTACT: BILL WOOD

LANDSCAPE ARCHITECT:
GATES AND ASSOCIATES
1655 N. MAIN STREET, SUITE 365
WALNUT CREEK, CALIFORNIA 94596
(925) 360-8411
CONTACT: RUSTY CASE

GEOTECHNICAL ENGINEER:
ENGEQ
2633 CAMINO RAMON, SUITE 250
SAN RAMON, CA 94583
(925) 786-8863
CONTACT: BROOKS RAMSDELL

ARBORIST:
WOODREEVE CONSULTING
5627 TELEGRAPH AVE, SUITE #385
OAKLAND, CA 94609
(510) 387-5241
CONTACT: JOHN LEFFINGWELL

BIOLOGIST:
RES
2125 19TH STREET, SUITE 200
SACRAMENTO, CA 95818
(713) 520-5400
CONTACT: TIM DEGRAFF



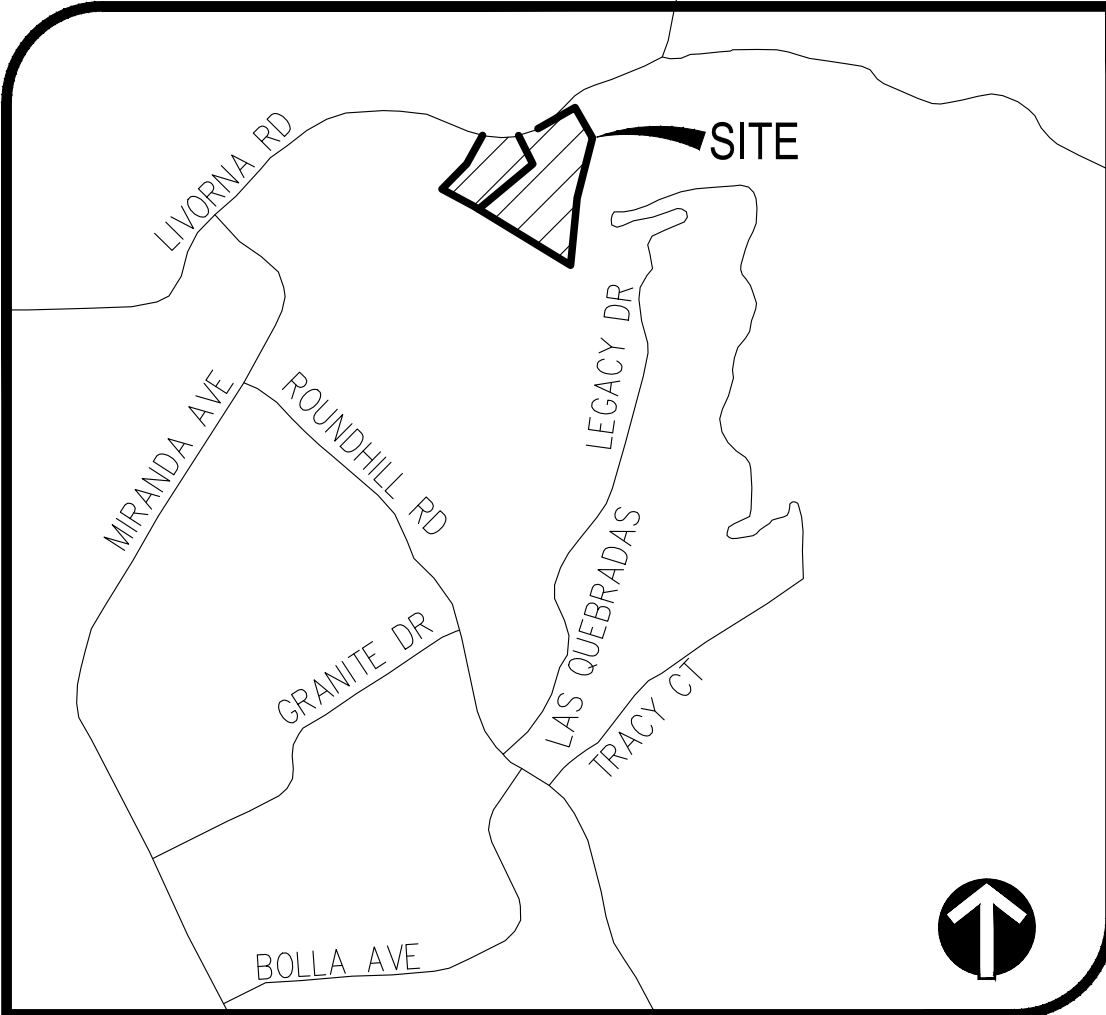
VICINITY MAP
NOT TO SCALE

WAIVERS

WAIVER #	COUNTY STANDARD/CODE	WAIVER NEEDED
WAIVER 1	84-16.602	LOT-AREA
WAIVER 2	84-16.604	LOT-WIDTH
WAIVER 3	84-16.606	LOT-DEPTH
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CONCESSIONS

CONCESSION	NOTES
CONCESSION #1	WE RESERVE THE RIGHT TO IDENTIFY A CONCESSION AS NECESSARY TO ACCOMMODATE THE PROJECT AS DESIGNED.



VICINITY MAP
NOT TO SCALE

PROJECT TEAM

APPLICANT/OWNER:
STONE VALLEY FARM
455 LIVORNA ROAD
ALAMO, CA 94507

CIVIL ENGINEER:
dk ENGINEERING
1931 SAN MIGUEL DR, SUITE 100
WALNUT CREEK, CA 94596
(925) 932-6868
CONTACT: ANDREW PALFFEY

ARCHITECT:
WILLIAM WOOD ARCHITECTS
301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA 94526
(925) 820-8233
CONTACT: BILL WOOD

LANDSCAPE ARCHITECT:
GATES AND ASSOCIATES
1655 N. MAIN STREET, SUITE 365
WALNUT CREEK, CALIFORNIA 94596
(925) 360-8411
CONTACT: RUSTY CASE

SITE INFORMATION

SITE LOCATION:
455 LIVORNA ROAD
CONTRA COSTA COUNTY, CA

BENCHMARK:
VERTICAL DATUM NAVD88 GEOID18 DERIVED FROM OPUS
SOLUTION

BASIS OF BEARINGS:
BEARINGS BASED ON LINE BETWEEN TWO MONUMENTS ON
LIVORNA RD BEARING SOUTH 59°13'26" WEST 93.24 FEET AS
SHOWN ON BOOK 103 LAND SURVEY MAPS PAGE 2, HAVING A
MEASURED BEARING SOUTH 59°15'55" WEST 93.24 FEET.
DISTANCES SHOWN ARE GRID DISTANCES.

ASSESSORS' PARCEL NUMBER:
193-010-014 & 193-010-039

PROJECT FLOOD ZONE:
ZONE X; AREA DETERMINED TO BE OUTSIDE OF THE 0.2%
ANNUAL FLOODPLAIN
FEMA MAP NO. 06013C0432F
EFFECTIVE DATE: 6/16/2009

EXISTING ZONING:
A-2

PROPOSED ZONING:
R-40

GENERAL PLAN USE:
SINGLE FAMILY RESIDENTIAL – VERY LOW DENSITY
RESOURCE CONSERVATION (UNDEVELOPED AREA)

NUMBER OF UNITS:
8 SINGLE FAMILY RESIDENTIAL HOMES

PROPOSED PHASING:
NONE

SITE ACREAGE:
TOTAL ACRES: 13.65 ACRE
GROSS ACRES OF RESIDENTIAL VERY LOW (RVL): 8.80 ACRE
GROSS ACRES OF RESOURCE CONSERVATION (RC): 4.85 ACRE
NET ACREAGE² RESIDENTIAL VERY LOW: 7.70 ACRE
NET ACREAGE² RESOURCE CONSERVATION: 4.22 ACRE

EXISTING CONTOURS:
2' INTERVAL

PROPOSED CONTOURS:
2' INTERVAL

UTILITIES & SERVICES:
WATER: EAST BAY MUNICIPAL UTILITY DISTRICT
SEWER: CONTRA COSTA COUNTY SANITARY DISTRICT
GAS & ELECTRIC: PACIFIC GAS & ELECTRIC

NOTES:

- GENERAL PLAN LAND USE ELEMENT CONSIDERS R-40 ZONING
CONSISTENT WITH EXISTING LAND USE.
- AREA REMAINING AFTER LAND DEDICATED TO RIGHTS OF WAY
AND OTHER PUBLIC OR COMMON USE.

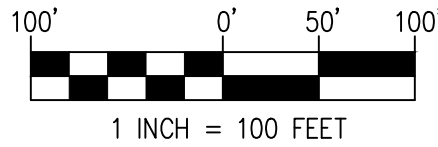
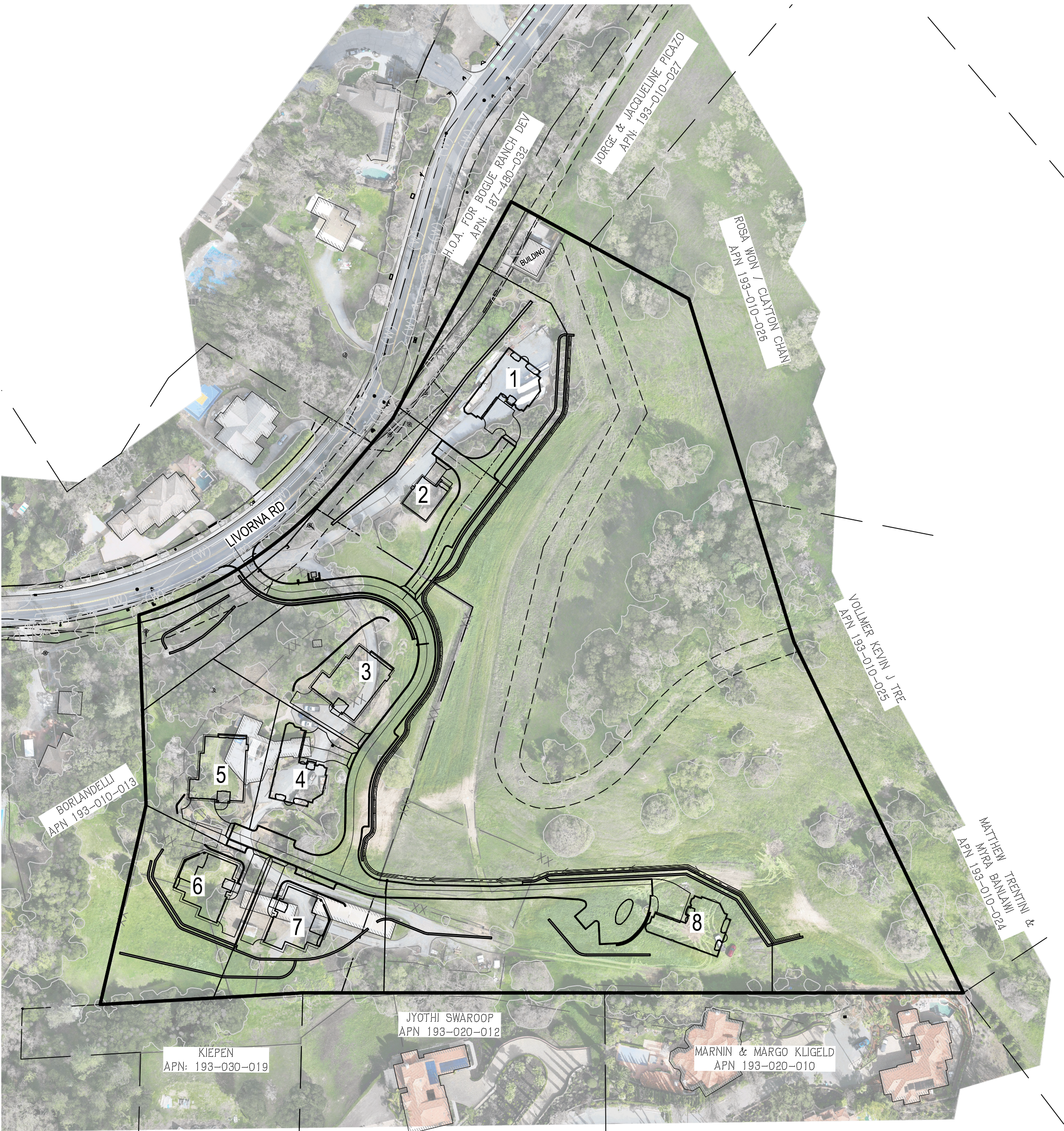
GEOTECHNICAL ENGINEER:
ENGE
2633 CAMINO RAMON, SUITE 250
SAN RAMON, CA 94583
(925) 786-8883
CONTACT: BROOKS RAMSDALL

ARBORIST:
WOODREEVE CONSULTING
5627 TELEGRAPH AVE, SUITE #385
OAKLAND, CA 94609
(510) 387-5241
CONTACT: JOHN LEFFINGWELL

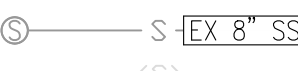
BIOLOGIST:
RES
2125 19TH STREET, SUITE 200
SACRAMENTO, CA 95818
(713) 520-5400
CONTACT: TIM DEGRAFF

SITE ACREAGE SUMMARY

TOTAL ACRES:	13.65 ACRES
GROSS ACRES RVL:	8.80 ACRES
EASEMENTS/ROADWAYS IN RVL:	1.10 ACRES
NET ACREAGE OF RVL:	7.70 ACRES
GROSS ACRES RC:	4.85 ACRES
EASEMENTS IN RC:	0.63 ACRES
NET ACREAGE OF RC:	4.22 ACRES



EXISTING

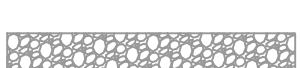
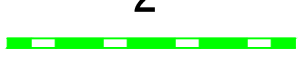
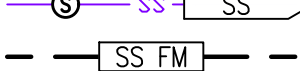
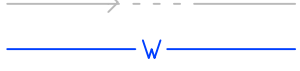
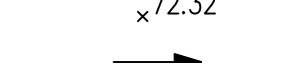
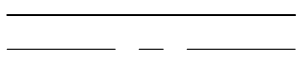
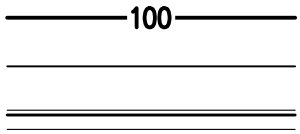


LEGEND

DESCRIPTION

- BOUNDARY LINE
EASEMENT LINE
PARCEL LINE
MAJOR CONTOUR
MINOR CONTOUR
BACK OF CURB, FACE OF CURB, LIP OF GUTTER
ROLLED CURB
STREET CENTERLINE
SPOT ELEVATION
SLOPE DIRECTION
STREET LIGHT
FENCE
FLOW LINE
WATER MAIN
SANITARY SEWER MAIN, MANHOLE
SANITARY SEWER FORCE MAIN
STORM DRAIN LINE, CATCH BASIN, FIELD INLET
FIRE HYDRANT
GAS
JOINT TRENCH
BIORETENTION BASIN
UNIT NUMBER
TREATED STORM DRAIN SYSTEM
GRADING DAYLIGHT LINE
BIOLOGICAL RIPARIAN LIMIT/TOP OF BANK
CREEK STRUCTURE SETBACK LINE
LAND USE DELINEATION LINE
PROPOSED RETAINING WALL
RIPRAP FLOW DISSIPATORS

PROPOSED



ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
APN	ACCESSOR'S PARCEL NUMBER
BK	BOOK
C&G	CURB AND CUTTER
CB	CATCH BASIN
CCC	CONTRA COSTA COUNTY
CL	CENTER LINE
CMP	CORRUGATED METAL PIPE
COR	CORNER
CY	CUBIC YARDS
D	DEPTH
DIP	DUCTILE IRON PIPE
DOC	DOCUMENT
DWY	DRIVEWAY
E	EAST
EASE	EASEMENT
EBMUD	EAST BAY MUNICIPAL UTILITY DISTRICT
EVAE	EMERGENCY VEHICLE ACCESS EASEMENT
EX	EXISTING
FL	FLOW LINE
FT	FEET
H.O.A.	HOMEOWNERS ASSOCIATION
INST.	INSTRUMENT
INV	INVERT
L	LENGTH
MAX	MAXIMUM
MIN	MINIMUM
NO.	NUMBER
NW	NORTHWEST
PAE	PRIVATE ACCESS EASEMENT
PCL	PARCEL
PG.	PAGE
PGE	PACIFIC GAS & ELECTRIC
PL	PROPERTY LINE
POR.	PORTION
PROP	PROPOSED
PSDE	PRIVATE STORM DRAIN EASEMENT
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
R	RADIUS
R/W	RIGHT OF WAY
RET	RETAINING
SF	SQUARE FEET
SSE	SANITARY SEWER EASEMENT
SSMH	SANITARY SEWER MANHOLE
SS	SANITARY SEWER
SW	SOUTHWEST
SWCP	STORM WATER CONTROL PLAN
TC	TOP OF CURB
THRU	THROUGH
TOB	TOP OF BANK
TR#-#	TITLE REPORT & EXCEPTION NUMBER
TS	TOE OF SLOPE
TYP	TYPICAL FEATURE
UTIL	UTILITY
UNID	UNIDENTIFIED
VAR	VARIABLE
W	WIDTH/WEST
WLE	WATER LINE EASEMENT

SHEET INDEX

SHEET NUMBER	SHEET TITLE
1	REGIONAL CONTEXT MAP
2	BOUNDARY & TOPOGRAPHY
3	TREE REMOVAL & DEMOLITION PLAN
4	PRELIMINARY SITE PLAN
5	PRELIMINARY UTILITY PLAN
6	PRELIMINARY GRADING & DRAINAGE PLAN
7	GRADING SECTIONS
8	STREET SECTIONS
9	VESTING TENTATIVE MAP
10	STORM WATER CONTROL PLAN
11	FIRE ACCESS PLAN
12	STRIPING & PARKING

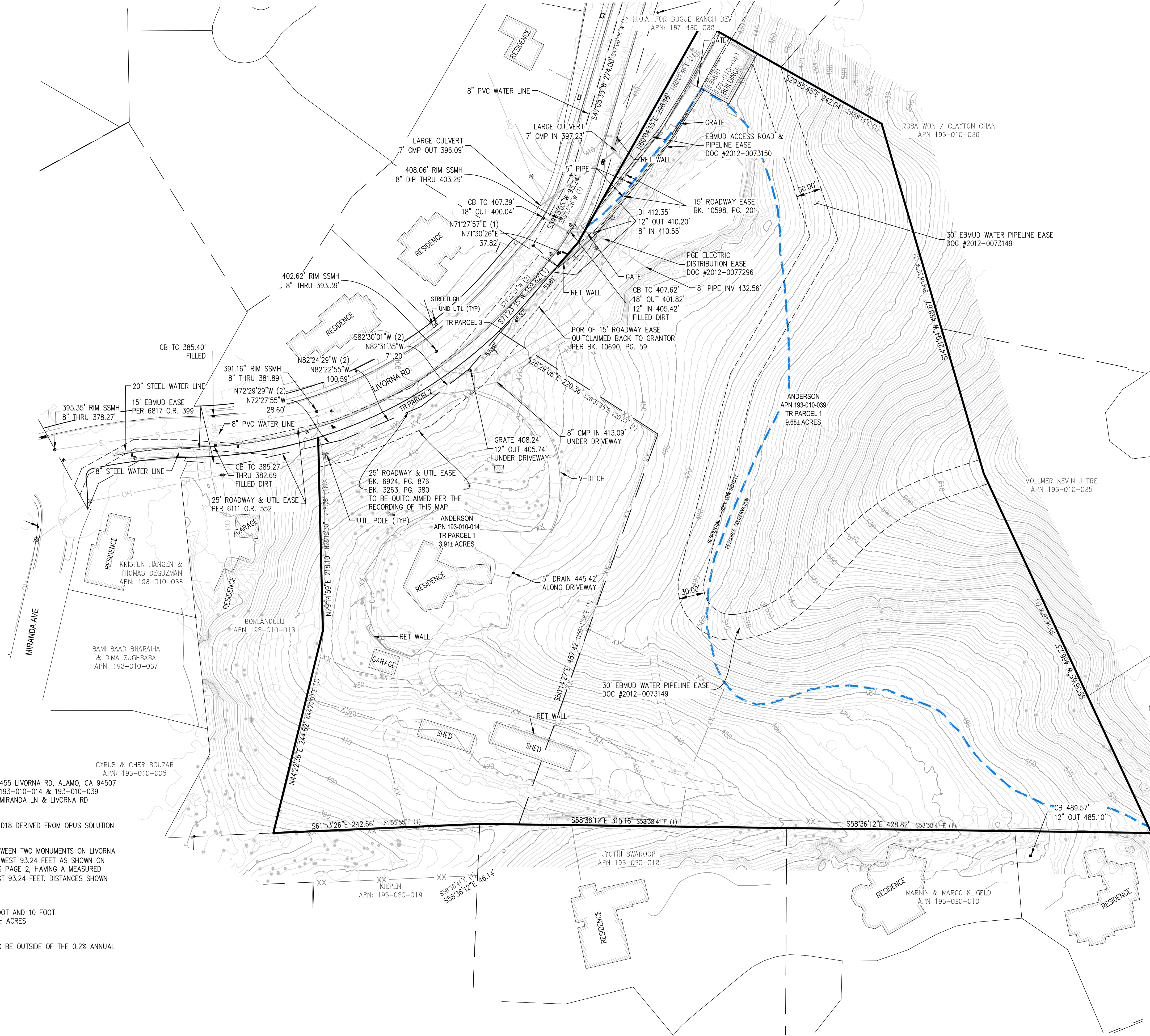


STONE VALLEY FARM
455 LIVORNA ROAD
REGIONAL CONTEXT MAP
CONTRA COSTA COUNTY, CA

APRIL 28, 2025



1931 SAN MIGUEL DRIVE, SUITE 100, WALNUT CREEK, CA 94596
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- LEGEND**
- BOUNDARY LINE
 - RIGHT OF WAY LINE
 - PROPERTY LINE
 - EASEMENT LINE
 - SECTION LINE
 - BUILDING
 - MAJOR CONTOUR
 - MINOR CONTOUR
 - TREE DRIP LINE
 - SIDEWALK
 - CURB LINE
 - CONCRETE GUTTER
 - WALL
 - EDGE OF PAVEMENT
 - CHAIN LINK FENCE
 - WOOD FENCE
 - BARBED WIRE FENCE
 - WROUGHT IRON FENCE/RAILING
 - GATE
 - STORM DRAIN LINE, CATCH BASIN, DRAINAGE INLET
 - STORM DRAIN MANHOLE, FIELD INLET, AREA DRAIN
 - SANITARY SEWER LINE, MANHOLE, CLEANOUT
 - WATER LINE, METER, VALVE
 - FIRE HYDRANT, BACK FLOW PREVENTER
 - ELECTRIC UNDERGROUND LINE, MANHOLE, UTILITY VAULT, SUBSURFACE BOX, ABOVEGROUND BOX
 - GUY WIRE, OVERHEAD UTILITY LINE, POLE
 - GAS LINE, VALVE, METER
 - TREE, DIAMETER OF TRUNK AT 6' HIGH
 - BOLLARD, SIGN, BUTTON/PARKING METER, MAILBOX
 - UNIDENTIFIED MANHOLE, TELEPHONE MANHOLE
 - SPOT ELEVATION
 - TOP OF CURB ELEVATION
 - ELECTROLIER
 - IRON PIPE, AS NOTED
 - STANDARD C.C.C. STREET MONUMENT
 - RECORD STORM DRAIN LINE
 - RECORD SANITARY SEWER LINE
 - RECORD GAS LINE
 - RECORD ELECTRIC LINE
 - RECORD JOINT TRENCH LINE
 - RECORD WATER LINE
 - RECORD TV LINE
 - RECORD TELEPHONE LINE
 - TOP OF DITCH/SWALE
 - BOTTOM OF DITCH/SWALE
 - FLOW LINE
 - LAND USE DELINEATION LINE

- ABBREVIATIONS**
- | | |
|--------|-------------------------------------|
| AC | ASPHALT CONCRETE |
| APN | ASSESSOR PARCEL NUMBER |
| BK. | BOOK |
| CB | CATCH BASIN |
| CMP | CORRUGATED METAL PIPE |
| COR | CORNER |
| DIP | DUCTILE IRON PIPE |
| DOC | DOCUMENT |
| DWY | DRIVEWAY |
| E | EAST |
| EASE | EASEMENT |
| EBMUD | EAST BAY MUNICIPAL UTILITY DISTRICT |
| FL | FLOWLINE ELEVATION |
| H.O.A. | HOMEOWNERS ASSOCIATION |
| INV | INVERT |
| NW | NORTHWEST |
| PG. | PAGE |
| PGE | PACIFIC GAS & ELECTRIC |
| PL | PROPERTY LINE |
| PVC | POLYVINYL CHLORIDE |
| RET | RETAINING |
| SSMH | SANITARY SEWER MANHOLE |
| SS | SANITARY SEWER |
| SW | SOUTHWEST |
| TC | TOP OF CURB |
| THRU | THROUGH |
| TR#-# | TITLE REPORT & EXCEPTION NUMBER |
| TYP | TYPICAL FEATURE |
| UTIL | UTILITY |
| UNID | UNIDENTIFIED |
| W | WEST |

LOCATION:

- ADDRESS: 455 LIVORNA RD, ALAMO, CA 94507
- SITE APNS: 193-010-014 & 193-010-039
- NEAREST INTERSECTION: MIRANDA LN & LIVORNA RD

BENCHMARK:

VERTICAL DATUM NAVD88 GEOID18 DERIVED FROM OPUS SOLUTION

BASIS OF BEARINGS:

BEARINGS BASED ON LINE BETWEEN TWO MONUMENTS ON LIVORNA RD BEARING SOUTH 59°13'26" WEST 93.24 FEET AS SHOWN ON BOOK 103 LAND SURVEY MAPS PAGE 2, HAVING A MEASURED BEARING SOUTH 59°15'55" WEST 93.24 FEET. DISTANCES SHOWN ARE GRID DISTANCES.

TOPOGRAPHIC SURVEY

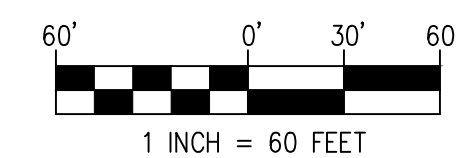
- CONTOUR INTERVAL: 2 FOOT AND 10 FOOT
- GROSS LAND AREA: 13.6± ACRES

PROJECT FLOOD ZONE:

ZONE X; AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL FLOODPLAIN
FEMA MAP NO. 06013C0432F
EFFECTIVE DATE: 6/16/2009

REFERENCES:

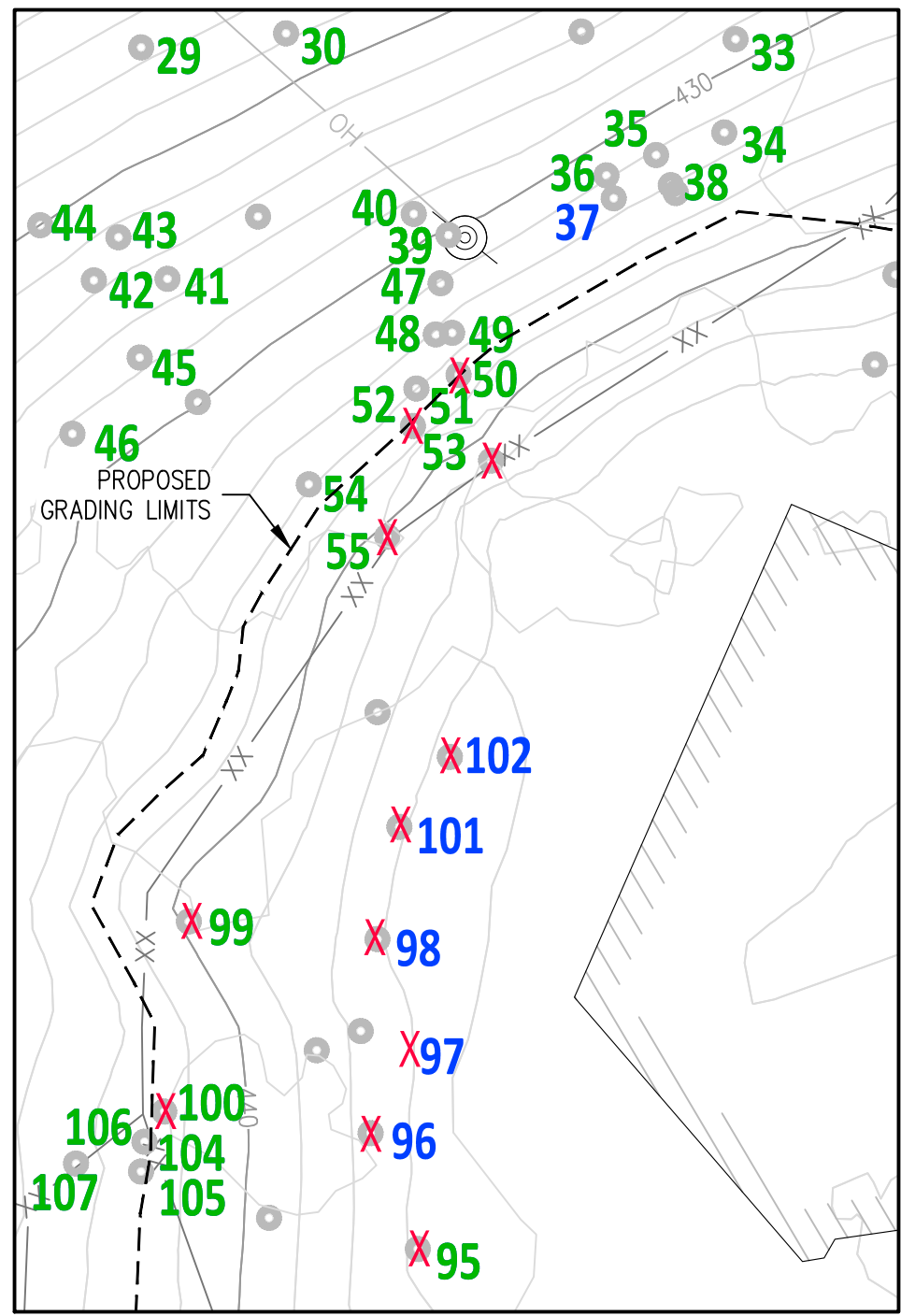
- (1) = 103LSM2
- (2) = 89LSM34



STONE VALLEY FARM
455 LIVORNA ROAD
BOUNDARY & TOPOGRAPHY
CONTRA COSTA COUNTY, CA
APRIL 28, 2025



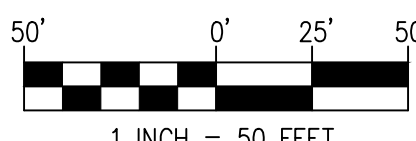
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DETAIL A
1"=20'

LEGEND

- 24 TREE TAG
- 24 PROTECTED TREE
- TREE TO REMAIN
- X TREE TO BE REMOVED
- GRADING LIMIT



TREE TABLE			
TREE #	SPECIES	PROTECTED (Y/N)	PROPOSED ACTION
1	CALIFORNIA BLACK WALNUT	Y	REMAIN
2	COAST LIVE OAK	Y	REMAIN
3	COAST LIVE OAK	Y	REMAIN
4	COAST LIVE OAK	Y	REMAIN
5	VALLEY OAK	Y	REMAIN
6	COAST LIVE OAK	Y	REMOVE
7	COAST LIVE OAK	N	REMOVE
8	VALLEY OAK	Y	REMOVE
9	COAST LIVE OAK	Y	REMOVE
10	VALLEY OAK	Y	REMOVE
11	VALLEY OAK	N	REMOVE
12	COAST LIVE OAK	Y	REMOVE
13	VALLEY OAK	Y	REMOVE
14	VALLEY OAK	Y	REMOVE
15	COAST LIVE OAK	Y	REMAIN
16	COAST LIVE OAK	Y	REMAIN
17	COAST LIVE OAK	Y	REMAIN
18	COAST LIVE OAK	Y	REMAIN
19	COAST LIVE OAK	Y	REMAIN
20	COAST LIVE OAK	Y	REMAIN
21	COAST LIVE OAK	Y	REMAIN
22	VALLEY OAK	Y	REMAIN
23	COAST LIVE OAK	Y	REMAIN
24	VALLEY OAK	Y	REMAIN
25	VALLEY OAK	Y	REMAIN
26	VALLEY OAK	N	REMAIN
27	VALLEY OAK	Y	REMAIN
28	VALLEY OAK	Y	REMAIN
29	VALLEY OAK	Y	REMAIN
30	COAST LIVE OAK	Y	REMAIN
31	VALLEY OAK	Y	REMAIN
32	VALLEY OAK	Y	REMAIN
33	COAST LIVE OAK	Y	REMAIN
34	COAST LIVE OAK	Y	REMAIN
35	COAST LIVE OAK	Y	REMAIN
36	COAST LIVE OAK	Y	REMAIN
37	VALLEY OAK	N	REMAIN
38	VALLEY OAK	Y	REMAIN
39	COAST LIVE OAK	Y	REMAIN
40	VALLEY OAK	Y	REMAIN
41	VALLEY OAK	Y	REMAIN
42	COAST LIVE OAK	Y	REMAIN
43	COAST LIVE OAK	Y	REMAIN
44	COAST LIVE OAK	Y	REMAIN
45	COAST LIVE OAK	Y	REMAIN
46	VALLEY OAK	Y	REMAIN
47	COAST LIVE OAK	Y	REMAIN
48	COAST LIVE OAK	Y	REMAIN
49	COAST LIVE OAK	Y	REMAIN
50	COAST LIVE OAK	Y	REMOVE

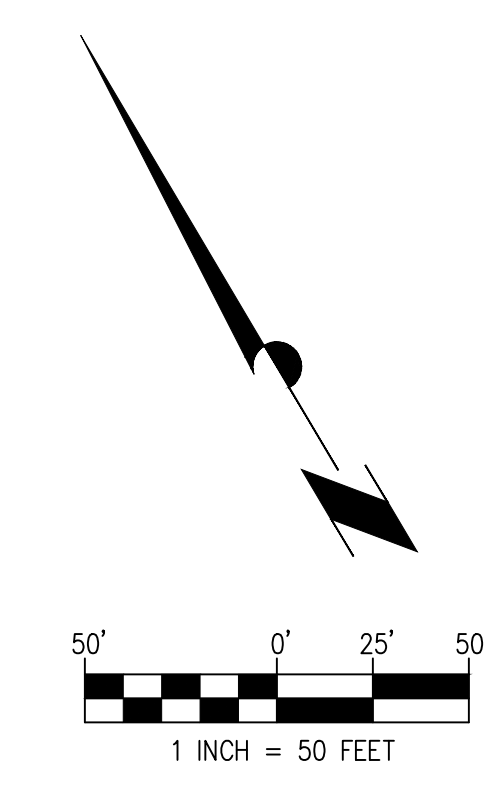
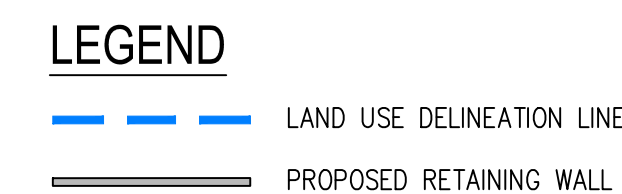
TREE TABLE			
TREE #	SPECIES	PROTECTED (Y/N)	PROPOSED ACTION
51	COAST LIVE OAK	Y	REMOVE
52	COAST LIVE OAK	N	REMAIN
53	COAST LIVE OAK	Y	REMOVE
54	VALLEY OAK	Y	REMAIN
55	VALLEY OAK	Y	REMOVE
56	COAST LIVE OAK	Y	REMOVE
57	COAST LIVE OAK	Y	REMOVE
58	COAST LIVE OAK	N	REMAIN
59	COAST LIVE OAK	Y	REMAIN
60	VALLEY OAK	Y	REMAIN
61	VALLEY OAK	Y	REMAIN
62	VALLEY OAK	Y	REMAIN
63	COAST LIVE OAK	Y	REMAIN
64	VALLEY OAK	Y	REMAIN
65	VALLEY OAK	Y	REMAIN
66	VALLEY OAK	Y	REMOVE
67	VALLEY OAK	Y	REMOVE
68	EVERGREEN ASH	N	REMOVE
69	VALLEY OAK	Y	REMOVE
70	COAST LIVE OAK	Y	REMOVE
71	OLIVE	N	REMOVE
72	COAST LIVE OAK	Y	REMOVE
73	COAST LIVE OAK	Y	REMOVE
74	COAST LIVE OAK	Y	REMOVE
75	CATALINA IRONWOOD	N	REMAIN
76	COAST LIVE OAK	Y	REMAIN
77	CHINESE PISTACHE	N	REMOVE
78	COAST LIVE OAK	Y	REMOVE
79	CATALINA IRONWOOD	N	REMOVE
80	EVERGREEN ASH	N	REMOVE
81	EVERGREEN ASH	N	REMOVE
82	EVERGREEN ASH	N	REMOVE
83	DEODAR CEDAR	N	REMOVE
84	EVERGREEN ASH	N	REMOVE
85	EVERGREEN ASH	N	REMOVE
86	EVERGREEN ASH	N	REMOVE
87	EVERGREEN ASH	N	REMOVE
88	VALLEY OAK	Y	REMOVE
89	ALEPPO PINE	N	REMOVE
90	COAST LIVE OAK	Y	REMOVE
91	MULBERRY	N	REMOVE
92	COAST REDWOOD	Y	REMOVE
93	DEODAR CEDAR	N	REMOVE
94	DEODAR CEDAR	N	REMOVE
95	COAST REDWOOD	Y	REMOVE
96	DEODAR CEDAR	N	REMOVE
97	COAST LIVE OAK	N	REMOVE
98	DEODAR CEDAR	N	REMOVE
99	COAST LIVE OAK	Y	REMOVE
100	COAST LIVE OAK	Y	REMOVE

TREE TABLE			
TREE #	SPECIES	PROTECTED (Y/N)	PROPOSED ACTION
101	DEODAR CEDAR	N	REMOVE
102	DEODAR CEDAR	N	REMOVE
103	COAST REDWOOD	Y	REMOVE
104	COAST LIVE OAK	Y	REMAIN
105	VALLEY OAK	Y	REMAIN
106	VALLEY OAK	Y	REMOVE
107	COAST LIVE OAK	Y	REMOVE
108	COAST LIVE OAK	N	REMOVE
109	ALEPPO PINE	N	REMOVE
110	COAST LIVE OAK	Y	REMOVE
111	COAST LIVE OAK	Y	REMAIN
112	COAST LIVE OAK	Y	REMAIN
113	COAST LIVE OAK	Y	REMAIN
114	COAST LIVE OAK	Y	REMOVE
115	COAST LIVE OAK	Y	REMOVE
116	COAST LIVE OAK	Y	REMOVE
117	COAST LIVE OAK	Y	REMOVE
118	COAST LIVE OAK	Y	REMOVE
119	COAST LIVE OAK	Y	REMOVE
120	COAST LIVE OAK	Y	REMOVE
121	COAST LIVE OAK	N	REMOVE
122	MULBERRY	N	REMOVE
123	COAST LIVE OAK	Y	REMOVE
124	MULBERRY	N	REMOVE
125	MULBERRY	N	REMOVE
126	MULBERRY	N	REMOVE
127	MULBERRY	N	REMOVE
128	MULBERRY	N	REMOVE
129	MULBERRY	N	REMOVE
130	VALLEY OAK	Y	REMAIN
131	VALLEY OAK	Y	REMAIN
132	VALLEY OAK	Y	REMAIN
133	VALLEY OAK	Y	REMAIN
134	VALLEY OAK	Y	REMAIN
135	BUCKEYE	Y	REMAIN
136	ALEPPO PINE	N	REMAIN
137	COAST LIVE OAK	Y	REMAIN
138	DEODAR CEDAR	N	REMOVE
139	DEODAR CEDAR	N	REMOVE
140	DEODAR CEDAR	N	REMOVE
141	COAST LIVE OAK	Y	REMAIN
142	COAST LIVE OAK	Y	REMAIN
143	COAST LIVE OAK	Y	REMAIN
144	COAST LIVE OAK	Y	REMAIN
145	COAST LIVE OAK	Y	REMAIN
146	COAST LIVE OAK	Y	REMAIN
147	COAST LIVE OAK	Y	REMAIN
148	COAST LIVE OAK	Y	REMAIN
TREES TO BE REMOVED			75

STONE VALLEY FARM
455 LIVORNA ROAD
TREE REMOVAL & DEMOLITION PLAN
CONTRA COSTA COUNTY, CA

APRIL 28, 2025

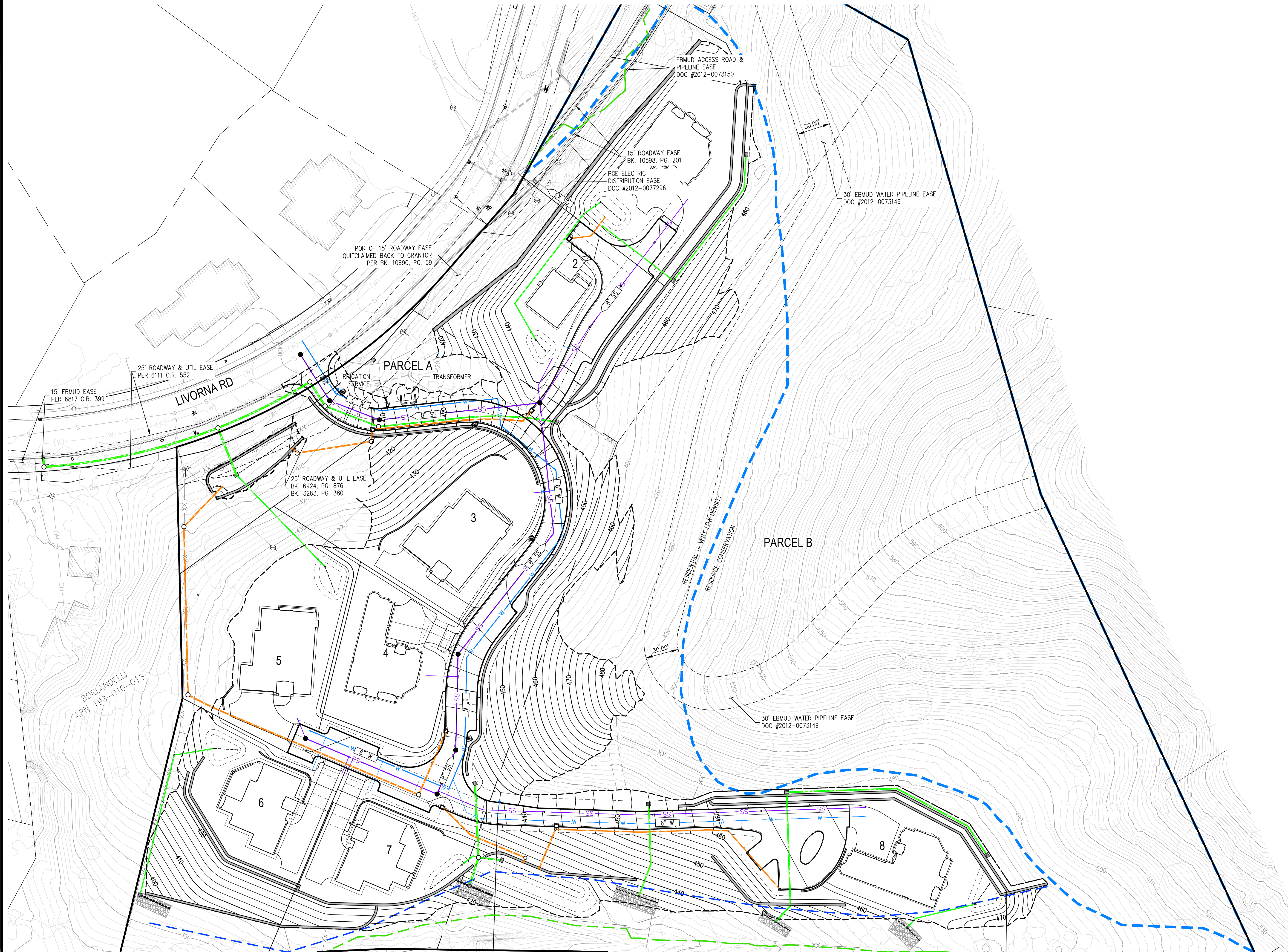




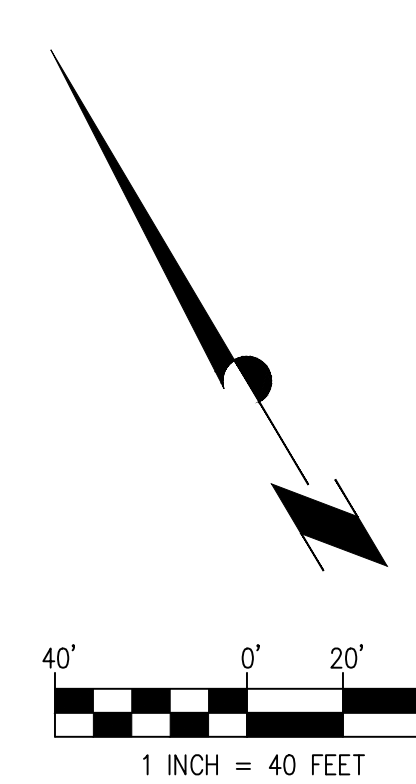
STONE VALLEY FARM
455 LIVORNA ROAD
PRELIMINARY SITE PLAN
CONTRA COSTA COUNTY, CA
APRIL 28, 2025

 **ENGINEERING**
SURVEYING • PLANNING

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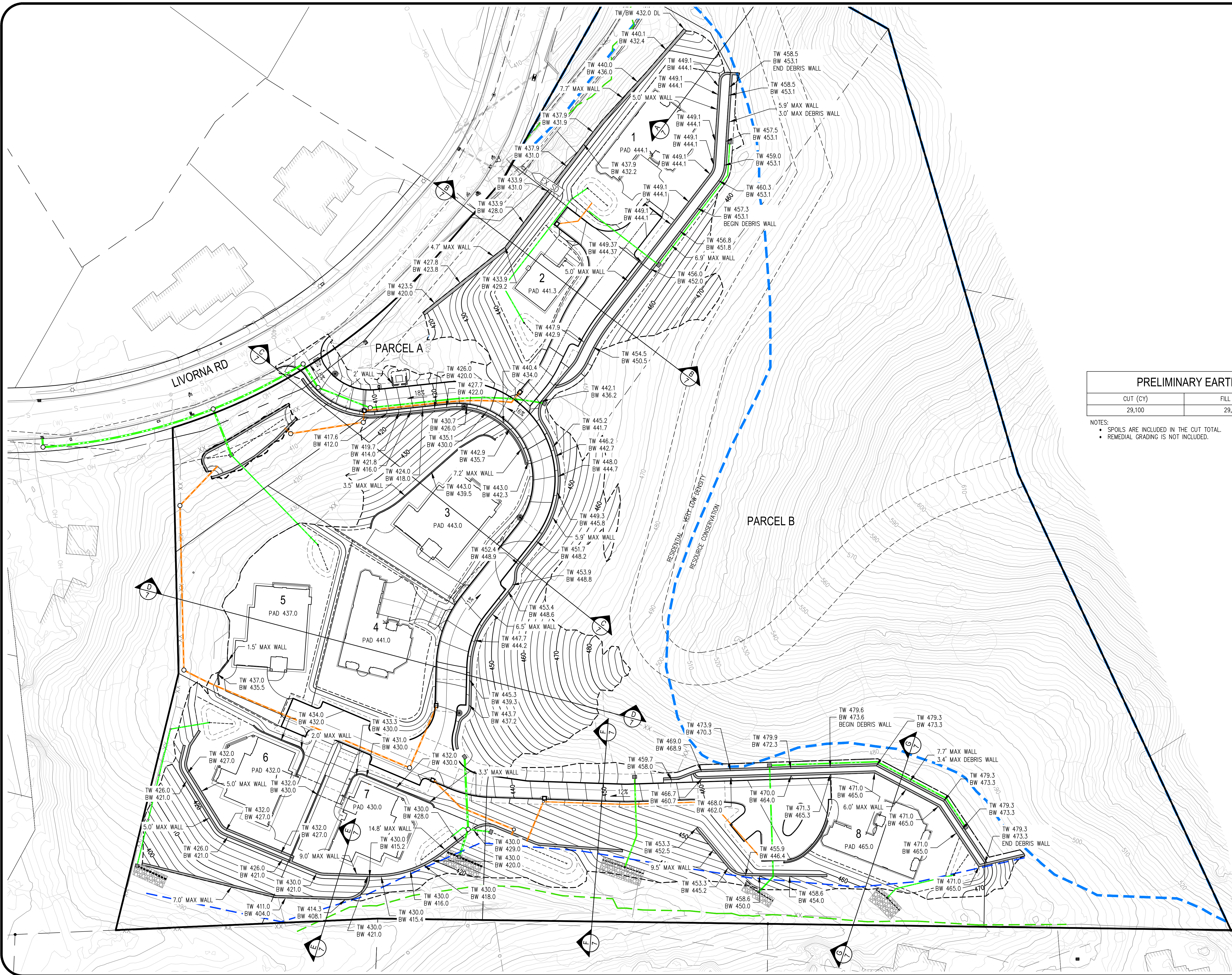
- LEGEND**
- POTABLE WATER SYSTEM
 - STORM DRAIN SYSTEM DIRECTED TO TREATMENT
 - TREATED STORM DRAIN SYSTEM
 - SANITARY SEWER SYSTEM
 - FIRE HYDRANT
 - PROPOSED STREET LIGHTS
 - BIOLOGICAL RIPARIAN LIMIT/TOP OF BANK
 - CREEK STRUCTURE SETBACK LINE
 - GRADING DAYLIGHT LINE
 - LAND USE DELINEATION LINE
 - RIPRAP FLOW DISSIPATORS



STONE VALLEY FARM
455 LIVORNA ROAD
PRELIMINARY UTILITY PLAN
CONTRA COSTA COUNTY, CA
APRIL 28, 2025

ENGINEERING
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LEGEND

- STORM DRAIN SYSTEM DIRECTED TO TREATMENT
- TREATED STORM DRAIN SYSTEM
- GRADING DAYLIGHT LINE
- BIOLOGICAL RIPARIAN LIMIT/TOP OF BANK
- CREEK STRUCTURE SETBACK LINE
- LAND USE DELINEATION LINE
- RIPRAP FLOW DISSIPATORS

PRELIMINARY EARTHWORK QUANTITIES

CUT (CY)	FILL (CY)	IMPORT/EXPORT (CY)
29,100	29,100	0

- NOTES:
- SPOILS ARE INCLUDED IN THE CUT TOTAL.
 - REMEDIAL GRADING IS NOT INCLUDED.

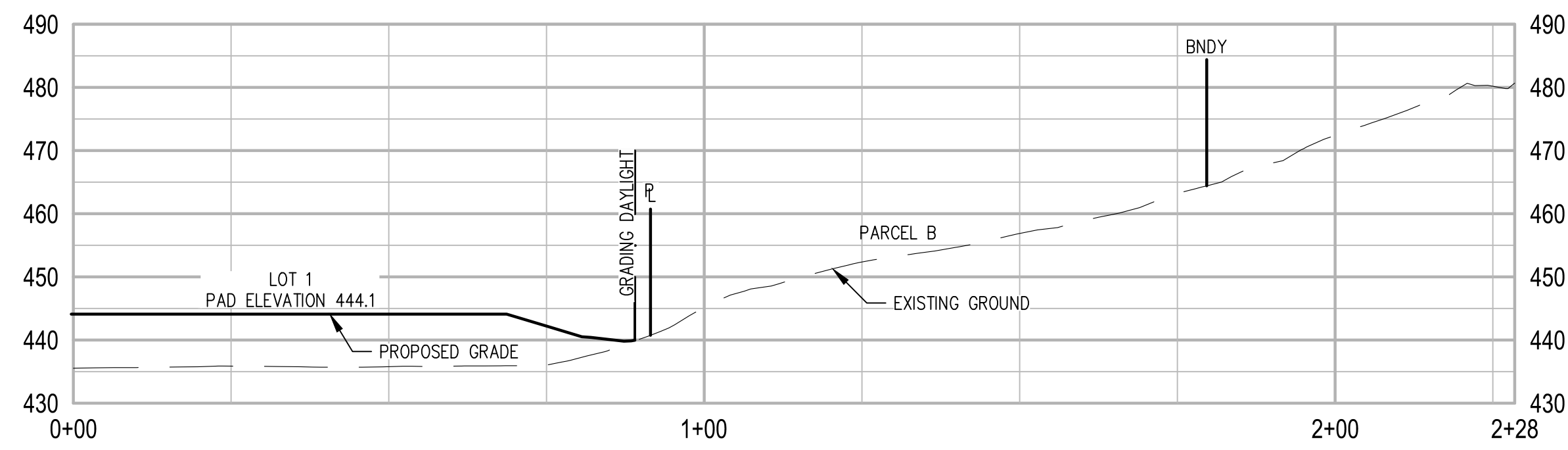
40' 0' 20' 40'
1 INCH = 40 FEET



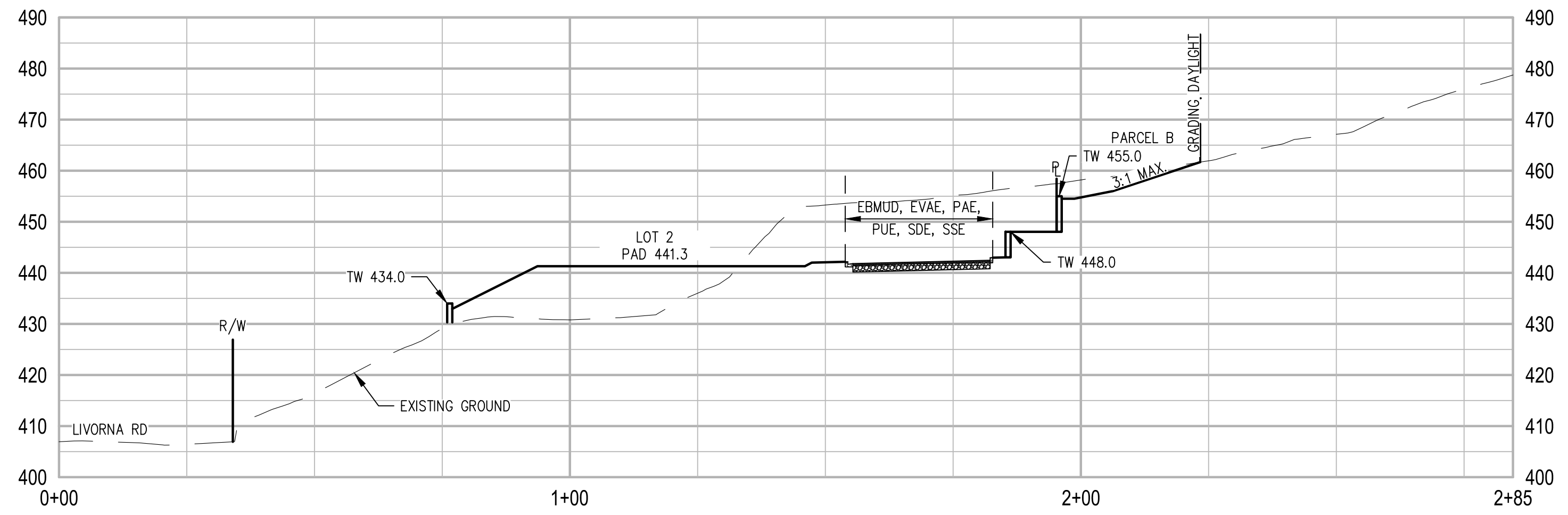
STONE VALLEY FARM
455 LIVORNA ROAD
PRELIMINARY GRADING & DRAINAGE PLAN
CONTRA COSTA COUNTY, CA

APRIL 28, 2025

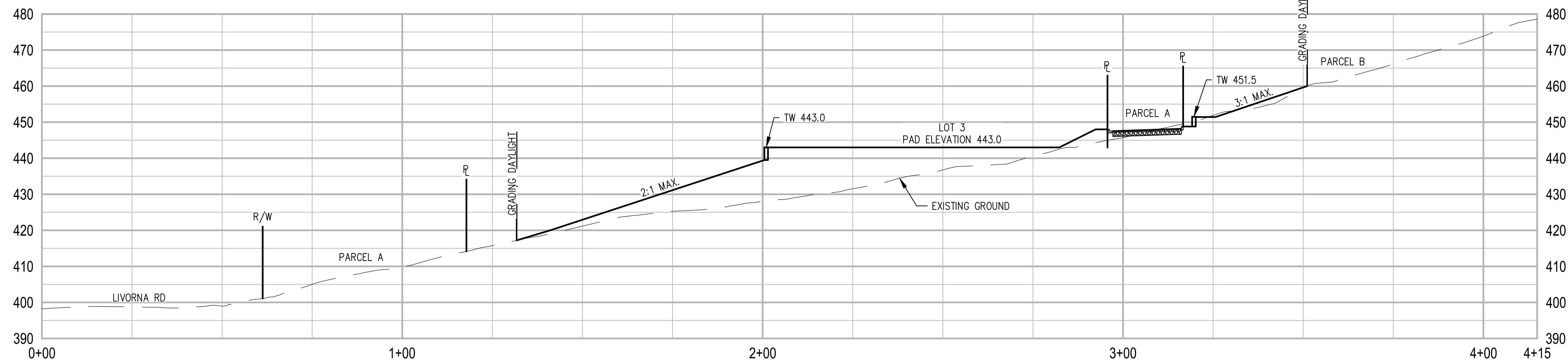




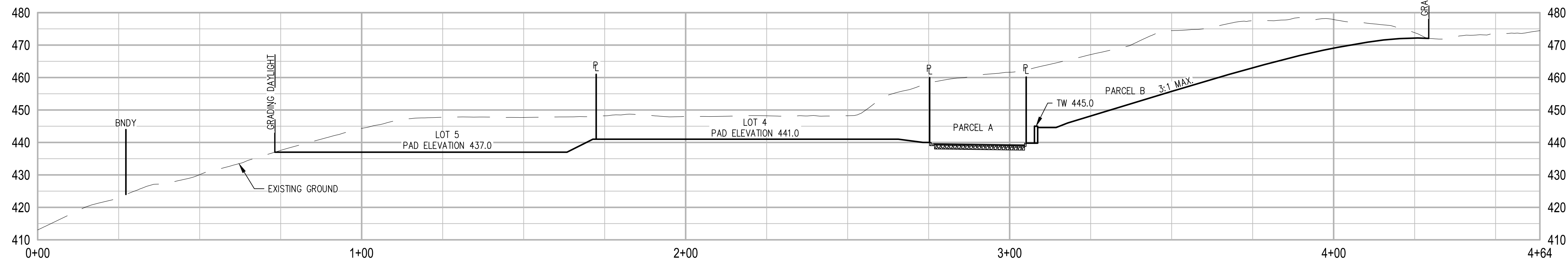
SECTION A
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=20'



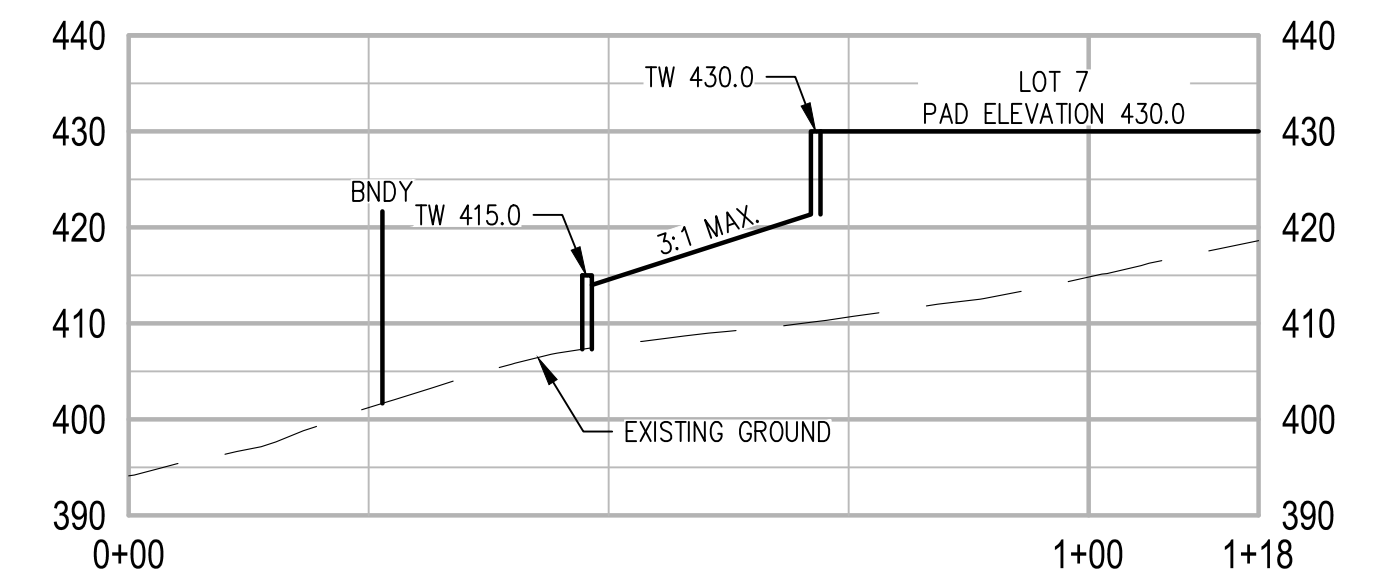
SECTION B
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=20'



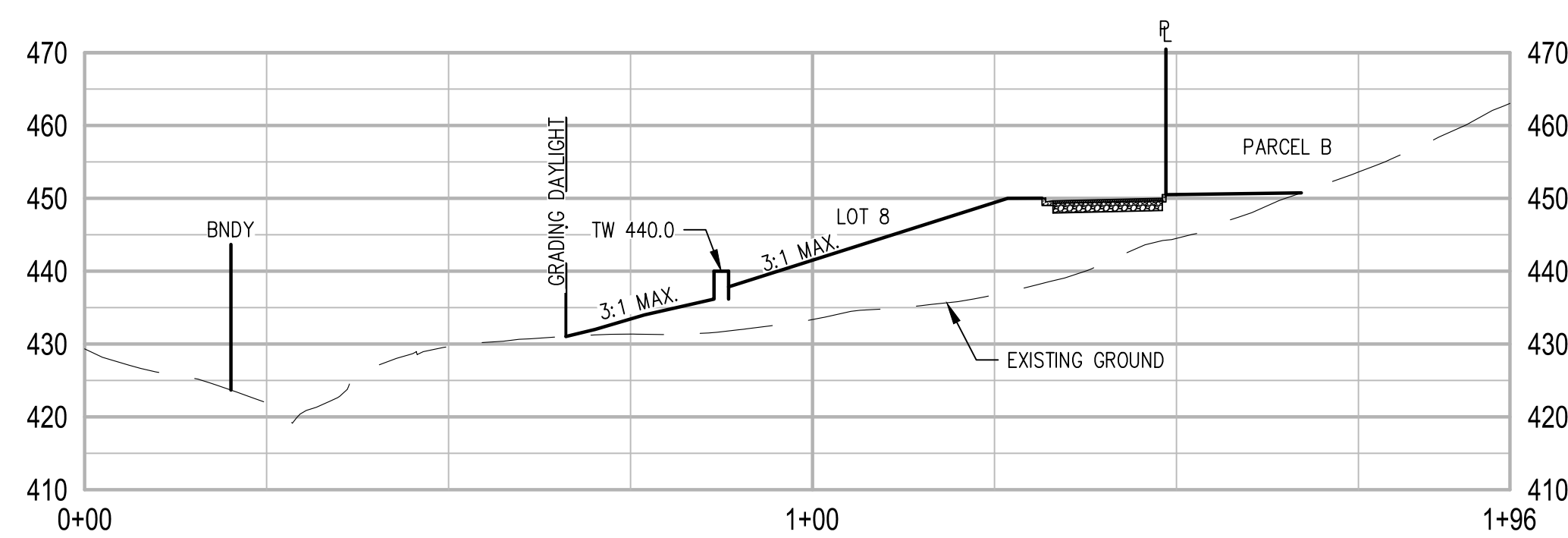
SECTION C
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=20'



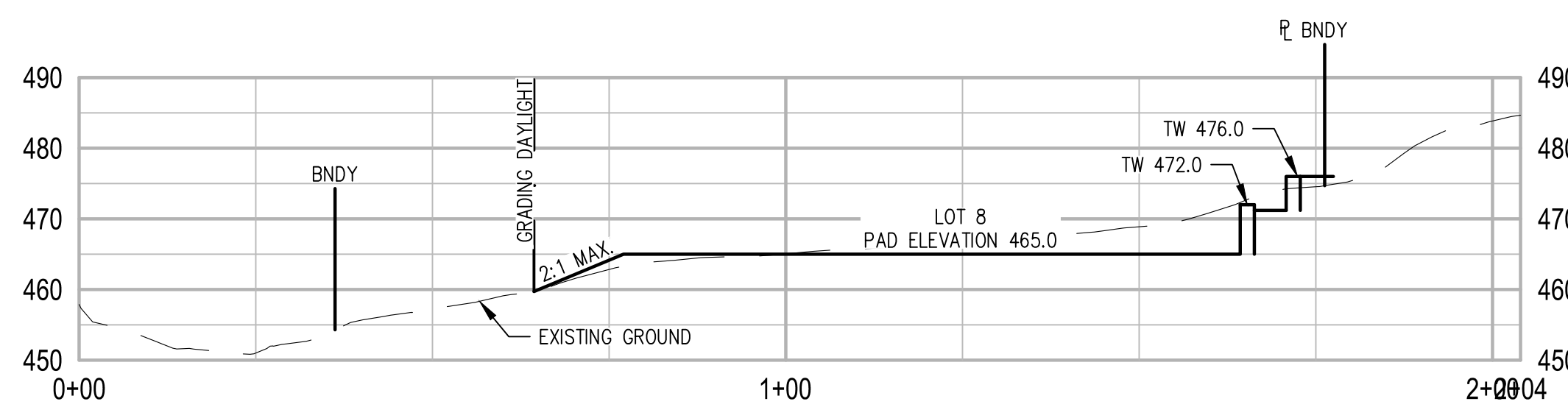
SECTION D
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=20'



SECTION E
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=20'



SECTION F
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=20'



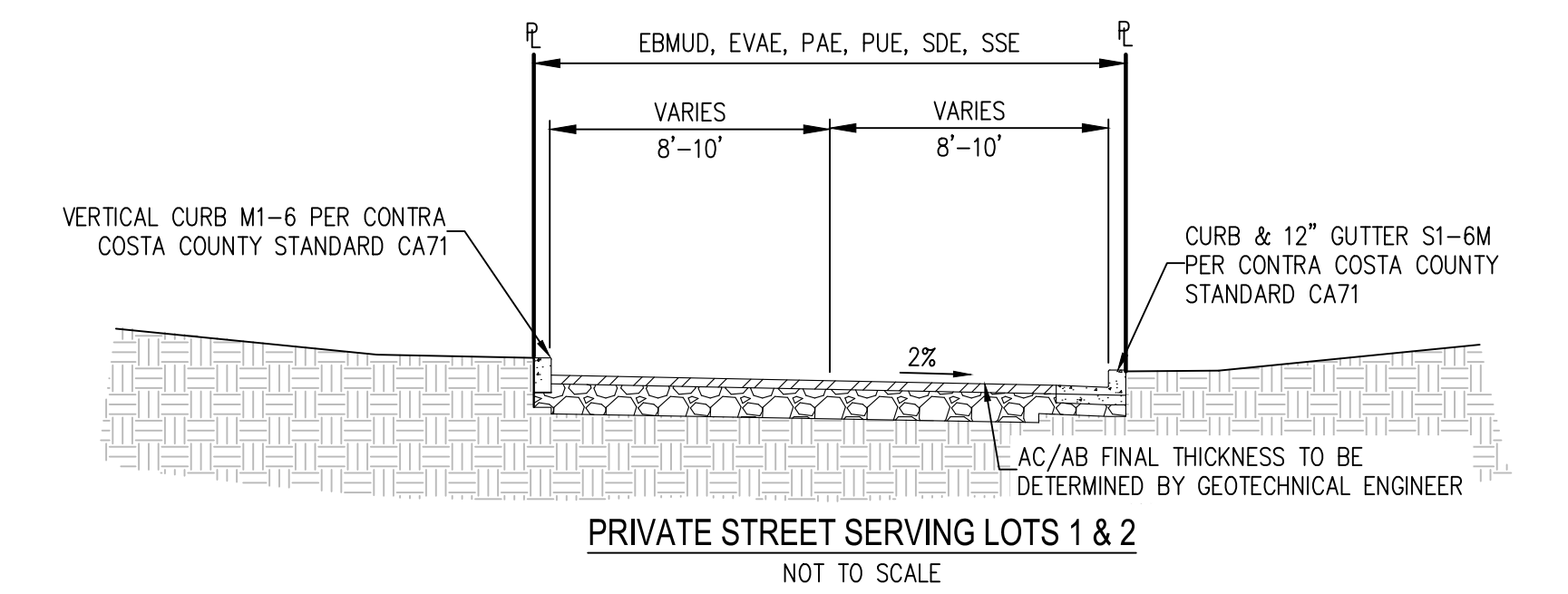
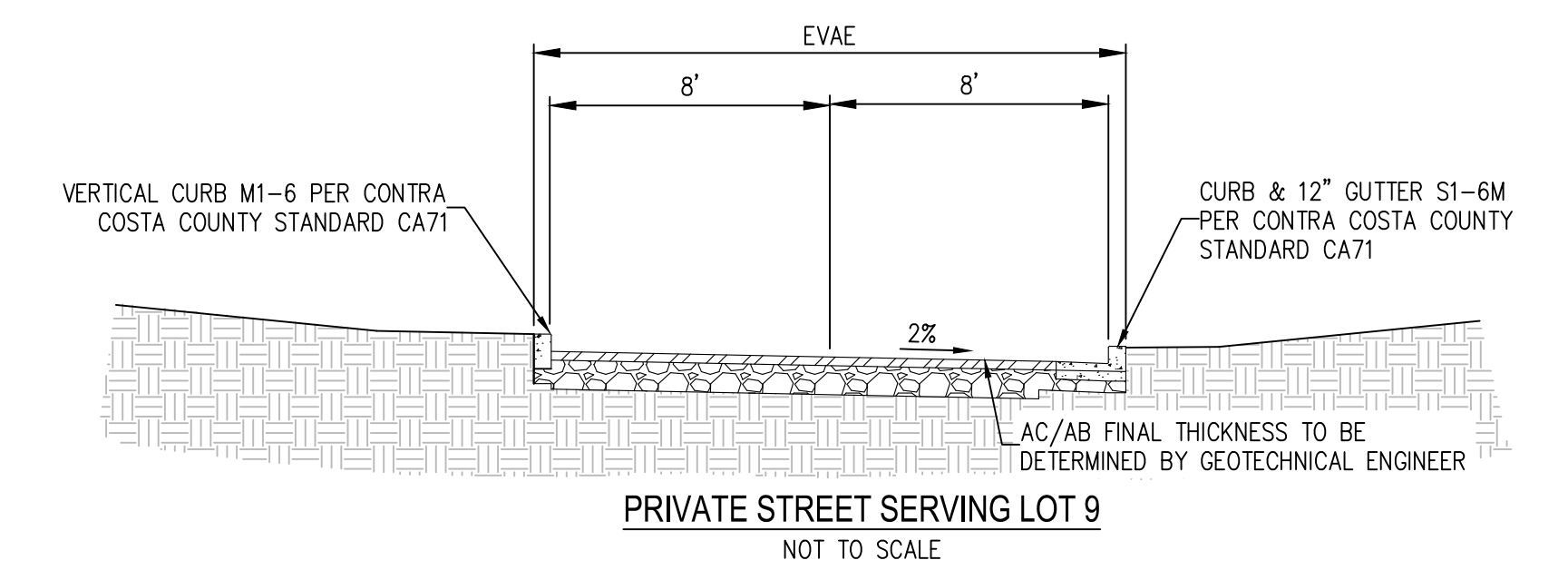
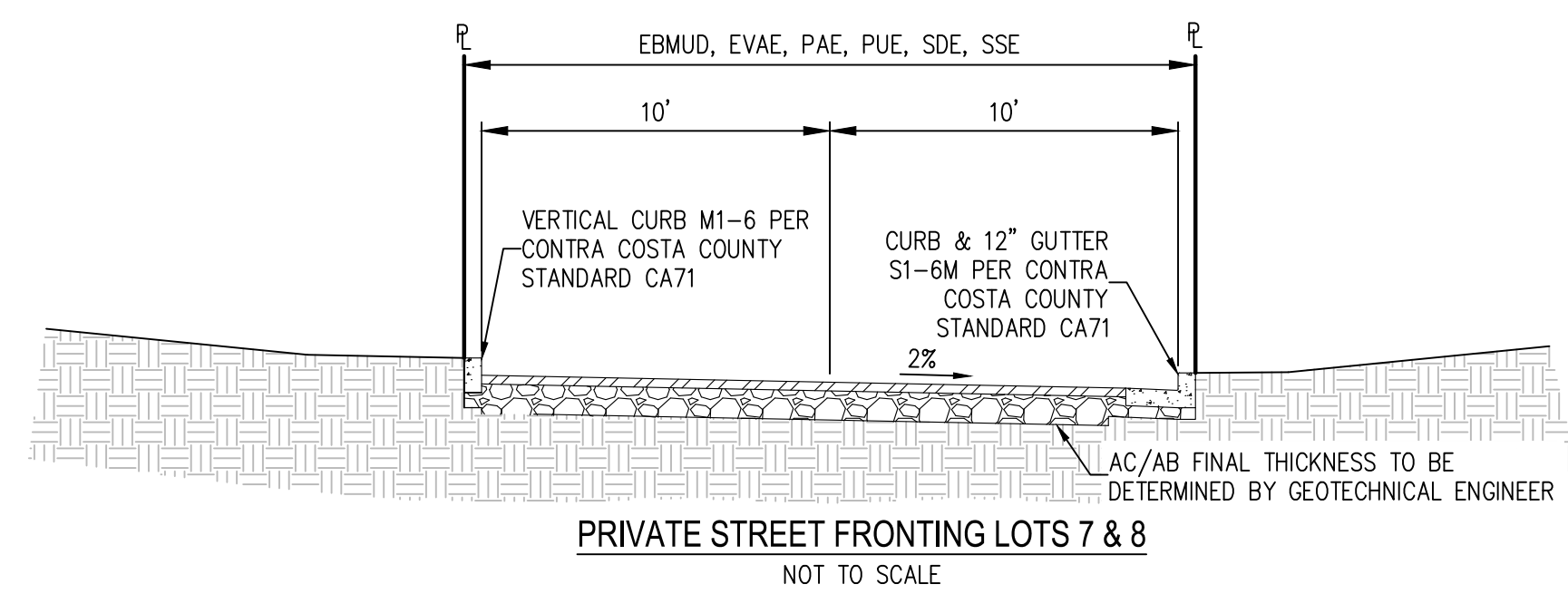
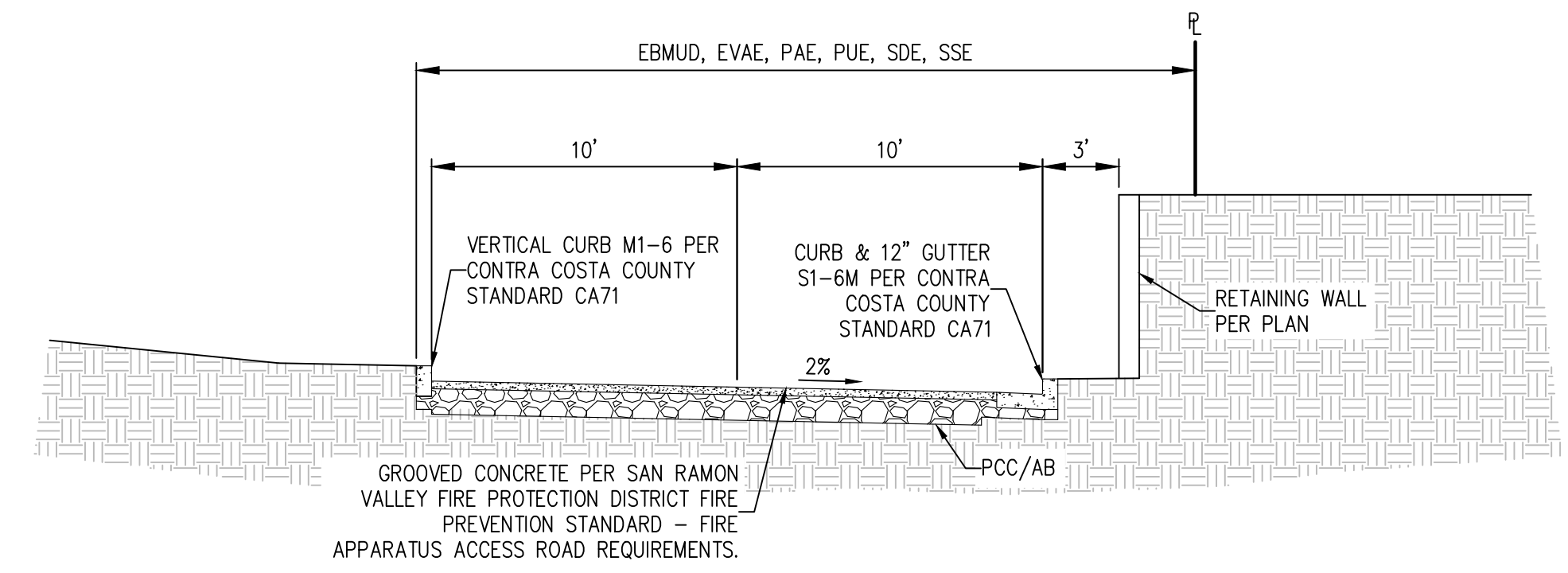
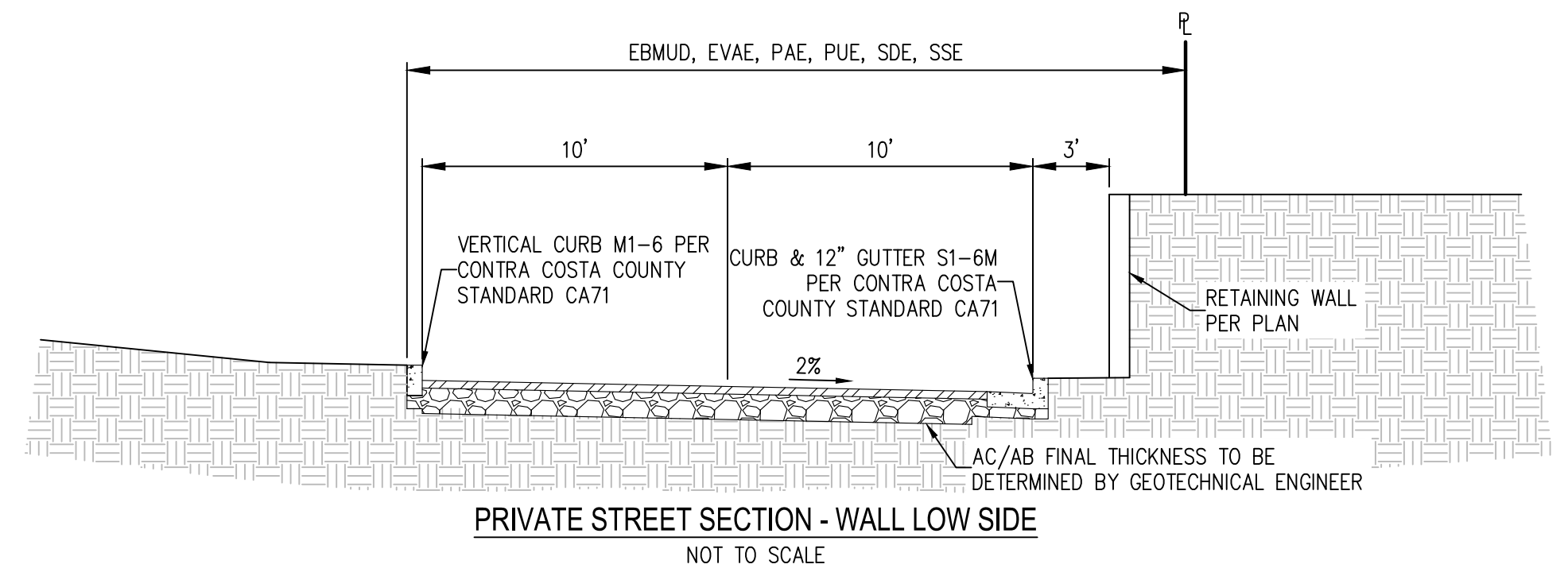
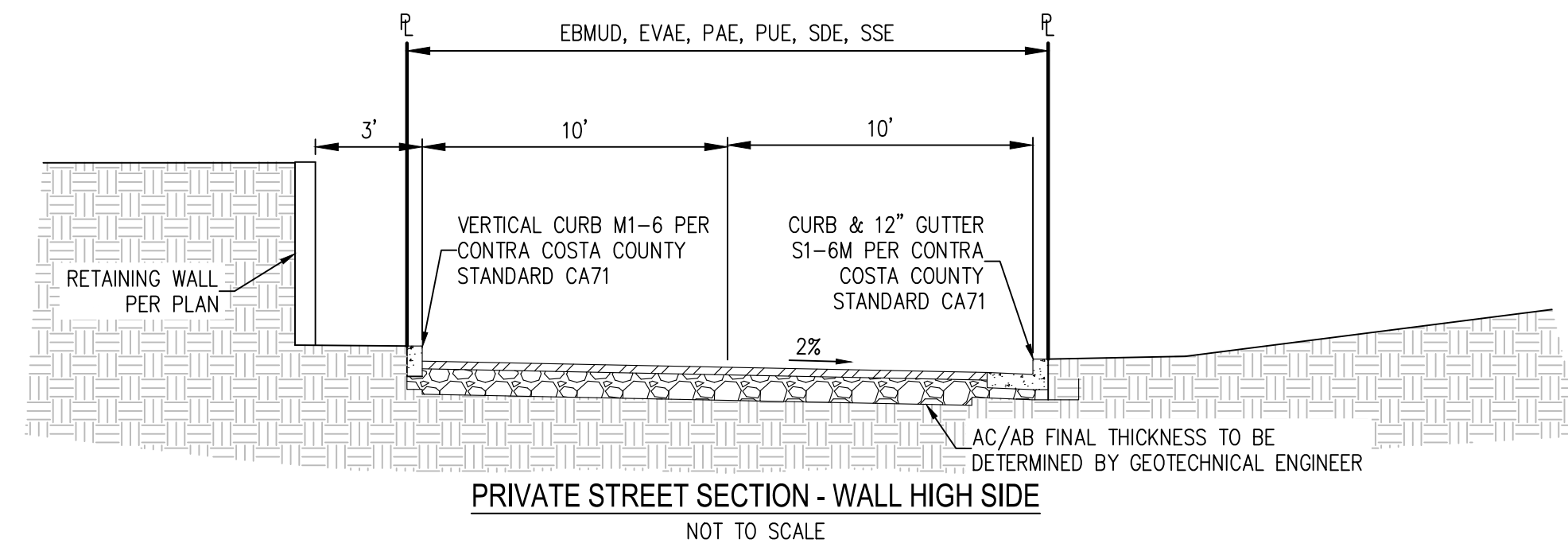
SECTION G
SCALE: HORIZONTAL 1"=20'
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STONE VALLEY FARM
455 LIVORNA ROAD
GRADING SECTIONS
CONTRA COSTA COUNTY, CA
APRIL 28, 2025

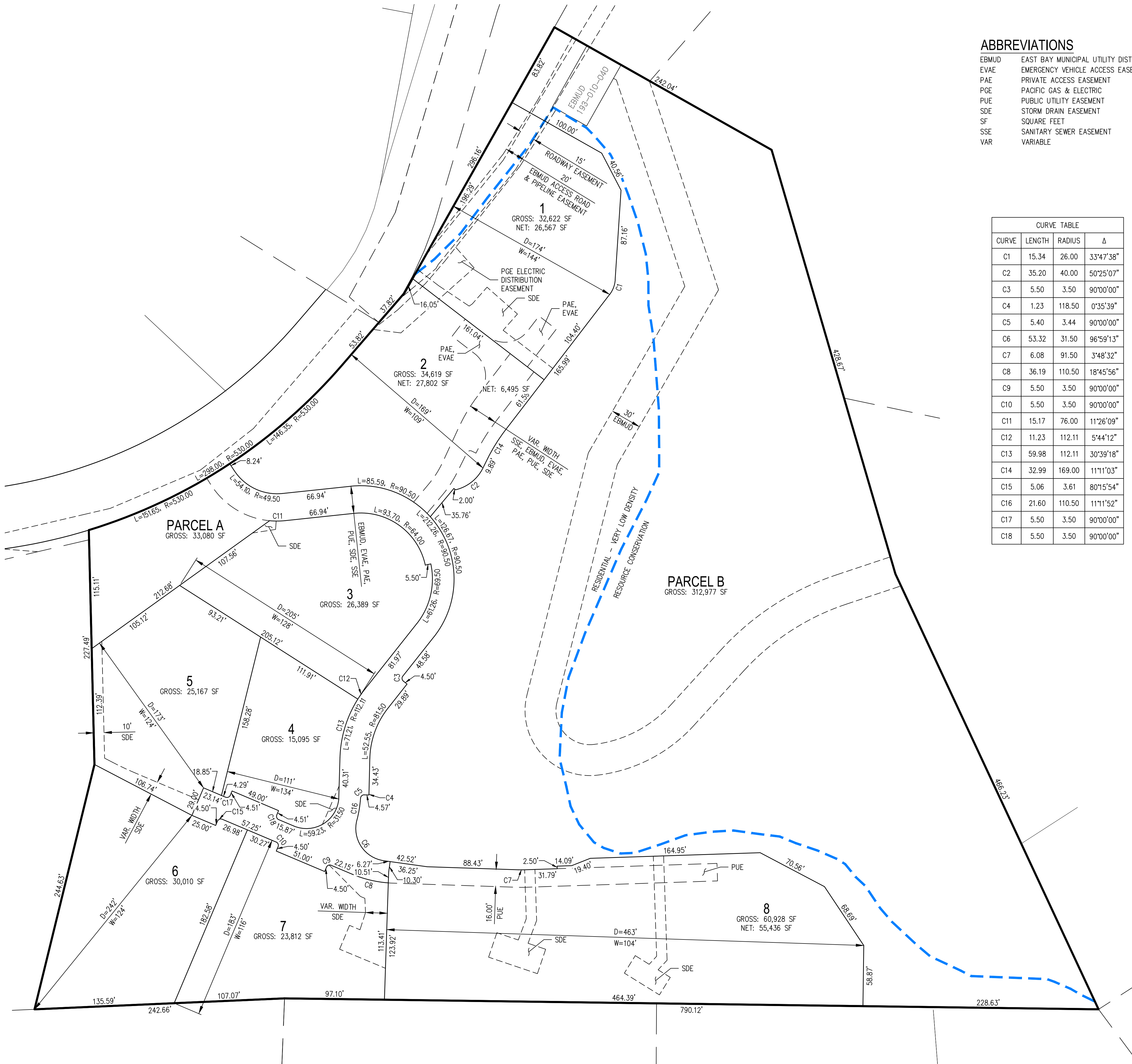
ENGINEERING
SURVEYING • PLANNING

1931 SAN MIGUEL DRIVE, SUITE 100, WALNUT CREEK, CA 94596
WWW.DKENGIN.COM (925) 932-6886



STONE VALLEY FARM
455 LIVORNA ROAD
STREET SECTIONS
CONTRA COSTA COUNTY, CA
APRIL 28, 2025





ABBREVIATIONS

EBMUD	EAST BAY MUNICIPAL UTILITY DISTRICT
EVAE	EMERGENCY VEHICLE ACCESS EASEMENT
PAE	PRIVATE ACCESS EASEMENT
PGE	PACIFIC GAS & ELECTRIC
PUE	PUBLIC UTILITY EASEMENT
SDE	STORM DRAIN EASEMENT
SF	SQUARE FEET
SSE	SANITARY SEWER EASEMENT
VAR	VARIABLE

CURVE TABLE			
CURVE	LENGTH	RADIUS	Δ
C1	15.34	26.00	33°47'38"
C2	35.20	40.00	50°25'07"
C3	5.50	3.50	90°00'00"
C4	1.23	118.50	0°35'39"
C5	5.40	3.44	90°00'00"
C6	53.32	31.50	96°59'13"
C7	6.08	91.50	3°48'32"
C8	36.19	110.50	18°45'56"
C9	5.50	3.50	90°00'00"
C10	5.50	3.50	90°00'00"
C11	15.17	76.00	11°26'09"
C12	11.23	112.11	5°44'12"
C13	59.98	112.11	30°39'18"
C14	32.99	169.00	11°11'03"
C15	5.06	3.61	80°15'54"
C16	21.60	110.50	11°11'52"
C17	5.50	3.50	90°00'00"
C18	5.50	3.50	90°00'00"

LOT MATRIX					
LOT	GROSS AREA	NET AREA	DEPTH	WIDTH	LOT FRONTAGE
1	32,622 SF	26,567 SF	174 FT	153 FT	105 FT
2	34,619 SF	27,802 SF	169 FT	165 FT	157 FT
3	26,389 SF	26,389 SF	205 FT	129 FT	82 FT
4	15,095 SF	15,095 SF	111 FT	136 FT	134 FT
5	25,167 SF	25,167 SF	173 FT	145 FT	48 FT
6	30,010 SF	30,010 SF	242 FT	124 FT	55 FT
7	23,812 SF	23,812 SF	183 FT	130 FT	137 FT
8	60,928 SF	55,436 SF	463 FT	120 FT	21 FT
PARCEL A	33,080 SF	N/A	N/A	N/A	N/A
PARCEL B	312,977 SF	N/A	N/A	N/A	N/A

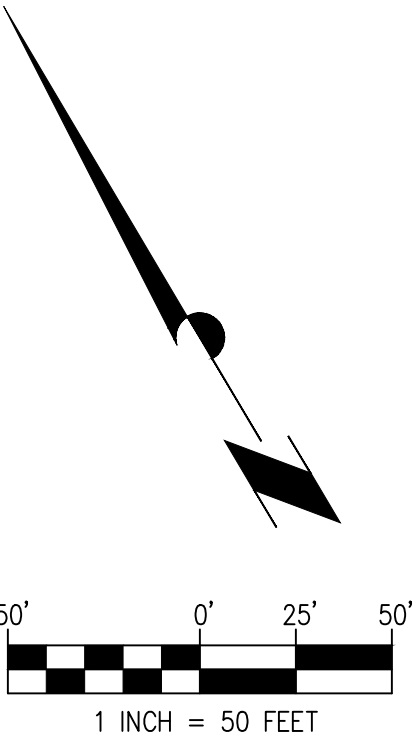
SITE ACREAGE SUMMARY

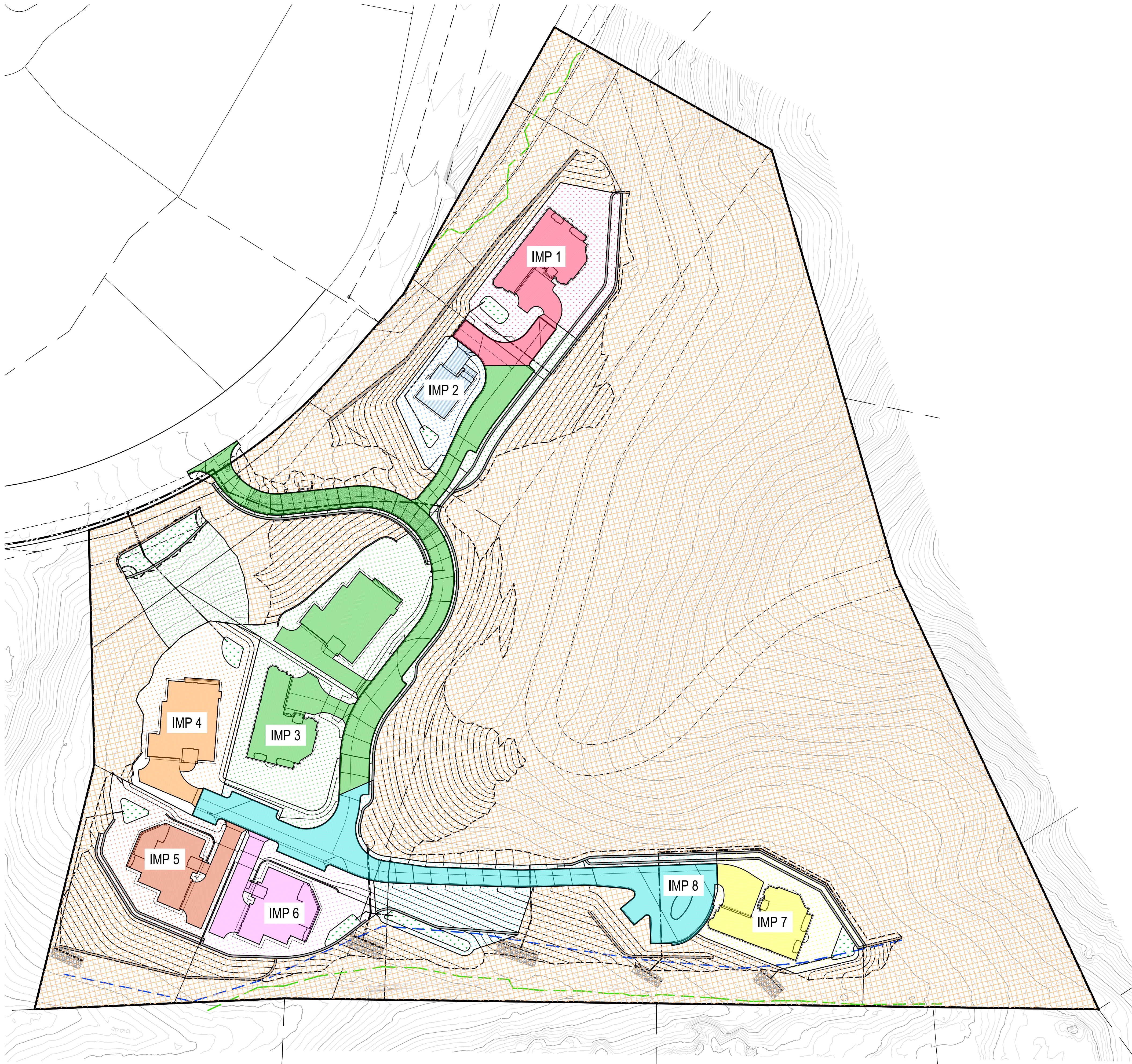
TOTAL ACRES:	13.65 ACRES
GROSS ACRES RVL:	8.80 ACRES
EASEMENTS/ROADWAYS IN RVL:	1.10 ACRES
NET ACREAGE OF RVL:	7.70 ACRES
GROSS ACRES RC:	4.85 ACRES
EASEMENTS IN RC:	0.63 ACRES
NET ACREAGE OF RC:	4.22 ACRES

STONE VALLEY FARM
455 LIVORNA ROAD
VESTING TENTATIVE MAP
CONTRA COSTA COUNTY, CA
APRIL 28, 2025



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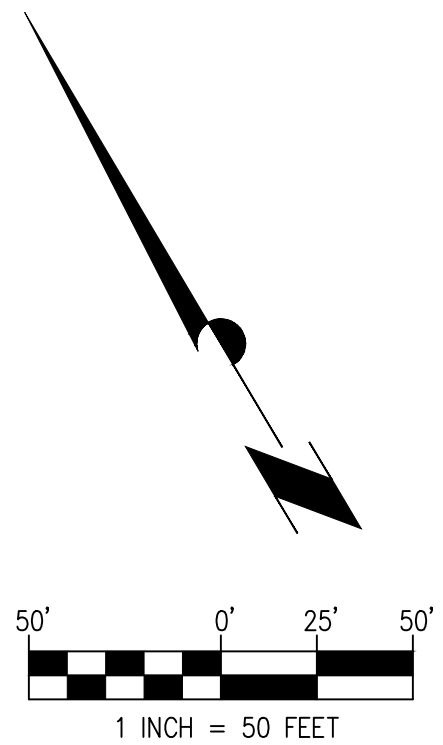




LEGEND

— BIOLOGICAL RIPARIAN LIMIT/TOP OF BANK
— CREEK STRUCTURE SETBACK LINE
--- GRADING DAYLIGHT LINE

SWCP LEGEND				
IMP	IMPERVIOUS		PERVIOUS	
	ROOF, CONCRETE, PAVEMENT, ETC.		LANDSCAPING	PROVIDED BIORETENTION
IMP-1		7,754 SF		9,233 SF 424 SF
IMP-2		2,077 SF		4,014 SF 221 SF
IMP-3		28,180 SF		31,814 SF 1,737 SF
IMP-4		6,064 SF		8,800 SF 420 SF
IMP-5		6,071 SF		7,483 SF 394 SF
IMP-6		6,071 SF		7,004 SF 429 SF
IMP-7		5,325 SF		6,588 SF 429 SF
IMP-8		16,589 SF		10,022 SF 891 SF
SELF TREATING	N/A			404,554 SF

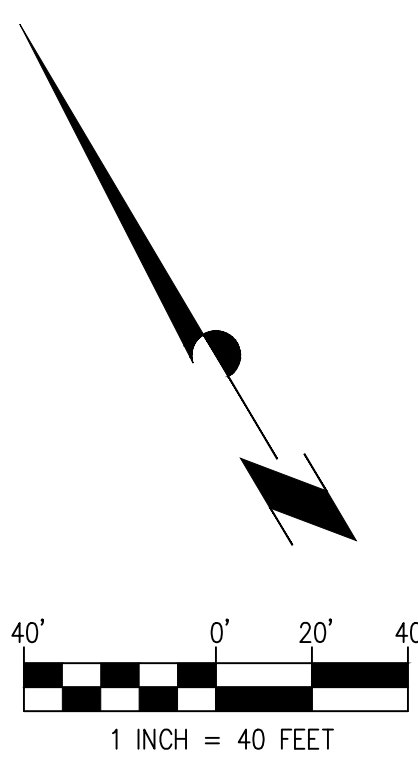
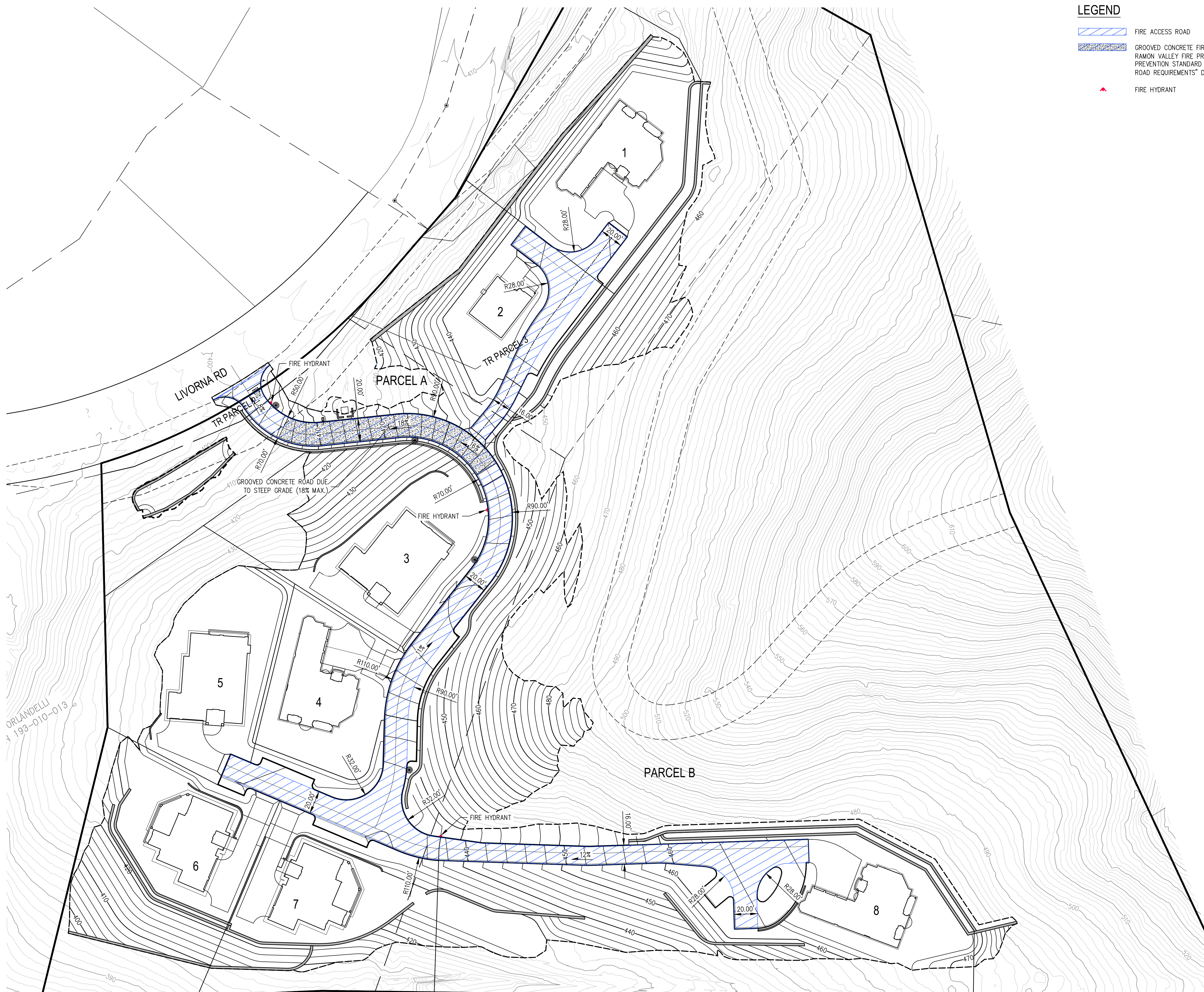


STONE VALLEY FARM
455 LIVORNA ROAD
STORM WATER CONTROL PLAN
CONTRA COSTA COUNTY, CA
APRIL 28, 2025



LEGEND

- FIRE ACCESS ROAD
- GROOVED CONCRETE FIRE ACCESS ROAD PER SAN RAMON VALLEY FIRE PROTECTION DISTRICT'S "FIRE PREVENTION STANDARD - FIRE APPARATUS ACCESS ROAD REQUIREMENTS" DATED JANUARY 2023
- FIRE HYDRANT



STONE VALLEY FARM
455 LIVORNA ROAD
FIRE ACCESS PLAN
CONTRA COSTA COUNTY, CA
APRIL 28, 2025



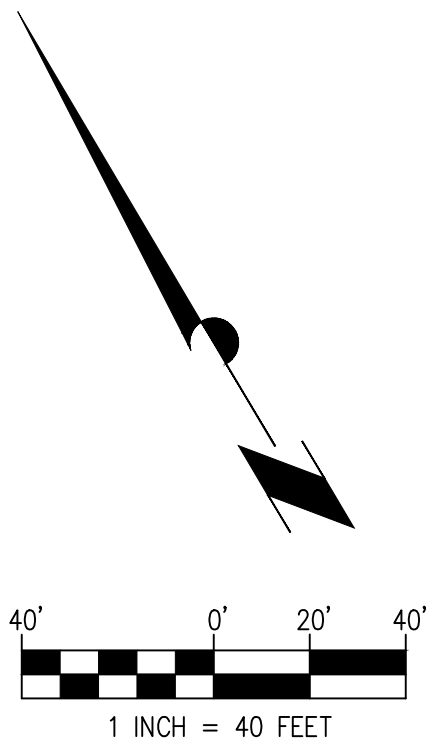


LEGEND

- | | |
|------|---|
| STOP | "STOP" PAVEMENT MARKING |
| | FIRE HYDRANT |
| | REFLECTIVE "BLUE DOT" FIRE HYDRANT MARKER |
| | RED CURB |
| | 6" WHITE STRIPING |
| | GUEST PARKING (62 SHOWN) |
| | WASTE STREAM CARTS |
| | STREET LIGHT |
| | SIGN |
| | LAND USE DELINEATION LINE |

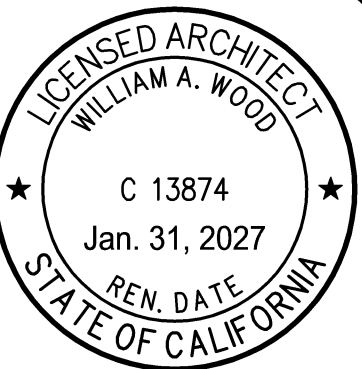
SIGNING AND STRIPING NOTES:

1. ALL STRIPING, PAVEMENT MARKING, AND SIGNING SHALL CONFORM TO THE LATEST EDITION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD) WITH REVISIONS AND THE 2018 CALTRANS STANDARD PLANS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER A MINIMUM OF TWO WORKING DAYS PRIOR TO THE DAY OF LAYOUT OF THE PROPOSED SIGNING AND STRIPING.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYOUT AND TRACKING OF ALL PROPOSED STRIPING AND MARKING. NO PERMANENT STRIPING OR MARKING SHALL BE PLACED UNTIL THE TRACKING IS APPROVED BY THE CITY TRAFFIC ENGINEER.
4. ALL DETAILS REFER TO THE LATEST EDITION OF THE CALTRANS STANDARD PLANS.
5. CONFLICTING STRIPING AND PAVEMENT MARKINGS SHALL BE REMOVED BY SANDBLASTING BY THE CONTRACTOR.
6. BLUE PAVEMENT MARKERS SHALL BE INSTALLED AT EVERY FIRE HYDRANT PER MUTCD SECTION 38.11.
7. EXISTING STRIPING TO REMAIN UNLESS OTHERWISE NOTED.
8. ALL STRIPING AND PAVEMENT MARKINGS SHALL BE THERMOPLASTIC WITH THE EXCEPTION OF RED CURB WHICH SHALL BE TRAFFIC PAINT.
9. SIGNS SHALL BE INSTALLED ON ELECTROLUERS WHERE SHOWN ON THE PLANS.
10. RESTRIPIING SHALL EXTEND BEYOND THE CONFORM LIMITS SHOWN ON THE PLANS IF THE EXISTING STRIPING IS DAMAGED OR ALTERED DUE TO PROJECT RELATED CONSTRUCTION AND/OR PAVING ACTIVITIES. THIS SHALL BE DETERMINED BY THE CITY INSPECTOR.



STONE VALLEY FARM
455 LIVORNA ROAD
STRIPING & PARKING
CONTRA COSTA COUNTY, CA
APRIL 28, 2025



[illegible]

STONE VALLEY FARM

455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD

ARCHITECTS
301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA 94526
(925) 820-8233

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DATE

SCALE
AS SHOWN

JOB NO.
25.2098R

SHEET

A1

OF **SHEETS**

SETBACKS & BUILDING HEIGHTS

	BEDROOMS	BATHROOMS	TOTAL LIVING AREA	GARAGE AREA	COVERED PORCH/BALCONY	GROSS SQUARE FOOTAGE	COVERED PARKING		FRONT	SIDES	REAR	HEIGHT
LOT 1 (PLAN B)	5	5.5	5,234 SQ/FT	872 SQ/FT	546 SQ/FT	6,652 SQ/FT	3 SPACES	LOT 1 (PLAN B)	43'-1"	28'-6" & 69'-2"	56'-0"	27'-11"
LOT 2 (PLAN D)	4	2.5	2,063 SQ/FT	437 SQ/FT	70 SQ/FT	2,570 SQ/FT	2 SPACES	LOT 2 (PLAN D)	10'-6"	12'-6" & 71'-7"	84'-6"	25'-2"
LOT 3 (PLAN A)	5	4.5	5,207 SQ/FT	989 SQ/FT	203 SQ/FT	6,399 SQ/FT	4 SPACES	LOT 3 (PLAN A)	25'-0"	25'-11" & 44'-1"	82'-11"	25'-9"
LOT 4 (PLAN B REVERSED)	5	5.5	5,234 SQ/FT	872 SQ/FT	546 SQ/FT	6,652 SQ/FT	3 SPACES	LOT 4 (PLAN B REVERSED)	25'-0"	15'-2" & 35'-9"	14'-9"	27'-11"
LOT 5 (PLAN A)	5	4.5	5,207 SQ/FT	989 SQ/FT	203 SQ/FT	6,399 SQ/FT	4 SPACES	LOT 5 (PLAN A)	24'-7"	15'-0" & 51'-4"	60'-0"	25'-9"
LOT 6 (PLAN C)	5	5.5	4,456 SQ/FT	842 SQ/FT	838 SQ/FT	6,136 SQ/FT	4 SPACES	LOT 6 (PLAN C)	17'-0"	29'-0" & 57'-5"	89'-5"	28'-4"
LOT 7 (PLAN C REVERSED)	5	5.5	4,456 SQ/FT	842 SQ/FT	838 SQ/FT	6,136 SQ/FT	4 SPACES	LOT 7 (PLAN C REVERSED)	17'-0"	29'-0" & 66'-6"	52'-4"	28'-4"
LOT 8 (PLAN B)	5	5.5	5,234 SQ/FT	872 SQ/FT	546 SQ/FT	6,652 SQ/FT	3 SPACES	LOT 8 (PLAN B)	310'-7"	17'-9" & 44'-10"	50'-10"	27'-11"

INDEX TO DRAWINGS

FLOOR PLANS:

PLAN A (LOTS 3 & 5)

PLAN C (LOTS 6 & 7)

PROJECT ADDRESS:

PLAN B (LOTS 1, 4 & 8)

PLAN D (LOT 2)

FIRST FLOOR	1,024 S.F.
SECOND FLOOR	1,039 S.F.
TOTAL LIVING SPACE	2,063 S.F.
3 CAR GARAGE	437 S.F.
COVERED PORCH	70 S.F.
TOTAL GROSS AREA	2,570 S.F.

APN:

193-010-014
193-010-039

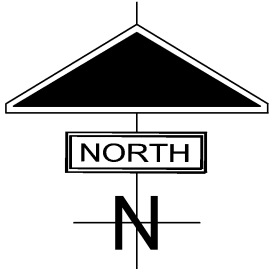
TOTAL GROSS AREA FOR ALL LOTS	47,596 S.F.
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PLOT DATE: Apr 25, 2025 - 11:56am CSI Cover Sheet.dwg



OVERALL SITE PLAN

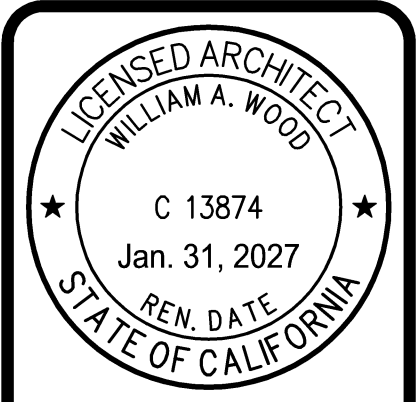
SCALE: 1" = 40'-0"



- LOT 1 - PLAN B (5,234 SF)
LOT 2 - PLAN D (2,063 SF) (AFFORDABLE)
LOT 3 - PLAN A (5,207 SF)
LOT 4 - PLAN B (REVERSE) (5,234 SF)
LOT 5 - PLAN A (5,207 SF)
LOT 6 - PLAN C (4,456 SF)
LOT 7 - PLAN C (REVERSE) (4,456 SF)
LOT 8 - PLAN B (REVERSE) (5,234 SF)

NOTE:
SEE LARGE SCALE SITE PLANS
FOR BUILDING SETBACKS, FENCES
AND ADDITIONAL INFORMATION.

REVISIONS	DATE



STONE VALLEY FARM

455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD
ARCHITECTS

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DANVILLE, CALIFORNIA 94526
(925) 820-8233

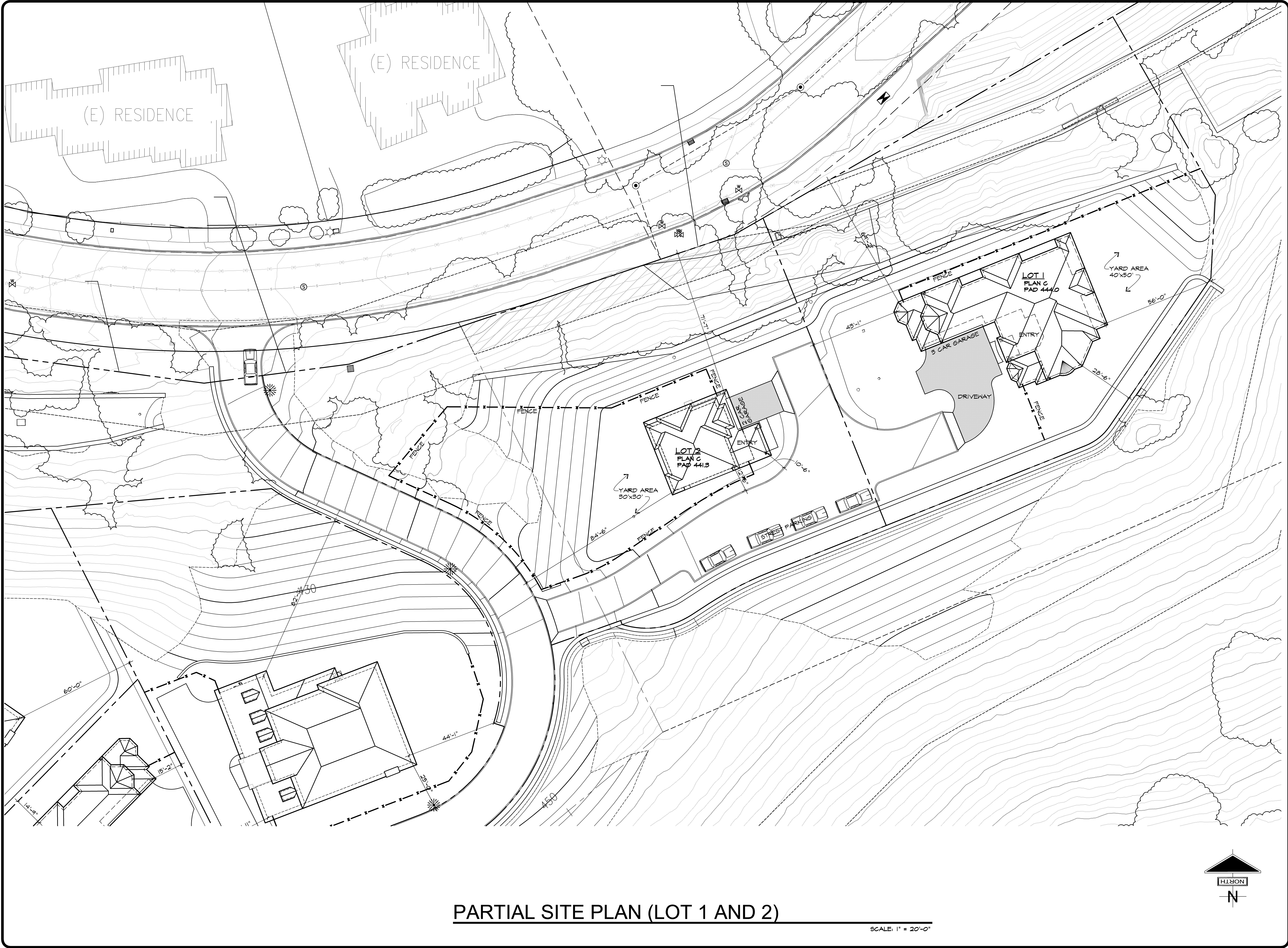
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JOB NO.
25.2098R
SHEET

A2

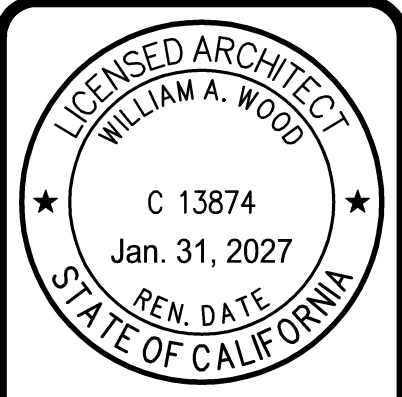
OF SHEETS



PARTIAL SITE PLAN (LOT 1 AND 2)

SCALE: 1" = 20'-0"

REVISIONS	DATE



STONE VALLEY FARM

455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD
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301 HARTZ AVENUE, SUITE 203
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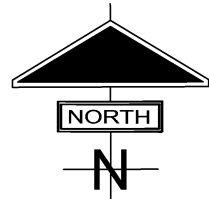
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DATE
SCALE AS SHOWN
JOB NO. 25.2098R
SHEET
A3
OF SHEETS

PLOT DATE: Apr 25, 2025 - 11:54am AI Site Plan.dwg

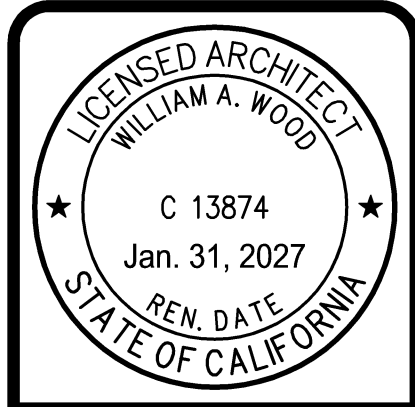


PARTIAL SITE PLAN (LOTS 3 - 7)

SCALE: 1" = 20'-0"



REVISIONS	DATE



STONE VALLEY FARM
455 LIVORNA ROAD
ALAMO, CA 94507

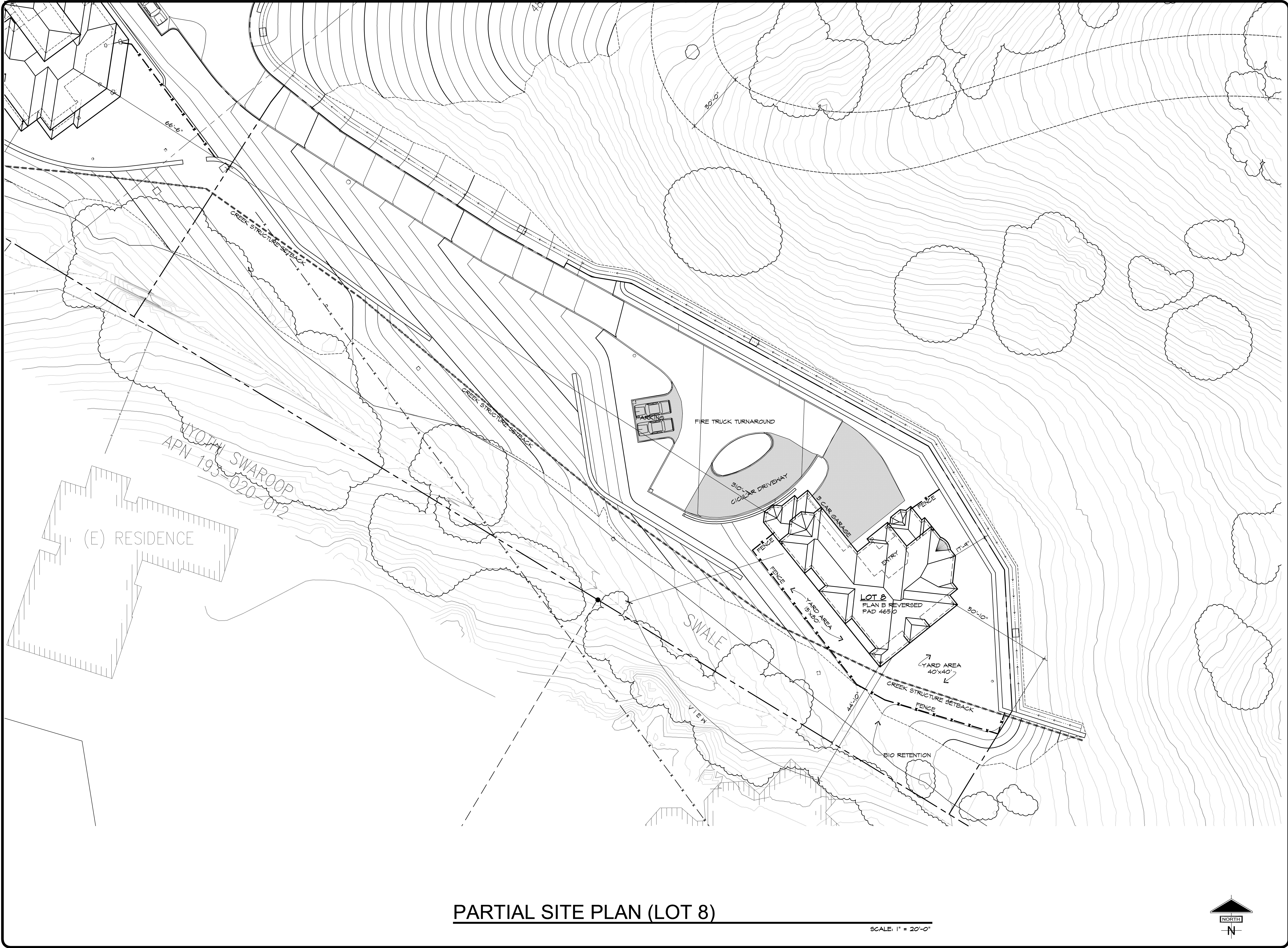
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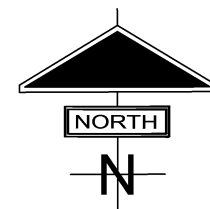
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PLOT DATE: Apr. 25, 2025 - 12:15pm AI Site Planning

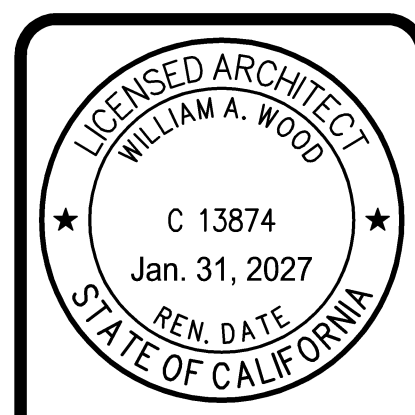


PARTIAL SITE PLAN (LOT 8)

SCALE: 1" = 20'-0"



REVISIONS	DATE



STONE VALLEY FARM

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ALAMO, CA 94507

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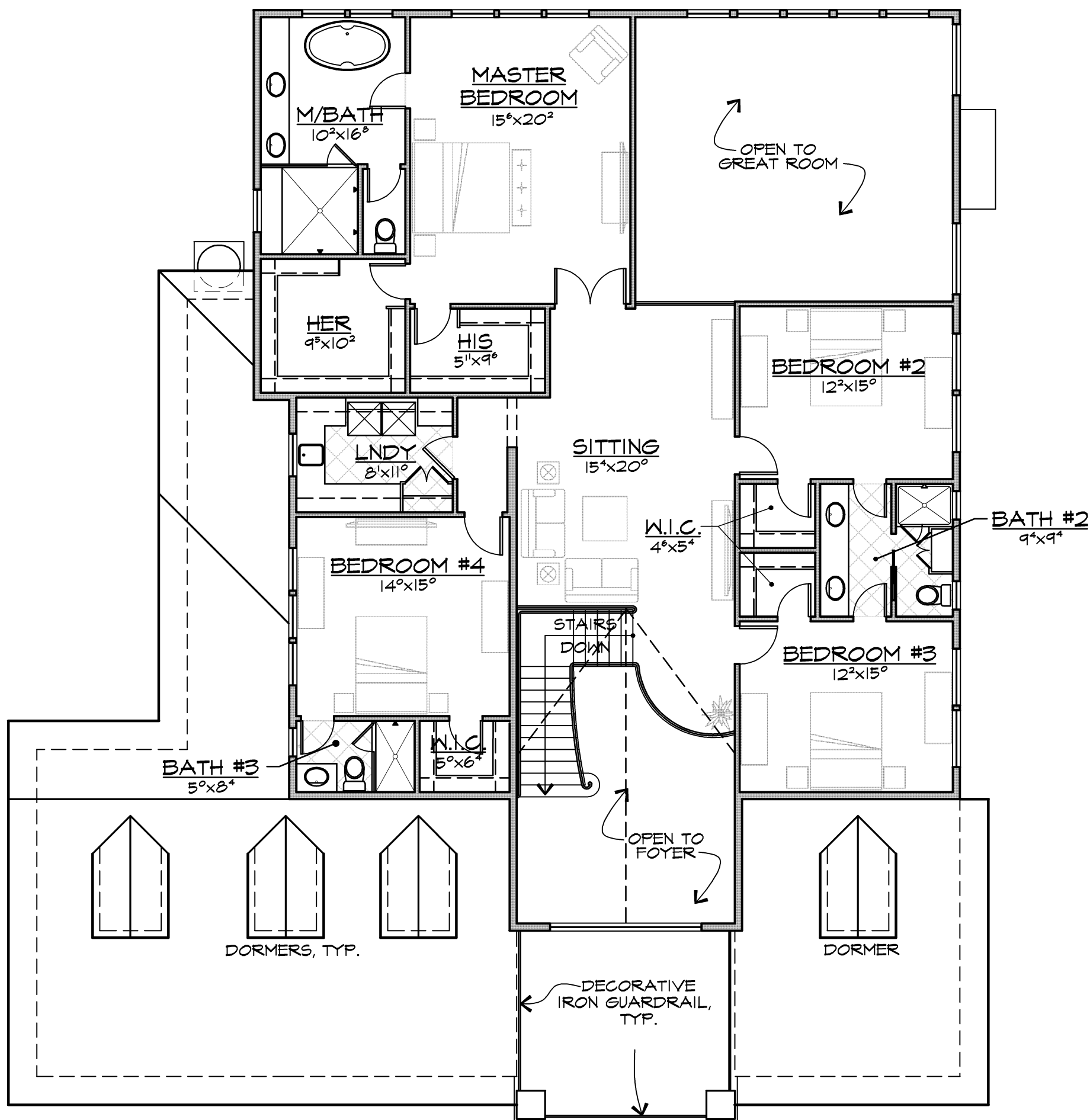
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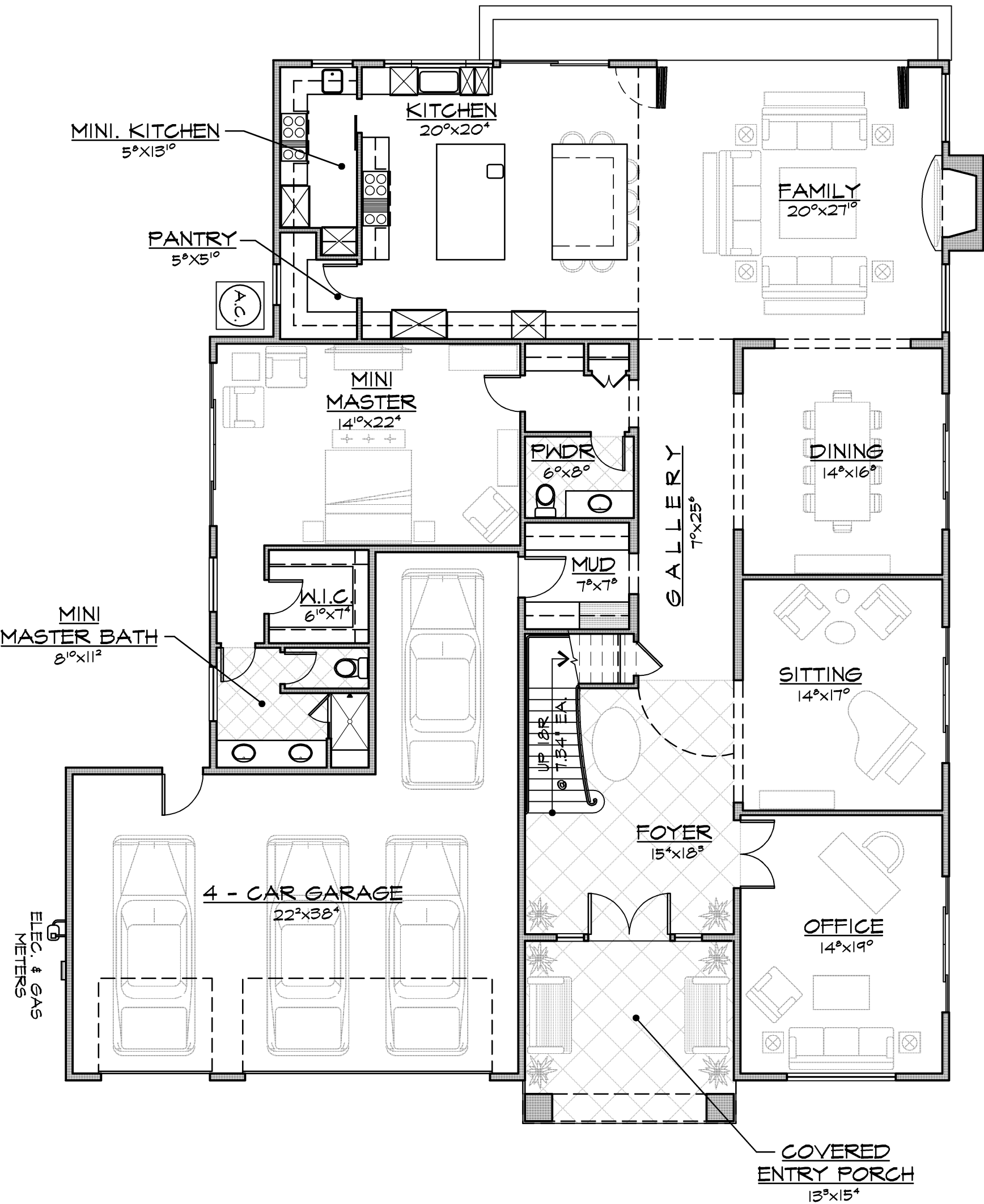
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JOB NO.	25.2098R
SHEET	A5
OF	SHEETS

PLOT DATE: Apr. 25, 2025 - 12:15pm AI Site Plan.dwg



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"



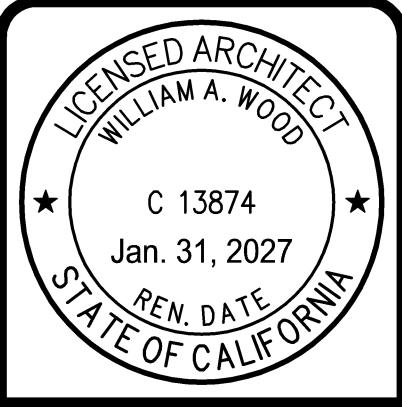
FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

PLAN A (LOTS 3 & 5)

FLOOR AREA:	
FIRST FLOOR	3,136 S.F.
SECOND FLOOR	2,071 S.F.
TOTAL AREA	5,207 S.F.
3 - CAR GARAGE	989 S.F.
COVERED PORCH	203 S.F.
TOTAL GROSS AREA	6,399 S.F.

REVISIONS	DATE



STONE VALLEY FARM

455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD
ARCHITECTS

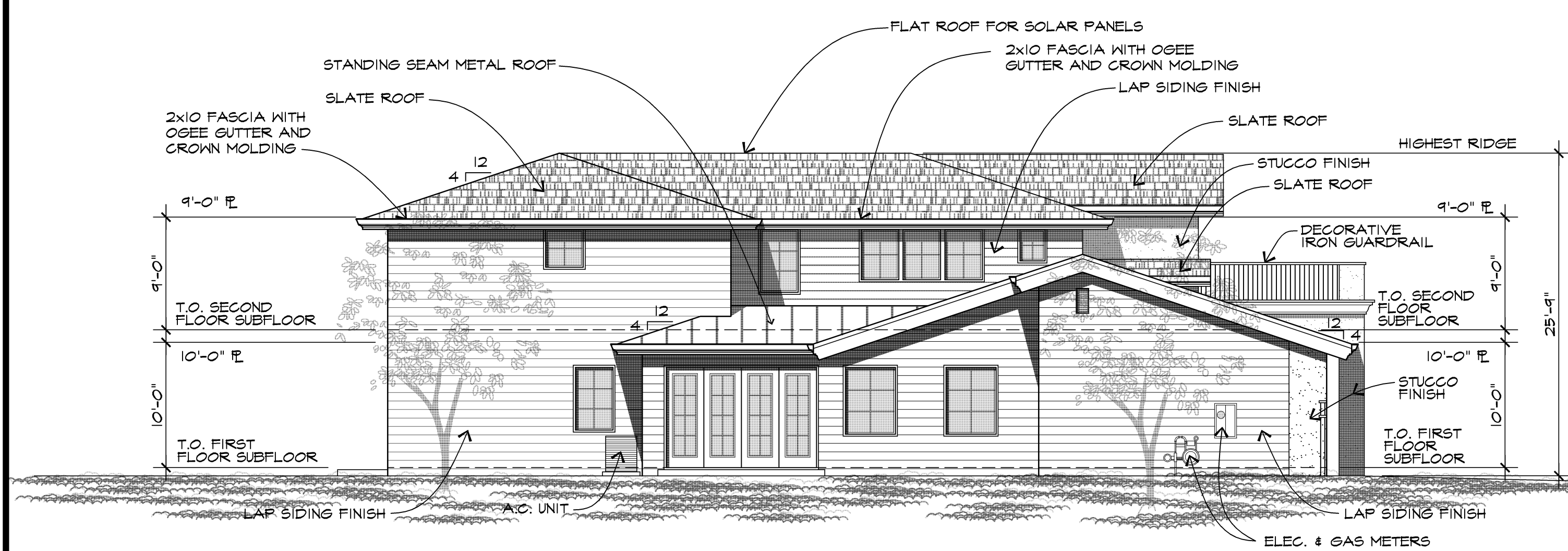
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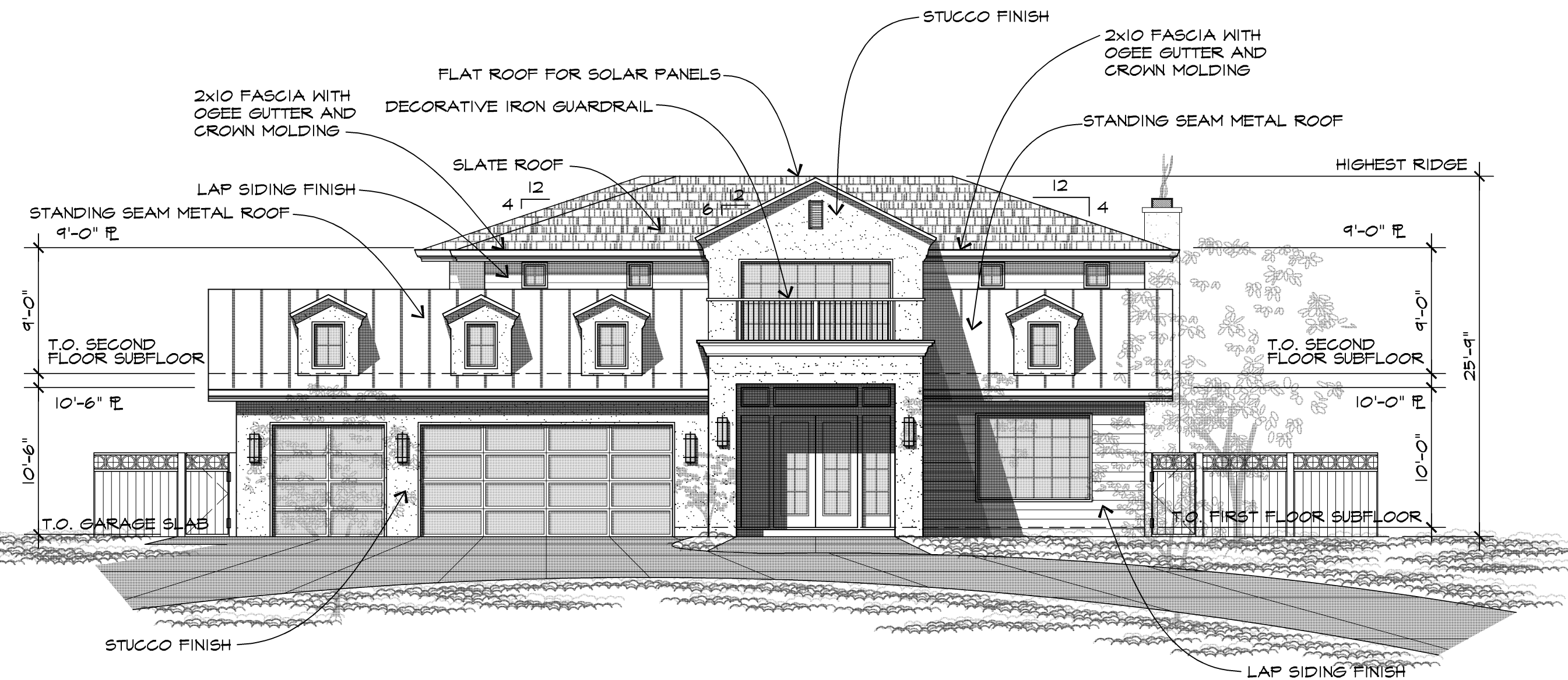
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DATE
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JOB NO. 25.2098R
SHEET A6
OF SHEETS

Plot Date: Apr 25, 2025 - 11:59pm A6 First-Second Floor Plans.dwg



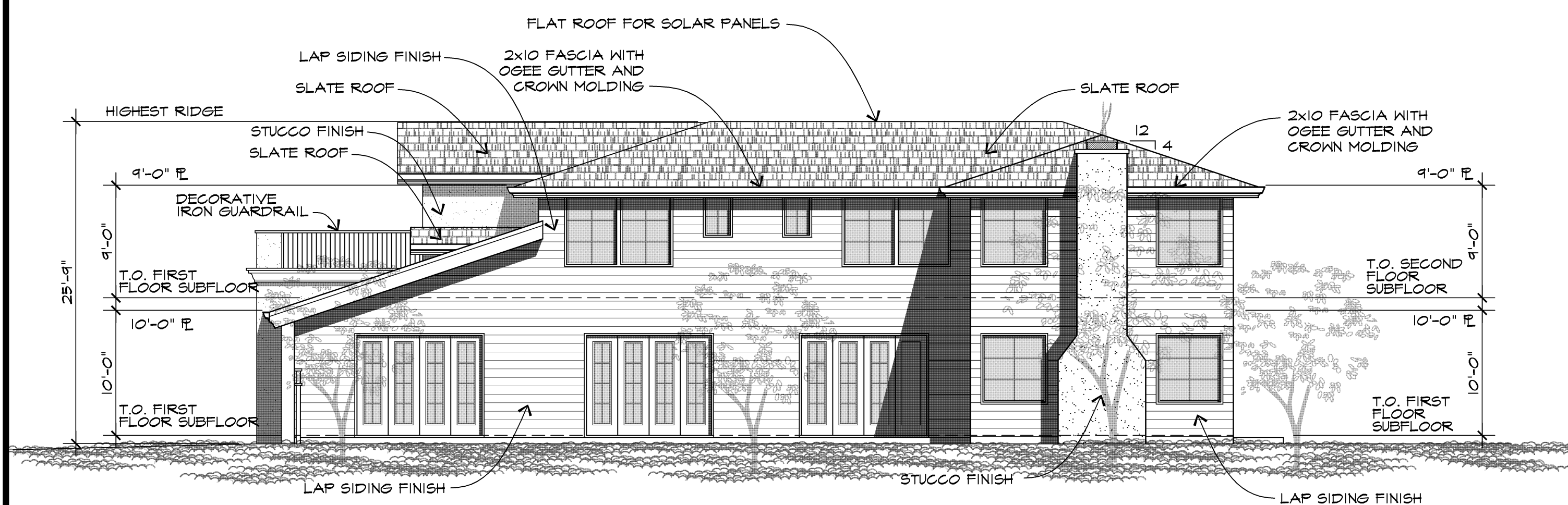
LEFT ELEVATION

SCALE: 1/8" = 1'-0"



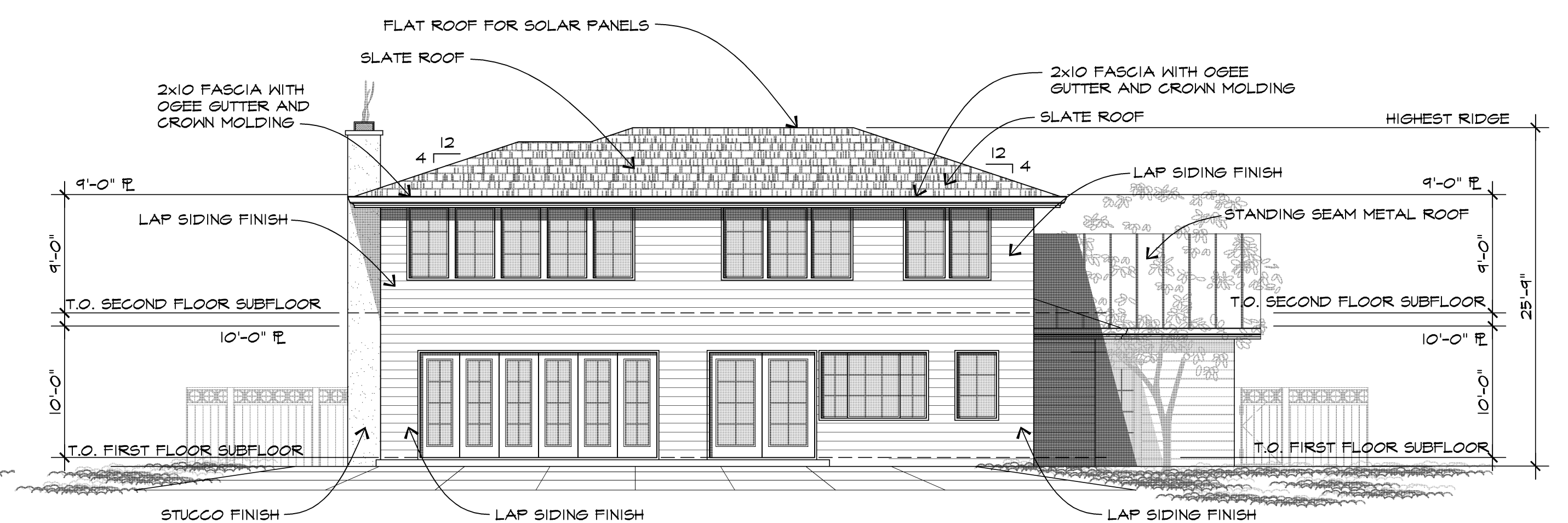
FRONT ELEVATION

SCALE: 1/8" = 1'-0"



RIGHT ELEVATION

SCALE: 1/8" = 1'-0"

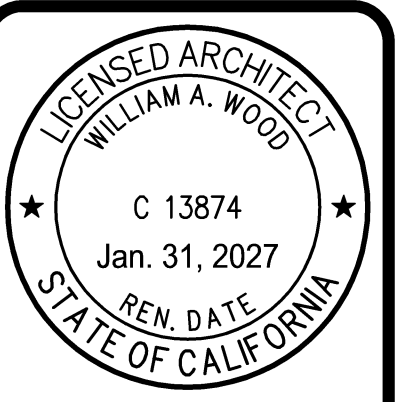


REAR ELEVATION

SCALE: 1/8" = 1'-0"

PLAN A

REVISIONS	DATE



STONE VALLEY FARM

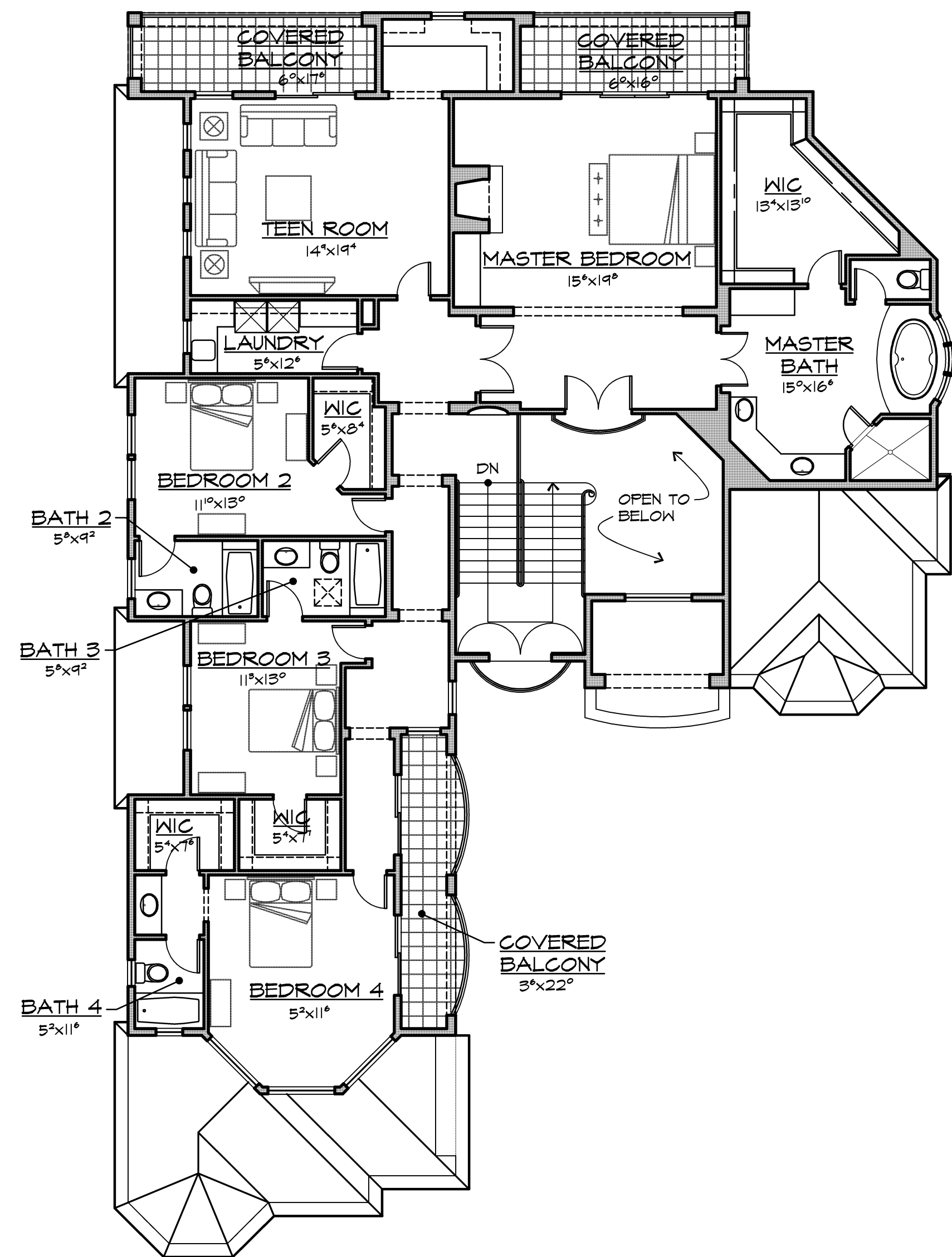
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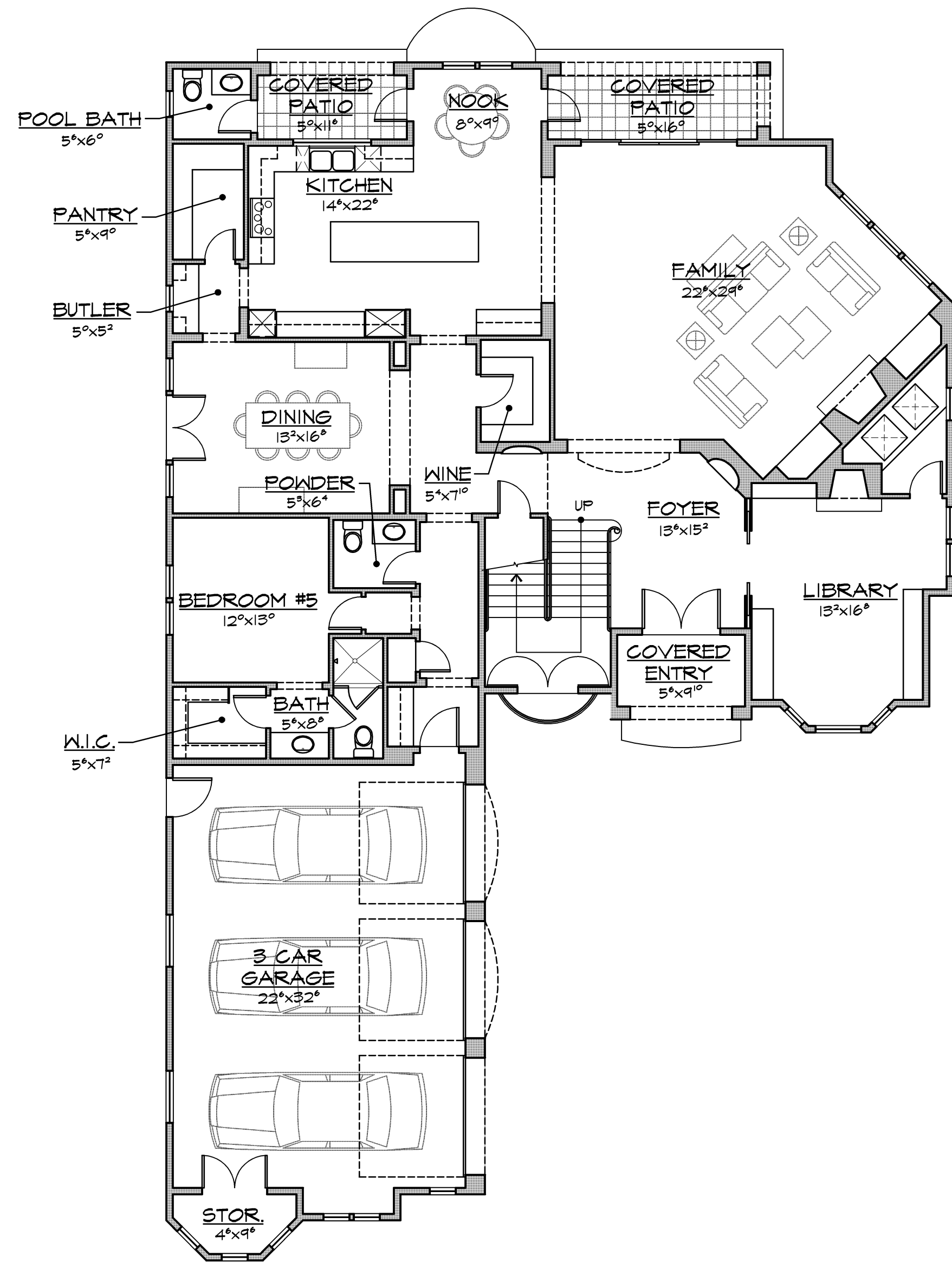
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JOB NO. 25.2098R
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OF SHEETS

PLOT DATE: Apr. 25, 2025 - 11:09pm AT Exterior Elevations.dwg



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"



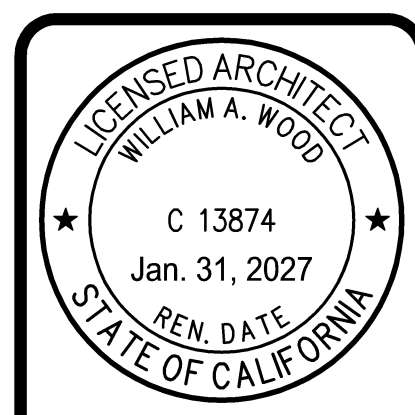
FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

PLAN B (LOTS 1, 4 & 8)

FLOOR AREA:		
FIRST FLOOR	2,708	S.F.
SECOND FLOOR	2,526	S.F.
TOTAL AREA	5,234	S.F.
3 - CAR GARAGE	872	S.F.
COVERED PORCH	546	S.F.
TOTAL GROSS AREA	6,652	S.F.

REVISIONS	DATE



STONE VALLEY FARM
455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD
ARCHITECTS

301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA 94526
(925) 820-8233

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DRAWN JJ
CHECKED WW
DATE
SCALE AS SHOWN
JOB NO. 25.2098R
SHEET A8
OF SHEETS

PLOT DATE: Apr 25, 2025 - 1:40pm A8 1ST-2ND FLOOR Plans.dwg



LEFT SIDE ELEVATION

SCALE: 1/8" = 1'-0"



FRONT ELEVATION

SCALE: 1/8" = 1'-0"



RIGHT SIDE ELEVATION

SCALE: 1/8" = 1'-0"

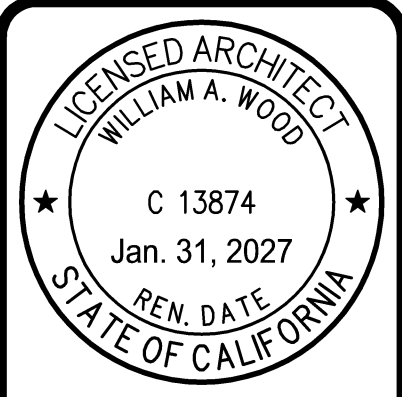


REAR ELEVATION

SCALE: 1/8" = 1'-0"

PLAN B

REVISIONS	DATE



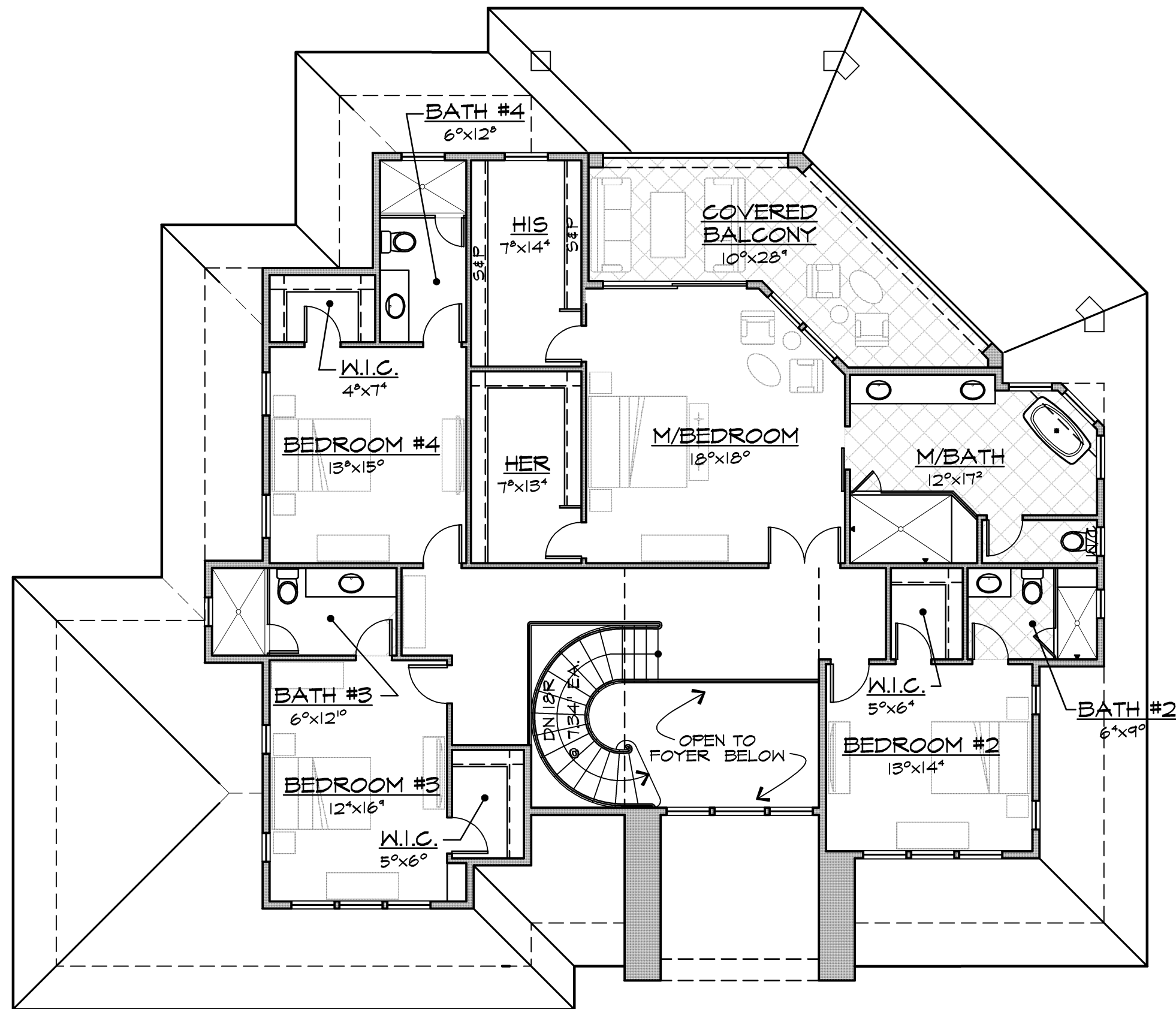
STONE VALLEY FARM
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ALAMO, CA 94507

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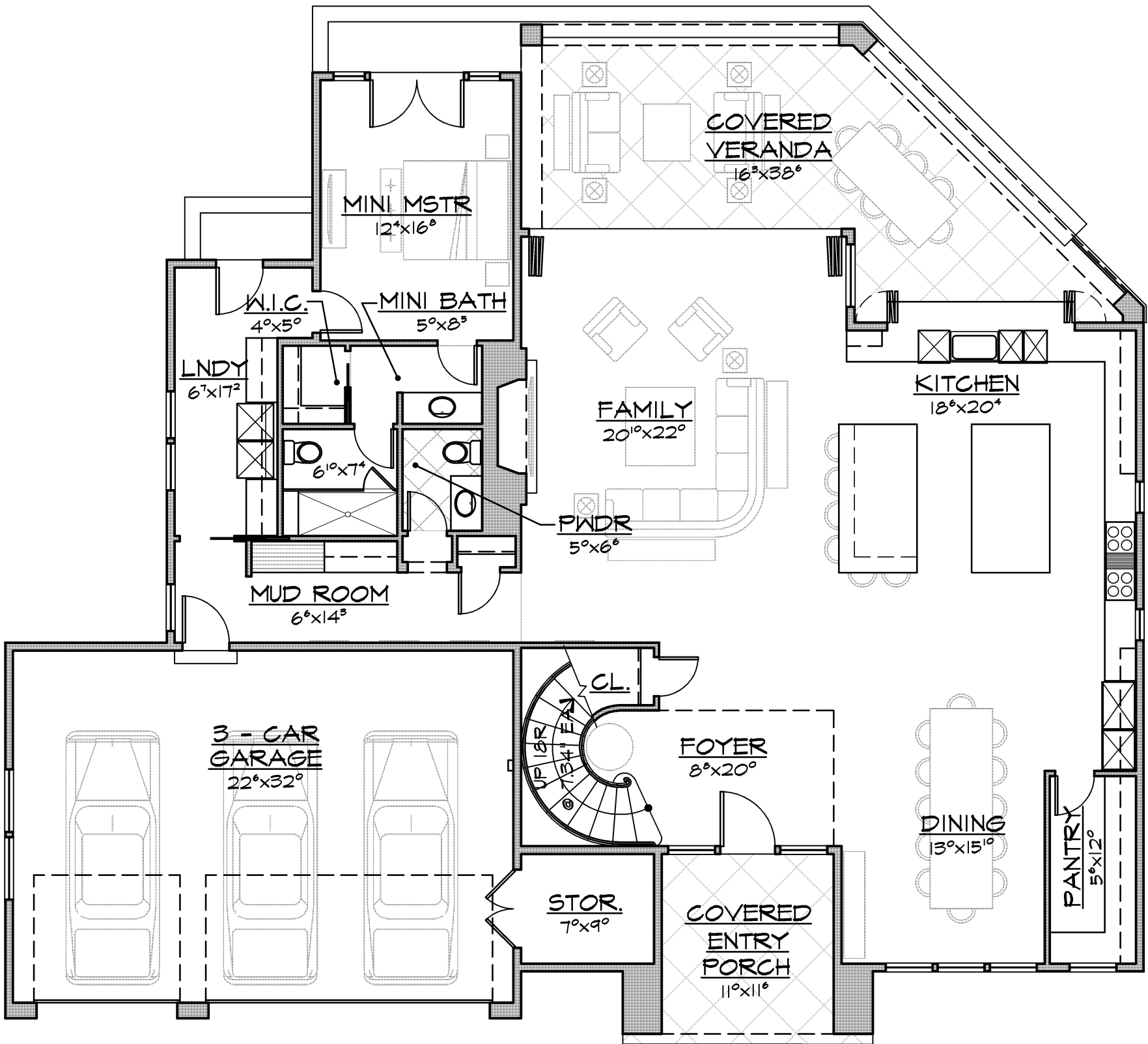
DRAWN JJ
CHECKED WW
DATE
SCALE AS SHOWN
JOB NO. 25.2098R
SHEET A9
OF SHEETS

PLOT DATE: Apr 25, 2025 - 4:12pm A4 EXT Elevations.DWG



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"



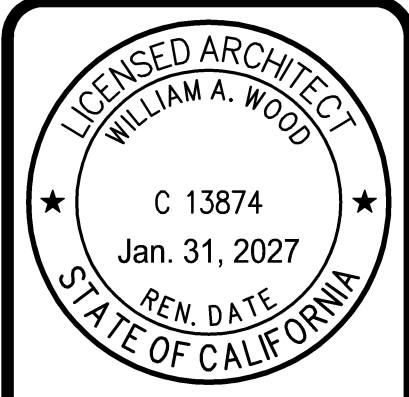
FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

PLAN C (LOTS 6 & 7)

FLOOR AREA:	
FIRST FLOOR	2,364 S.F.
SECOND FLOOR	2,092 S.F.
TOTAL AREA	4,456 S.F.
3 - CAR GARAGE	
	842 S.F.
COVERED PORCH	838 S.F.
TOTAL GROSS AREA	6,136 S.F.

REVISIONS	DATE



STONE VALLEY FARM

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ALAMO, CA 94507

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DATE
SCALE AS SHOWN
JOB NO. 25.2098R
SHEET
A10
OF SHEETS

PLOT DATE: Apr 25, 2025 - 1:43pm A10 First-Second Floor Plans.dwg



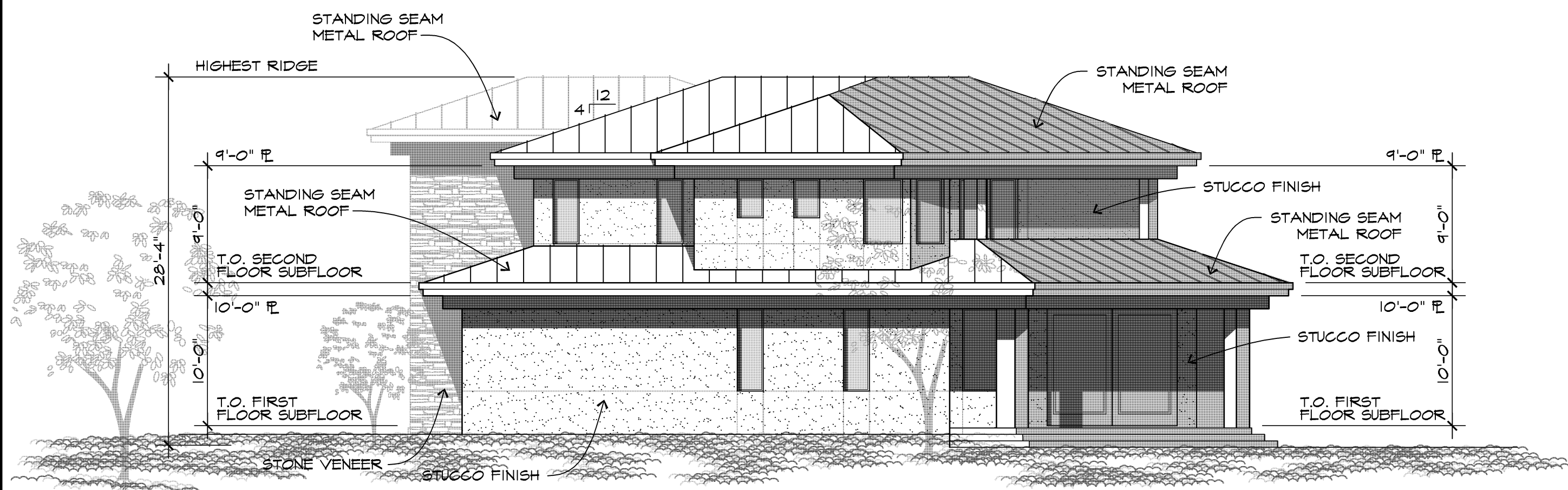
LEFT ELEVATION

SCALE: 3/16" = 1'-0"



FRONT ELEVATION

SCALE: 3/16" = 1'-0"



RIGHT ELEVATION

SCALE: 3/16" = 1'-0"

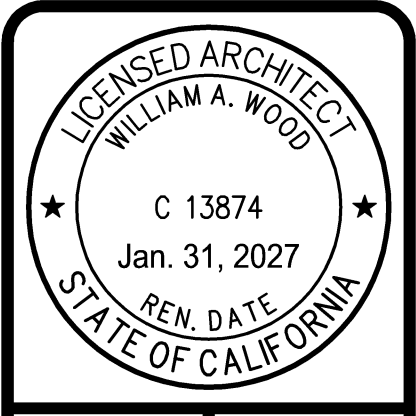


REAR ELEVATION

SCALE: 3/16" = 1'-0"

PLAN C

REVISIONS	DATE



STONE VALLEY FARM

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ALAMO, CA 94507

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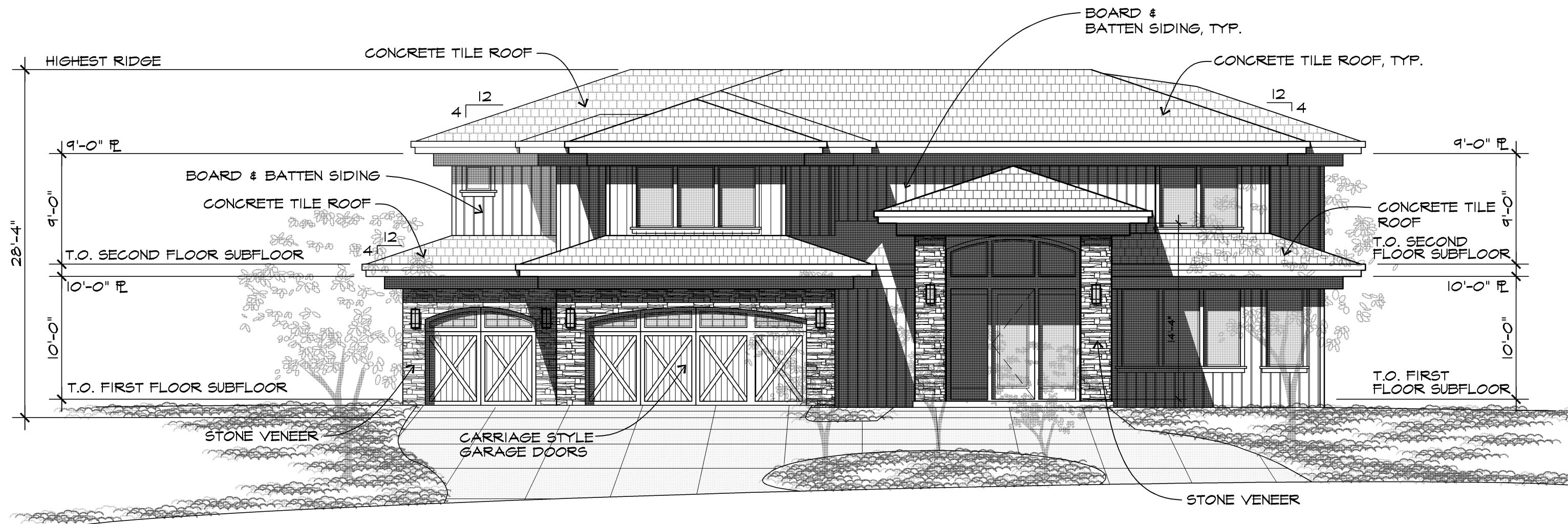
DRAWN JJ
CHECKED WW
DATE
SCALE AS SHOWN
JOB NO. 25.2098R
SHEET
A11
OF SHEETS

PLOT DATE: Apr. 25, 2025 - 1:56pm All Elevations.dwg



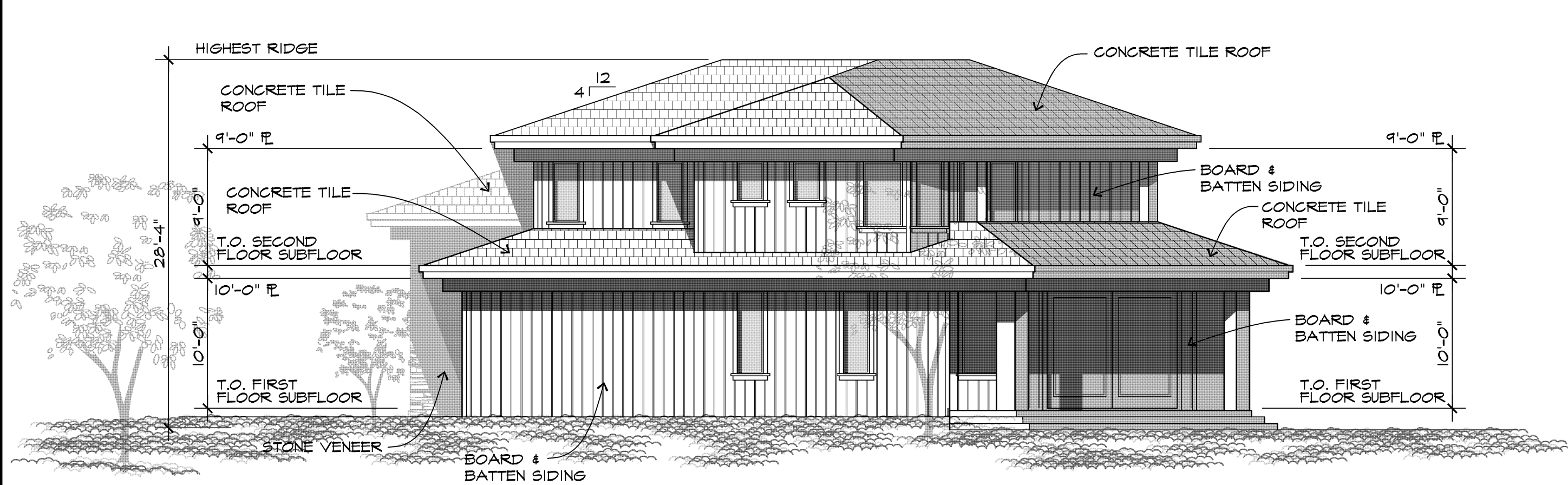
LEFT ELEVATION

SCALE: 3/16" = 1'-0"



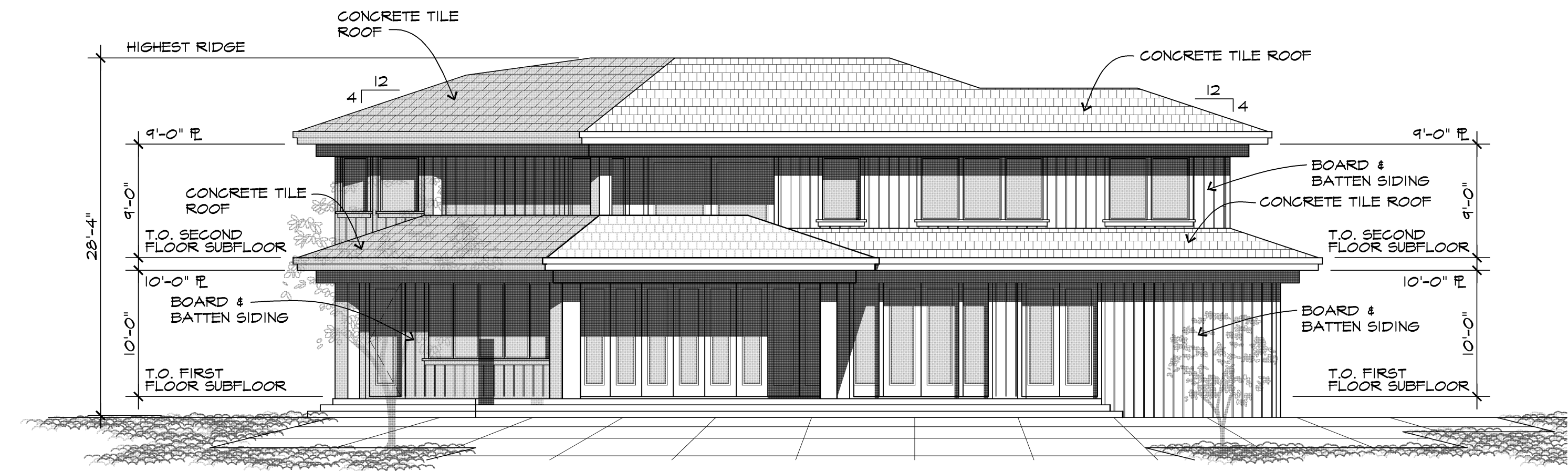
FRONT ELEVATION

SCALE: 3/16" = 1'-0"



RIGHT ELEVATION

SCALE: 3/16" = 1'-0"

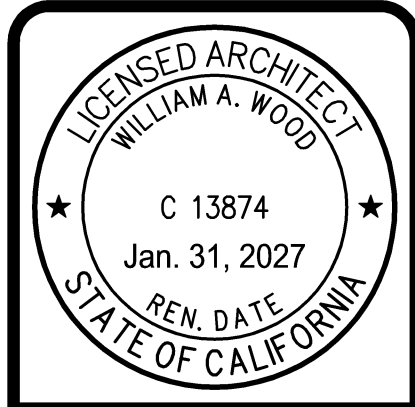


REAR ELEVATION

SCALE: 3/16" = 1'-0"

PLAN C (ALTERNATE)

REVISIONS	DATE



STONE VALLEY FARM

455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD
ARCHITECTS

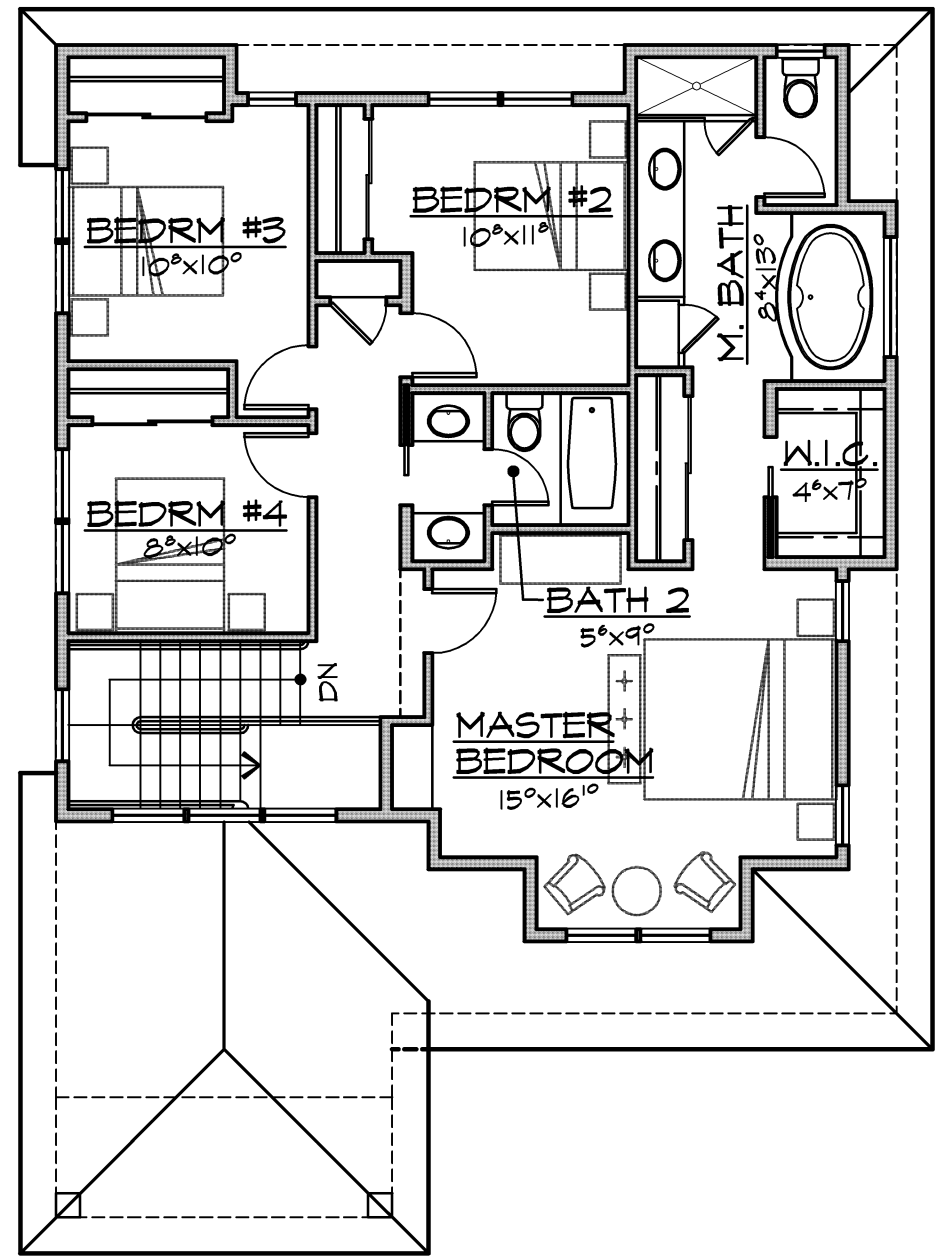
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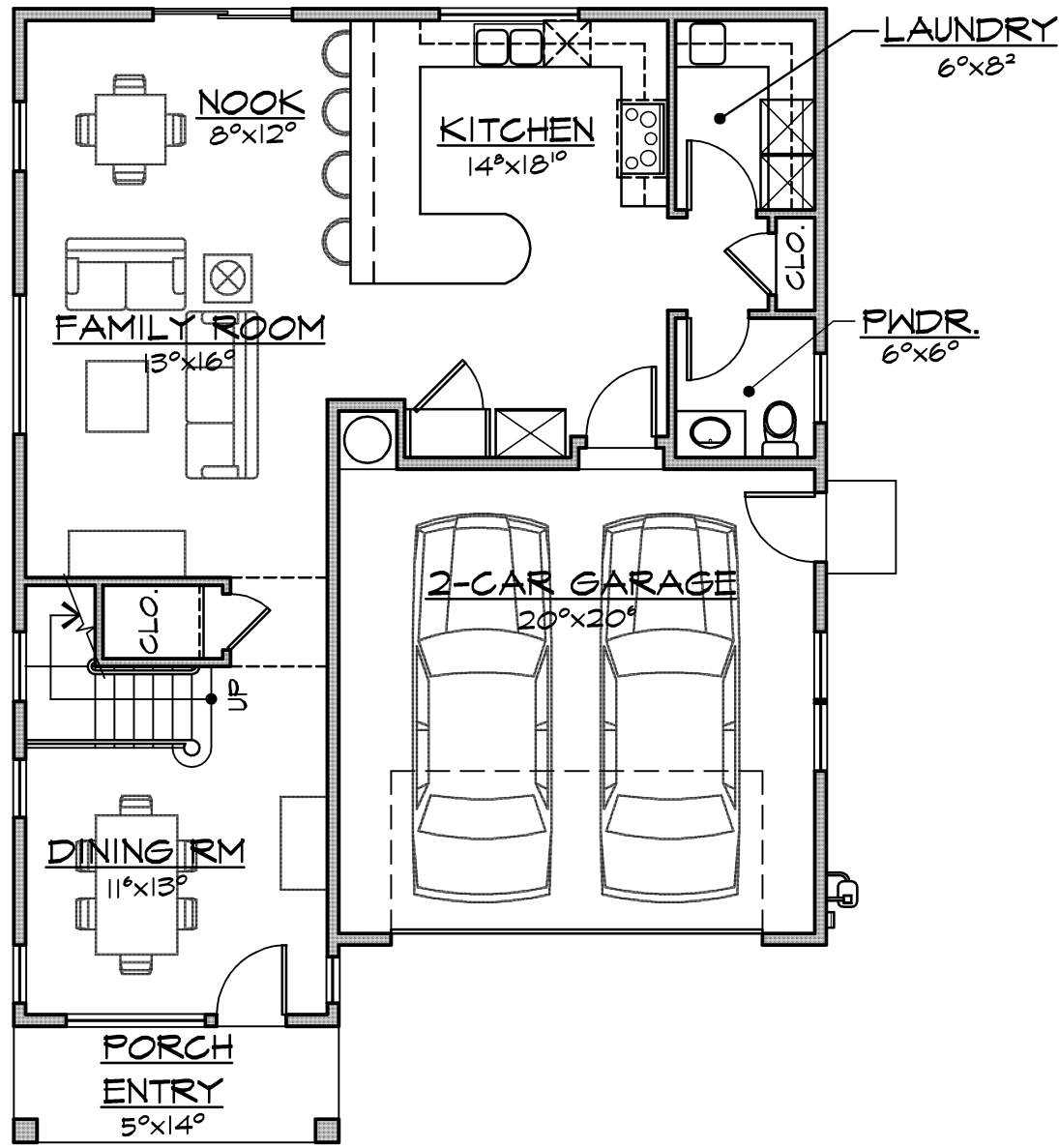
DRAWN JJ
CHECKED WW
DATE
SCALE AS SHOWN
JOB NO. 25.2098R
SHEET
A12
OF SHEETS

PLOT DATE: Apr. 25, 2025 - 2:19pm All Elevations.dwg



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"



FIRST FLOOR PLAN

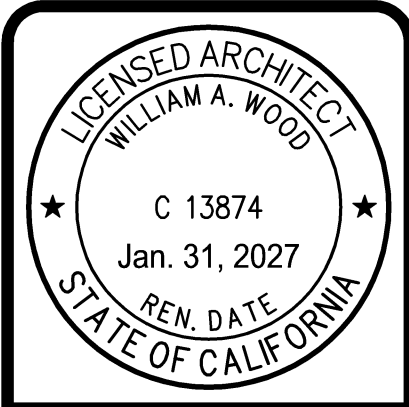
SCALE: 1/8" = 1'-0"

PLAN D (LOT 2)

FLOOR AREA:

FIRST FLOOR	1,024	S.F.
SECOND FLOOR	1,039	S.F.
TOTAL AREA	2,063	S.F.
2 - CAR GARAGE	437	S.F.
COVERED PORCH	70	S.F.
TOTAL GROSS AREA	2,570	S.F.

REVISIONS	DATE



STONE VALLEY FARM

455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD ARCHITECTS

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DATE

SCALE
AS SHOWN

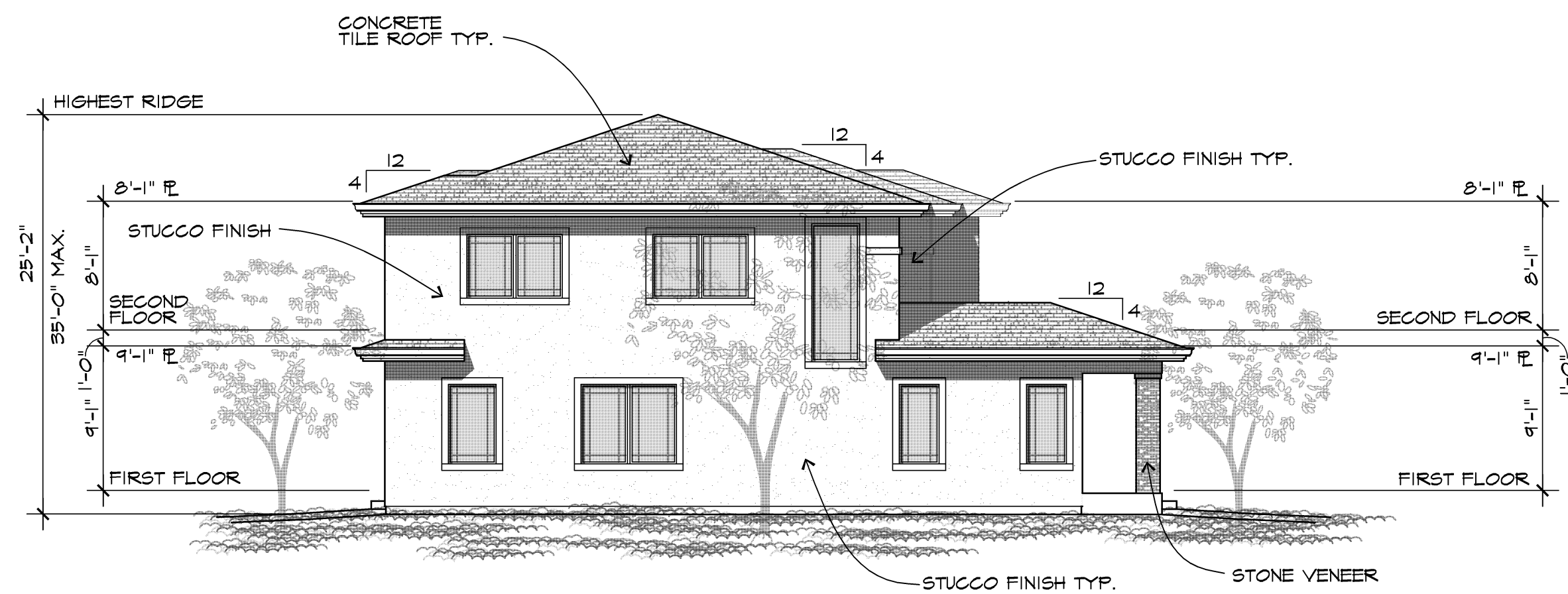
JOB NO.
25.2098R

SHEET

A13

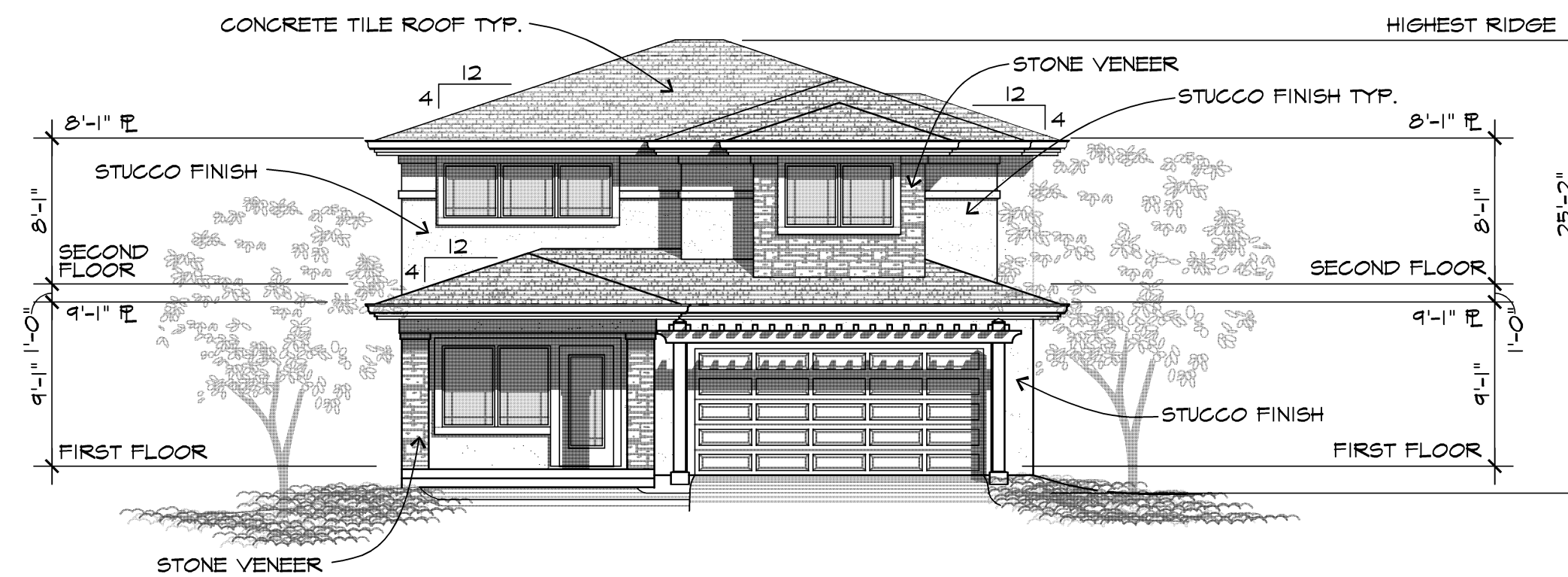
OF SHEETS

PLOT DATE: Apr 25, 2025 - 1:47pm A13 plan D.dwg



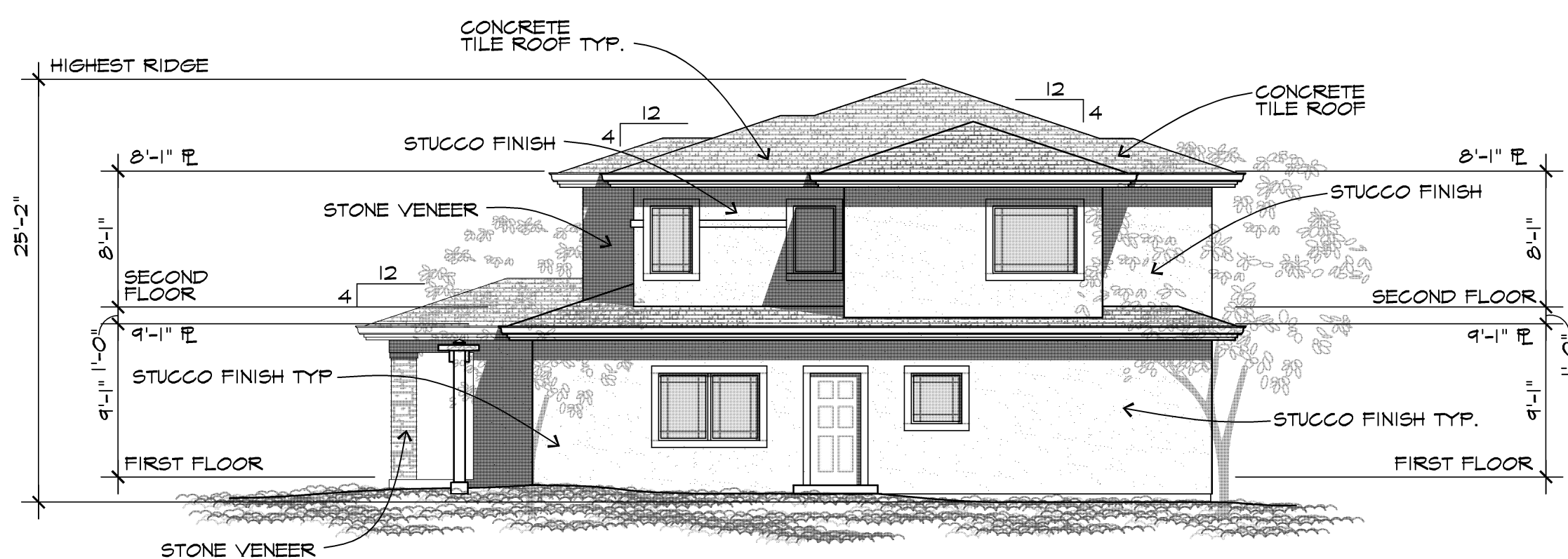
LEFT ELEVATION

SCALE: 1/8" = 1'-0"



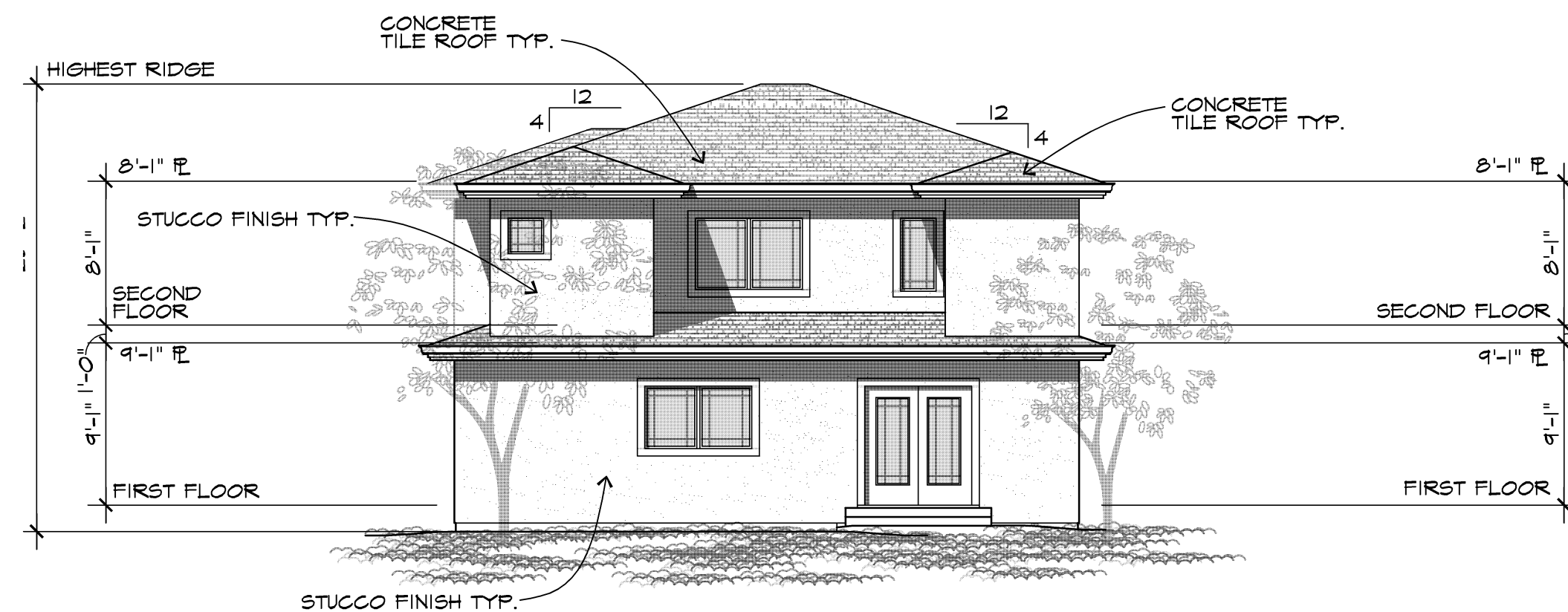
FRONT ELEVATION

SCALE: 1/8" = 1'-0"



RIGHT ELEVATION

SCALE: 1/8" = 1'-0"

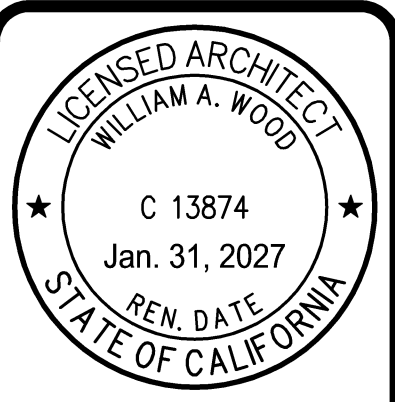


REAR ELEVATION

SCALE: 1/8" = 1'-0"

PLAN D

REVISIONS	DATE



STONE VALLEY FARM

455 LIVORNA ROAD
ALAMO, CA 94507

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DATE
SCALE AS SHOWN
JOB NO. 25.2098R
SHEET A14
OF SHEETS

PLOT DATE: Apr. 25, 2025 - 1:56pm A15 elevations plan D.dwg

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 1

WILLIAM WOOD
ARCHITECTS

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DANVILLE, CALIFORNIA
(925) 820-8233 FAX (925) 820-8793

BODY STUCCO
Dunn Edwards
Pigeon Gray DE6214

TRIM
Dunn Edwards
Fine Grain DE6213

ROOF
Boral
Carmel Blend - Old World

WINDOWS
Black

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 2

WILLIAM WOOD
ARCHITECTS

301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA
(925) 820-8233 FAX (925) 820-8793

BODY STUCCO
Dunn Edwards
Wooden Peg DE6215

TRIM
Dunn Edwards
Barrel Stove DE6216

WINDOWS
Black

ROOF
Eagle - Bel-Air
Dark Charcoal

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 3

WILLIAM WOOD
ARCHITECTS

301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA
(925) 820-8233 FAX (925) 820-8793

BODY STUCCO
Dunn Edwards
Barnwood Gray DET620

TRIM
Dunn Edwards
Reclaimed Wood DET625

ROOF
Eagle
Dark Charcoal Tapered Slate

WINDOWS
Black

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 4

WILLIAM WOOD
ARCHITECTS

301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA
(925) 820-8233 FAX (925) 820-8793

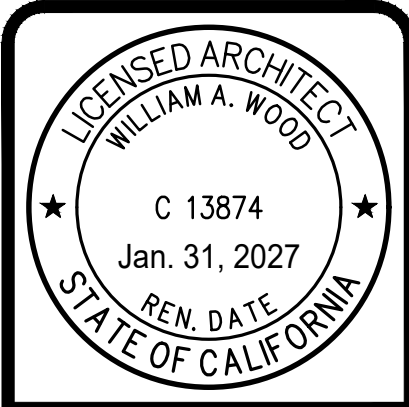
BODY STUCCO
Dunn Edwards
Stucco Tan DE6205

TRIM
Dunn Edwards
Bison Beige DEC750

ROOF
Boral
Carmel Blend - Old World

WINDOWS
Black

	REVISIONS	DATE
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ANDERSON SUBDIVISION

455 LIVORNA ROAD
ALAMO, CA 94507

WILLIAM WOOD
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25.2098R

SHEET

A15

OF SHEETS

PLOT DATE: Apr 17, 2025 - 4:50pm A15-A16 Color Boards.dwg

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 5

WILLIAM WOOD
ARCHITECTS
301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA
(925) 820-8233 FAX (925) 820-8793

BODY STUCCO
Dunn Edwards
Barnwood Gray DET620

TRIM
Dunn Edwards
Reclaimed Wood DET625

ROOF
Eagle
Dark Charcoal Tapered Slate

WINDOWS
Black

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 6

WILLIAM WOOD
ARCHITECTS
301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA
(925) 820-8233 FAX (925) 820-8793

BODY STUCCO
Dunn Edwards
Flintstone DE6221

TRIM
Dunn Edwards
Calico Rock DE6229

STONE
Boral - Bucks County Country LedgeStone

METAL ROOF
Medium Bronze

WINDOWS
Black

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 7

WILLIAM WOOD
ARCHITECTS
301 HARTZ AVENUE, SUITE 203
DANVILLE, CALIFORNIA
(925) 820-8233 FAX (925) 820-8793

BODY STUCCO
Dunn Edwards
Stucco Tan DE6205

TRIM
Dunn Edwards
Bison Beige DEC750

ROOF
Boral
Carmel Blend - Old World

WINDOWS
Black

ANDERSON SUBDIVISION
455 LIVORNA ROAD
ALAMO, CA 94507
LOT 8

WILLIAM WOOD
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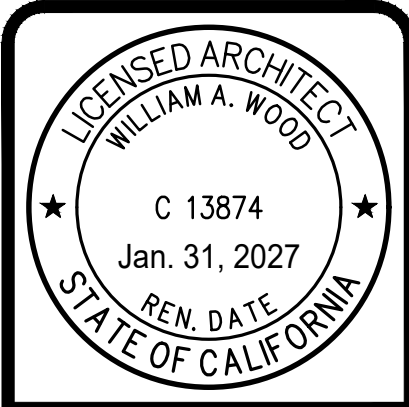
BODY STUCCO
Dunn Edwards
Pigeon Gray DE6214

TRIM
Dunn Edwards
Fine Grain DE6213

ROOF
Boral
Carmel Blend - Old World

WINDOWS
Black

	REVISIONS	DATE
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ANDERSON SUBDIVISION

455 LIVORNA ROAD
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DATE

SCALE
AS SHOWN

JOB NO.
25.2098R

SHEET

A16

OF SHEETS

Plot Date: Apr 17, 2025 - 4:04pm A16-A16 Color Boards.dwg

Applicant Art Anderson
Project Name Stone Valley Farm
Subdivision # _____
County File # CDPC24-00005

Property Owner Art Anderson
Site Address 455 Livorna Rd, Alamo, CA 94507
APN 193-010-014 and 193-010-039
Date Submitted 4/29/25

Contra Costa County Department of Conservation and Development Density Bonus Proposal

DENSITY BONUS SUBMITTAL REQUIREMENTS

Requests for Density Bonuses are reviewed and processed for approval or denial by the Community Development and the Housing and Community Improvement Divisions. Density Bonus requests are processed pursuant to Section 65915 et seq. of the California Government Code and Title 8, Division 822, Chapter 822-2 of the Contra Costa County Ordinance Code. Density Bonus proposals are intended to provide incentives and/or concessions for housing developments for the production of housing for very low-income, lower-income, moderate-income, or senior households; to facilitate the development of affordable housing; to implement the goals, objectives, and policies of the County General Plan's Housing Element.

The Density Bonus request will be reviewed and processed concurrently with the complete submittal of a development application, which may include but is not limited to applications, for subdivisions, planned unit developments, development plans, land use permits, rezones, and/or general plan amendments.

1. **DENSITY BONUS PROPOSAL.** The proposal must include:
 - a. A full description of the proposed project.
 - b. The type of housing development proposed as required by the State's Density Bonus law (rental, for-sale, low-income, senior housing, foster youth, common interest development, student housing, etc.).
 - c. Maximum base unit calculation for the site.
 - d. The percentage of density bonus requested.
 - e. The total number of units and the affordability level (based on percentage of area median income) of all units in the project.
 - f. The number of incentives/concessions for the project, including the referenced Government Code Section that supports the number requested for the project.
 - g. The requested incentive/concession.
 - h. A list of requested waivers or reductions of development standards.
 - i. The number of existing residential units on site. Are the existing units rental units?
 - j. Are there any deed restrictions on the parcel that restricts the ownership or rental of the property/unit to persons below the area median income?
 - k. The number of buildings proposed in the project.
 - l. The unit types, numbers, and distribution (i.e. studio, 1 bedroom, 3 bedroom, etc.).
 - m. Whether the project will be phased and the approximate timeline for development.
 - n. Location of the affordable units and what phase they will be developed.
2. **VICINITY/LOCATION MAP.**
3. **SITE PLAN.** Site plan should be legibly drawn to scale, and include the following:
 - a. Square footage and acreage of parcel(s)
 - b. Property lines and dimensions
 - c. Street right-of-way
 - d. Existing easements
 - e. Existing/proposed on-site buildings and any buildings within 100 feet of property
 - f. Driveway and parking layout

Applicant Art Anderson
Project Name Stone Valley Farm
Subdivision #
County File # CDPC24-00005

Property Owner Art Anderson
Site Address 455 Livorna Rd, Alamo, CA 94507
APN 193-010-014 and 193-010-039
Date Submitted 4/29/25

- g. Existing and proposed trees and landscaping
 - h. Location of the proposed affordable units
 - i. Zoning
 - j. General Plan
 - k. Gross acreage
 - l. Net acreage
4. FINANCIAL ANALYSIS REPORT. The financial analysis report for the project should indicate that the proposed Density Bonus and concessions and/or incentives are necessary to provide the proposed affordable units. (Optional)
5. ADDITIONAL INFORMATION.
- a. Any pertinent information that is relevant for staff's review and processing of the request.
 - b. Is the proposed development located on property that includes or included affordable units that have been subject to a recorded covenant, ordinance, or law restricting rents or sales prices?
 - c. Is the proposed development located on property where dwelling units have been vacated or demolished in the five-year period preceding the submittal of the application proposal for development?
 - d. Are any existing housing units on the site proposed to be demolished? If so, are the units currently occupied, when were they last occupied, and what is the current/last known rent and bedroom size?"
6. ATTACH COMPLETED INCLUSIONARY HOUSING ORDINANCE HOUSING PLAN. This Housing Plan is required for projects of five or more residential units to demonstrate compliance with the County's Inclusionary Housing Ordinance. See Chapter 822-4 of the County Ordinance Code for the standards and requirements for applicability and compliance.

Applicant & Property Owner Verification:

I/We verify that all the information stated and submitted is complete and accurate to the best of my/our knowledge, and should it be found that any of the information is incorrect, incomplete, or inconsistent with the requirements of the ordinance that it may result in increased processing time and/or costs.

Applicant Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Owner Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Applicant Art Anderson
Project Name Stone Valley Farm
Subdivision # _____
County File # CDPC24-00005

Property Owner Art Anderson
Site Address 455 Livorna Rd, Alamo, CA 94507
APN 193-010-014 and 193-010-039
Date Submitted 4/29/25

Density Bonus Agreement Requirements

A density bonus agreement is typically combined with an inclusionary housing agreement (Agreement) for compliance with both the density bonus ordinance/density bonus state law and inclusionary housing ordinance deed restriction requirements.

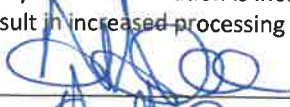
Prior to the issuance of a demolition permit, grading permit, building permit, or recordation of a subdivision map for the development, whichever occurs first, the applicant/owner must execute an Agreement, and it shall be recorded. The preparation and approval of an Agreement will be a minimum three-month process or may be longer due to the complexities of the project and scheduling before the Board of Supervisors for approval of the Agreement prior to the Department of Conservation and Development's signature on behalf of the County and subsequent recordation. The Agreement is not considered to be executed until all parties have signed and the document is recorded.

To initiate the preparation of an Agreement on the normal timeline, the applicant must file a COA Compliance Review Application after the final entitlement approval (discuss earlier options with Housing staff early in the process), accompanied by the following information:

- Preliminary Title Report
- Written Narrative to include:
 - List all owners of the property.
 - If the owners are entities, please provide the names and titles of the two managers of the LLC who have the authority to sign the agreement on behalf of the entity. If the owner is an LLC, or multiple LLCs that were not consistent with owners listed on the entitlement application, proof of ownership and a copy of the Articles of Incorporation for each entity are required.
 - Developer's mailing address. This must be a local contact and address for notices required by the IHA.
 - Identify the lender who has been or will provide financing for the development and the recorded deed of trust that has been recorded, including the referenced document number of the recorded deed of trust.
- Exhibit A Legal Description
- Density Bonus Plan Maps that are legible, in black and white, and scaled to 8 ½" x 11" sheets that comply with document recording requirements
- Detailed timeline for the project including constructing the units, including phasing of the development, marketing the units, reviewing applications for qualified households, and sale of density bonus for-sale units or occupancy of density bonus rental units.
- Any other information that may be required for staff to prepare the Agreement.

Applicant & Property Owner Verification:

I/We verify that all the information stated and submitted is complete and accurate to the best of my/our knowledge, and should it be found that any of the information is incorrect, incomplete, or inconsistent with the requirements of the ordinance that it may result in increased processing time and/or costs.

Applicant Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Owner Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Applicant Art Anderson
Project Name Stone Valley Farm
Subdivision # _____
County File # CDPC24-00005

Property Owner Art Anderson
Site Address 455 Livorna Rd, Alamo, CA 94507
APN 193-010-014 and 193-010-039
Date Submitted _____

Density Bonus Units Construction and Occupancy

For all projects where density bonus housing will be built for sale or rental, the applicant must submit documentation and other information to DCD for review and approval along with the filing of a condition of approval compliance review application and fees at least 90 days prior to construction completion and the request for a final building inspection and occupancy of the building. The following documents and information required for review and approval include, but are not limited to the following:

- Marketing Plan
- Marketing Materials, including translated Marketing Materials
- Proof of Publication of the advertising of the Density Bonus Units to all publications listed in the Marketing Plan
- Certification Statement listing all organizations and groups that were distributed marketing materials for the density bonus units
- Tenant Selection Plan or Homeowner Selection Plan, whichever is applicable to the project
- Tenant Rent Roll (pre-certified households for DCD review)

The expectation is for the developer to market the units in the project prior to construction completion, select qualified tenants or qualified homeowners for density bonus units prior to construction completion, and submit a list of the qualified households to DCD for review prior to final inspection/final occupancy.

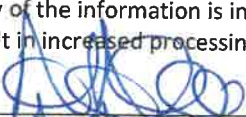
A copy of the prequalified households for for-sale units will be submitted to DCD for review and approval and the file record. The prequalification approval by DCD will include the applicant's submittal of income documentation and income certification forms for review. The prequalification approval will be valid for six months. The income must be recertified by DCD at least 30 days prior to sale.

For density bonus rental units, a copy of the tenant rent roll must be submitted for review and approval by DCD and kept in the file record. The tenant rent roll should include information including, but not limited to, the tenant's name, income, unit number, unit affordability level, household size, tenant rents, utility costs, and gross rents. The owner/property manager may be instructed to upload this information to a secure database as indicated by DCD for review and approval.

Annual monitoring reports will be required from the property manager and a sample of the density bonus units will be selected by DCD for periodic review of tenant income documentation, certification, and unit occupancy qualification. The annual monitoring reports must be submitted with a condition of approval compliance review application and fees.

Applicant & Property Owner Verification:

I/We verify that all the information stated and submitted is complete and accurate to the best of my/our knowledge, and should it be found that any of the information is incorrect, incomplete, or inconsistent with the requirements of the ordinance that it may result in increased processing time and/or costs.

Applicant Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25
Owner Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Applicant Art Anderson
Project Name Stone Valley Farm
Subdivision #
County File # CDPC24-00005

Property Owner Art Anderson
Site Address 455 Livorna Rd, Alamo, CA 94507
APN 193-010-014 and 193-010-039
Date Submitted 4/29/25

Density Bonus Housing Maximum Sales Price Calculation

The maximum affordable sales price will be calculated by DCD, no more than once annually for a project's density bonus units. A density bonus unit may also be an inclusionary housing unit. In this case, the most restrictive requirements would apply to the unit. The calculation of the maximum affordable sales price will be according to the ordinance, state law, conditions of approval, and agreement.

The following is a list of non-mortgage costs that will be included in the calculation of the maximum sales price for the density bonus units. The developer will provide DCD staff with the following information for staff review and use accompanied by a written request for DCD to calculate the maximum purchase price for the respective density bonus units for the project at the respective affordability levels and unit size.

Non-Mortgage Costs	Housing Costs in Dollars
HOA Dues (annual)	
Property Insurance (estimated annual for fire and casualty covering replacement value of property improvements)	
Utility Allowance (monthly)	
Solar Lease (annual cost)	
Property Taxes and Assessments	
CFD (annual)	
Mello Roos Tax (annual)	
Property maintenance and repairs (annual)	
Space rent, if the housing unit is on rented land	
Other Costs (annual, including third-party)	

Applicant & Property Owner Verification:

I/We verify that all the information stated and submitted is complete and accurate to the best of my/our knowledge, and should it be found that any of the information is incorrect, incomplete, or inconsistent with the requirements of the ordinance that it may result in increased processing time and/or costs.

Applicant Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Owner Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Applicant Art Anderson
Project Name Stone Valley Farm
Subdivision # _____
County File # CDPC24-00005

Property Owner Art Anderson
Site Address 455 Livorna Rd, Alamo, CA 94507
APN 193-010-014 and 193-010-039
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Housing Element Sites Inventory Findings

The Housing Element Sites Inventory's no net loss rule is a separate requirement of the State of California and is distinct from the State's Density Bonus Code or the County's Density Bonus Ordinance Requirements. Government Code Section 65863 requires the county to ensure that its housing element sites inventory can accommodate its share of the regional housing need throughout the planning period. The law prohibits the county from reducing, requiring, or permitting the reduction of the residential density to a lower residential density on sites listed in the inventory. It also prohibits the county from permitting or causing the inventory of sites identified in the housing element to be insufficient to meet its remaining unmet share of the regional housing need for lower and moderate-income households.

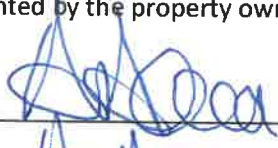
Housing developments that are located on a parcel(s) identified in the County's Housing Element sites inventory will require written findings for the proposal if the housing development includes fewer units by income category or fewer units by density from that which is identified in the sites inventory. Compliance with the no net loss rule is required prior to a recommendation for approval or entitlement decision. Compliance with the law may include the requirement for the applicant/developer to assist in identifying an alternative site to be rezoned and/or added to the sites inventory to account for any net loss in the county's share of the regional housing needs due to the proposed housing development.

To determine if your parcel(s) is listed in the County's Housing Element sites inventory, please contact the DCD Application and Permits Center staff and they can verify whether the property is listed in the County's Housing Element sites inventory.

* To assist the project planner in preparing the required findings for a parcel or parcels identified in the housing element sites inventory, you may attach a narrative and explanation of the project's compliance with the no net loss requirement. (optional)

Applicant & Property Owner Verification:

I/We certify that all statements made on this form or any accompanying attachment or exhibit are true and complete to the best of my knowledge. Should it be found that any of the information is incorrect, incomplete, or inconsistent with the requirements of the County Ordinance or State law that it may result in denial of the request and increased processing time and/or costs. I/We understand that any false statements may result in denial of the requested permit, revocation of any issued permit, or penalties. I/We further certify that permission has been granted by the property owner to conduct the proposed development applied for herein.

Applicant Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25

Owner Signature:  Name: ARTHUR L ANDERSON Date: 4/28/25



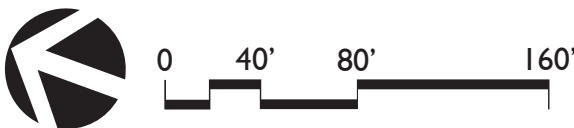
PLANT SCHEDULE

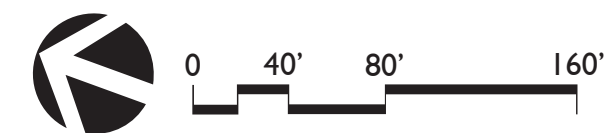
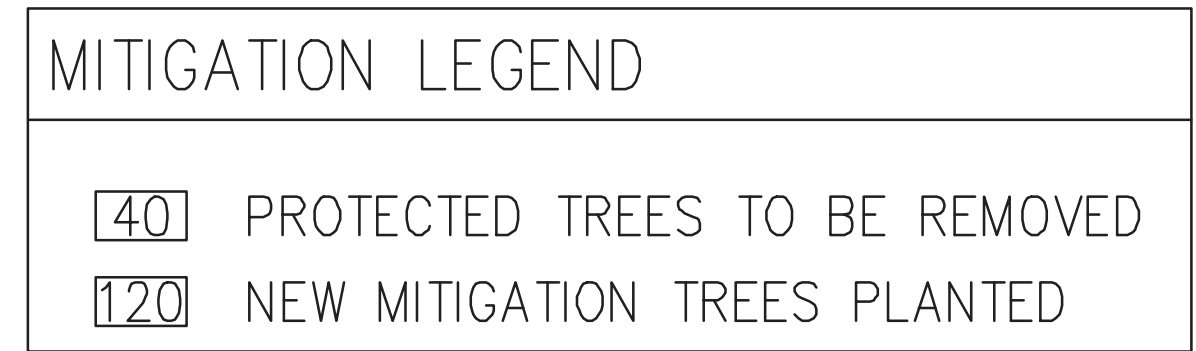
SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE
TREES					
	CER	CERCIS OCCIDENTALIS	WESTERN REDBUD	15 GAL STD.	L (WUCOLS IV)
	LAG	LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ'	NATCHEZ CRAPE MYRTLE	24"BOX STD.	M (WUCOLS IV)
	PIS	PISTACIA CHINENSIS 'KEITH DAVEY'	KEITH DAVEY CHINESE PISTACHE	24"BOX STD.	M (WUCOLS IV)
	PLA	PLATANUS X ACERIFOLIA 'COLUMBIA'	COLUMBIA LONDON PLANE TREE	24"BOX STD.	M (WUCOLS IV)
	QUA	QUERCUS AGRIFOLIA	COAST LIVE OAK	24"BOX STD.	VL (WUCOLS IV)
	QUL	QUERCUS LOBATA	VALLEY OAK	24"BOX STD.	L (WUCOLS IV)
	MITIGATION TREE				
	EXISTING TREE TO REMAIN				

MITIGATION LEGEND

- PROTECTED TREES TO BE REMOVED
- NEW MITIGATION TREES PLANTED

RECEIVED on 04/30/2025 **CDS25-09717**
By Contra Costa County
Department of Conservation and Development

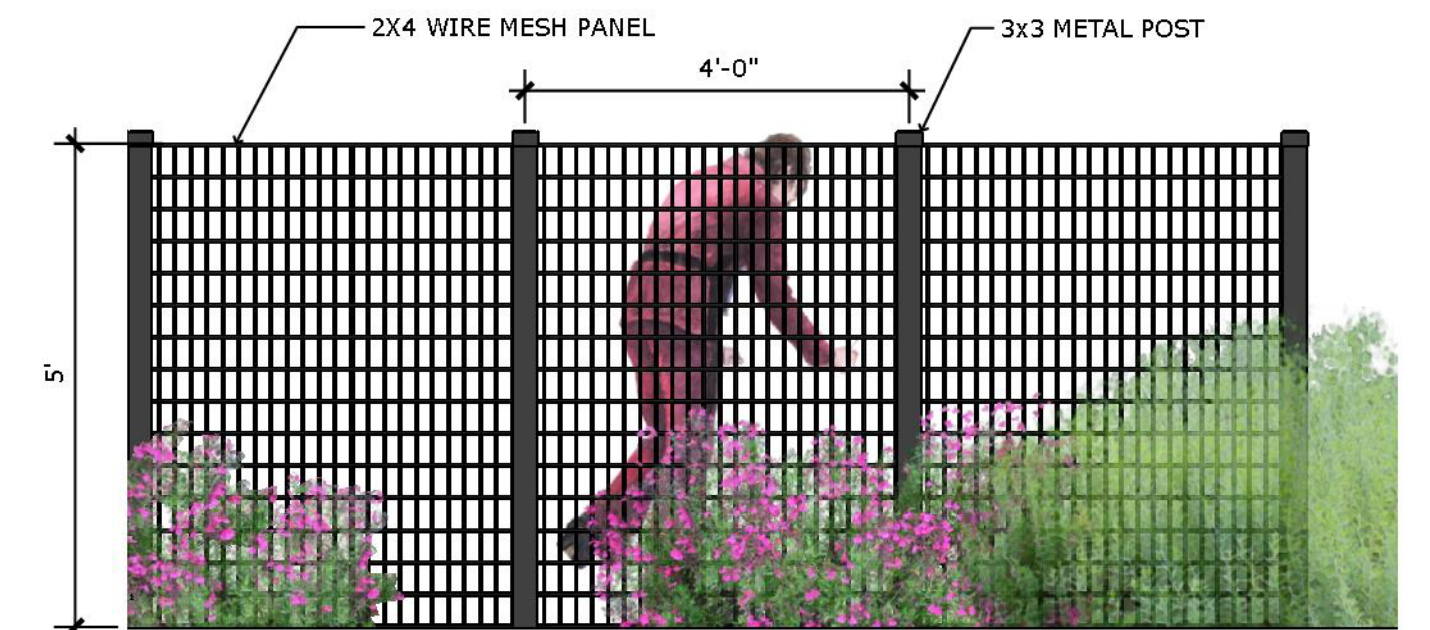




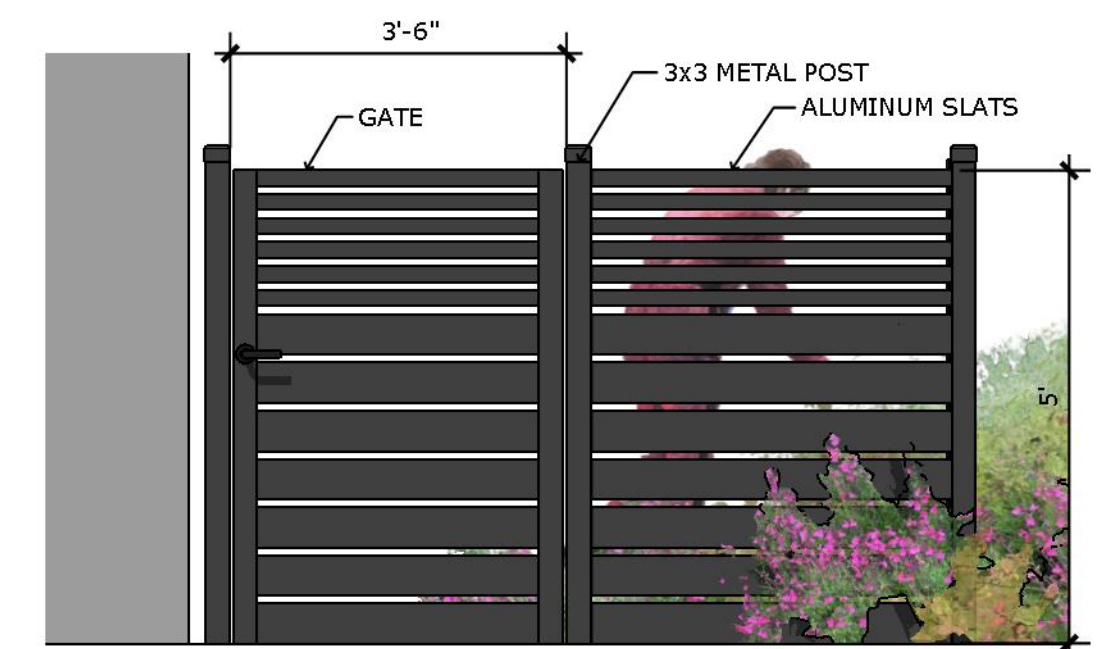
TREE PRESERVATION PLAN **L-2**
MAY, 2025



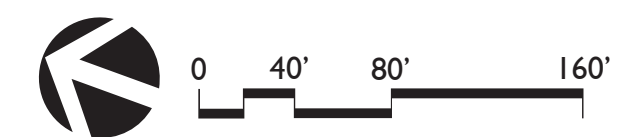
PRIVACY FENCE
RETAINING WALL

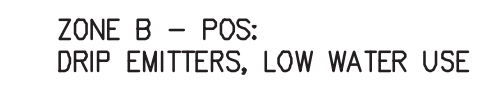


7 VIEW FENCE
SCALE: 1/2" = 1'-0"



8 PRIVACY FENCE / GATE
SCALE: 1/2" = 1'-0"



[illegible]

SPECIAL LANDSCAPE AREAS									
HYDROZONE #	HYDROZONE NAME								
				TOTALS	0				0%

MAWA	GALLONS/YR	1,827,462
	ACRE FEET/YR	5.61
	HCF/YR	2,443.13

ETWU	GALLONS/YR	834,806
	ACRE FEET/YR	2.56
	HCF/YR	1,116.05

SITE IRRIGATION EFFICIENCY	SITE PLANT FACTOR	MAWA COMPLIANT
81.0%	0.20	YES

ETAF Calculations	
REGULAR LANDSCAPE AREAS	
TOTAL ETAF x AREA	29,207
TOTAL AREA	116,250
AVG. ETAF	25.12%

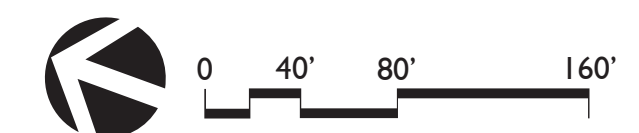
MAWA FORMULA
MAXIMUM APPLIED WATER ALLOWANCE (MAWA) GALLONS PER YEAR
MAWA = (ET_o) (0.62) [(LA x 0.55) + (0.45 x SLA)]

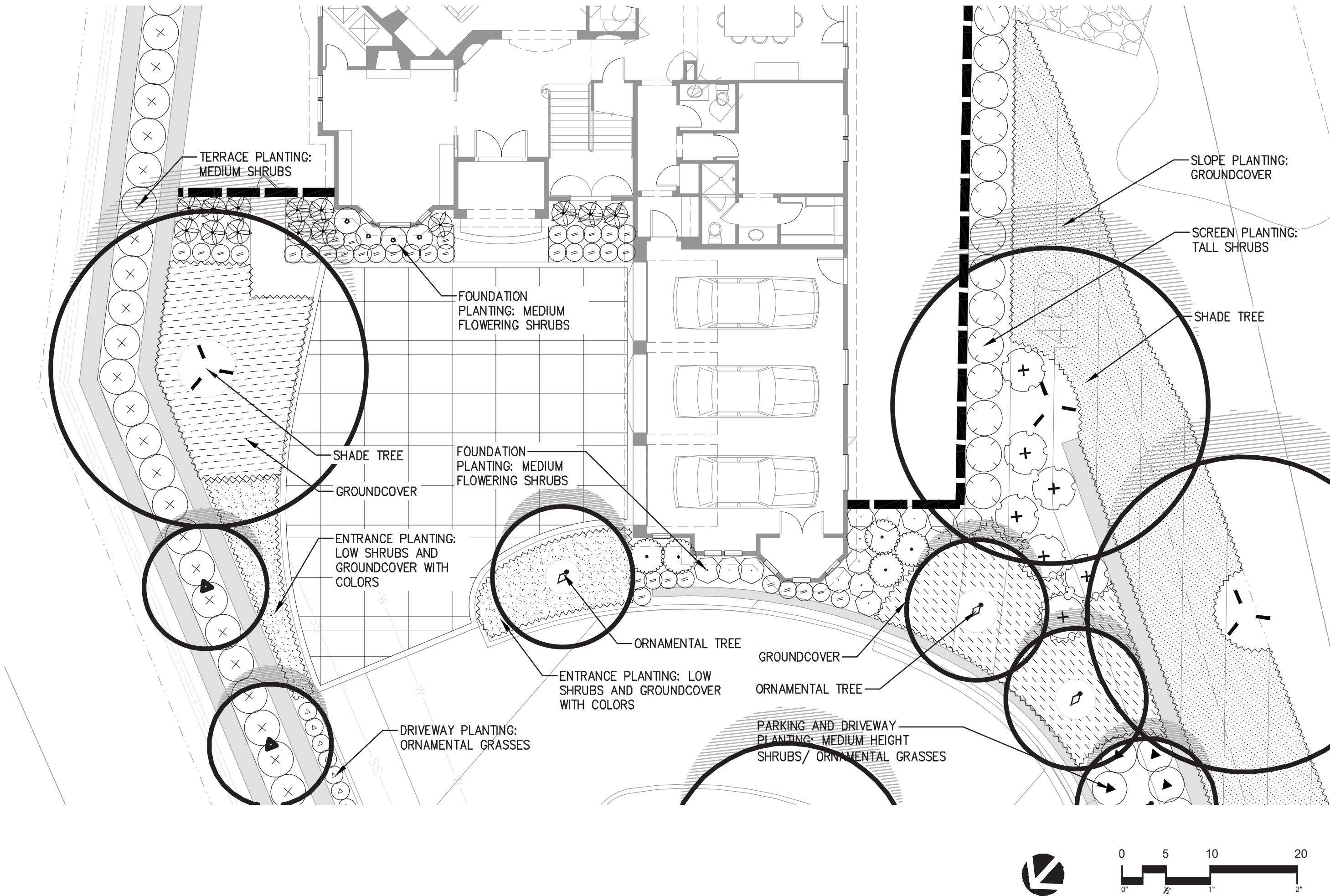
ET ₀ = REFERENCE EVAPOTRANSPIRATION	
0.55 = ET ADJUSTMENT FACTOR	
LA = LANDSCAPED AREA (SQUARE FEET)	
0.62 = CONVERSION FACTOR (GALLONS/SQ.FT/YR)	

ETWU FORMULA
ESTIMATED TOTAL WATER USE (ETWU) GALLONS PER YEAR
$ETWU = ((ETO) \times (.82) (ETAF \times LA))$

ET ₀ = REFERENCE EVAPOTRANSPIRATION
PF = PLANT FACTOR FOR HYDROZONES
HA = HYDROZONE AREA (SQ.FT)
0.62 = CONVERSION FACTOR (GALLONS/SQ.FT/YR)

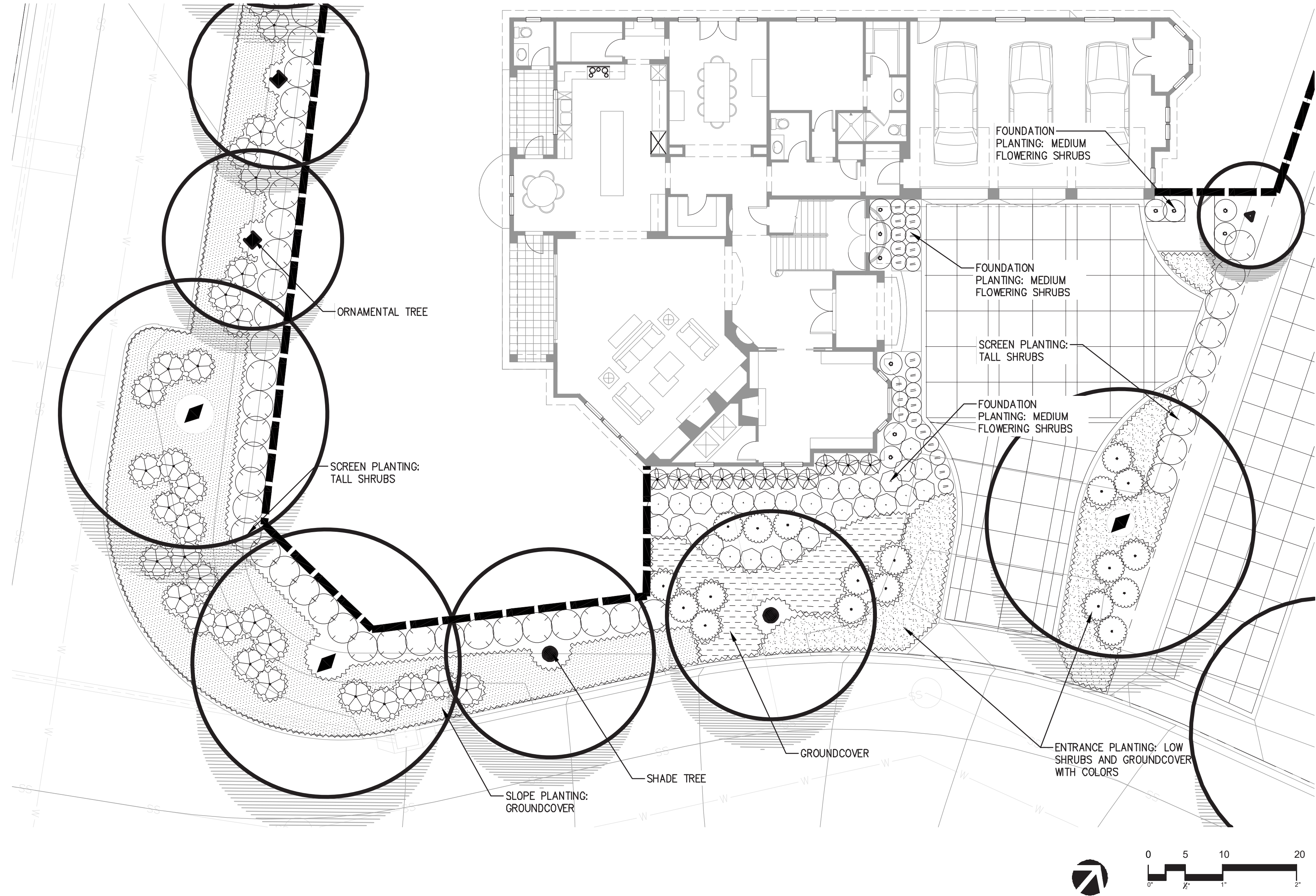
IE = IRRIGATION EFFICIENCY (0.81)-BUBBLER/DRP
IE = IRRIGATION EFFICIENCY (0.75)-ROTORS/SPRAY





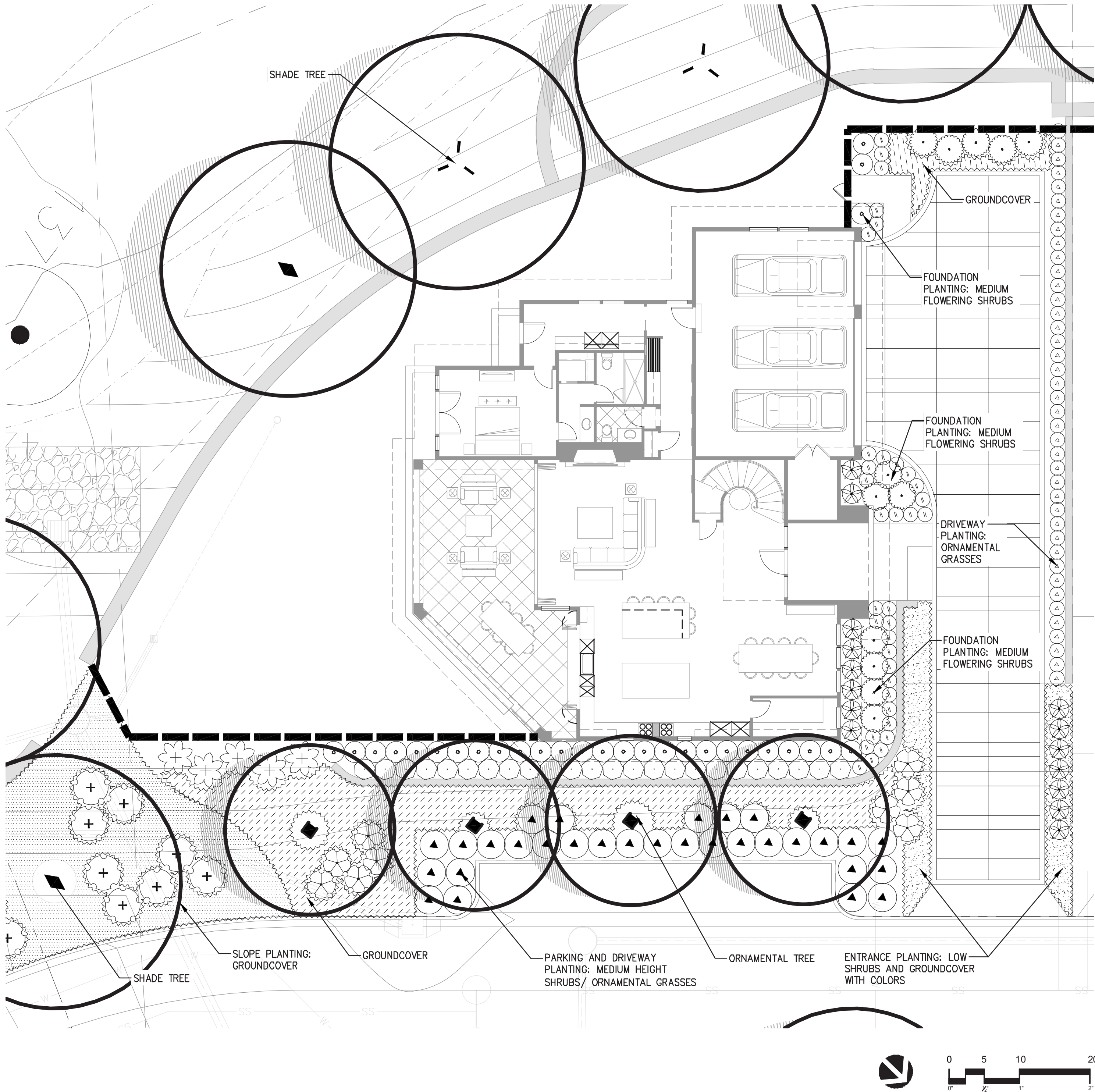
PLANT SCHEDULE

TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE
	ARB	ARBUTUS UNEDO	STRAWBERRY TREE MULTI-TRUNK	24"BOX	L
	COC	CERCIS OCCIDENTALIS	WESTERN REDBUD MULTI-TRUNK	24"BOX	VL
	LAG	LAGERSTROEMIA INDICA	GRAPE MYRTLE	24"BOX	L
	OLE	OLEA EUROPAEA 'SWAN HILL'	SWAN HILL OLIVE MULTI-TRUNK	24"BOX	VL
	PIS	PISTACIA CHINENSIS 'KEITH DAVEY'	KEITH DAVEY CHINESE PISTACHE	24"BOX	L
	PLA	PLATANUS X ACERIFOLIA 'COLUMBIA'	COLUMBIA LONDON PLANE TREE	24"BOX	L
	QUE	QUERCUS AGRIFOLIA	COAST LIVE OAK	24"BOX	L
	QUL	QUERCUS LOBATA	VALLEY OAK	24"BOX	L
	RHU	RHUS LANCEA	AFRICAN SUMAC	24"BOX	L
	SCH	SCHINUS MOLLE	CALIFORNIA PEPPER	24"BOX	L
	VAC	VITEX AGNUS-CASTUS	CHASTE TREE	24"BOX	L
SHRUBS		BOTANICAL NAME	COMMON NAME	SIZE	WATER USE
AB		ANIGOOZANTHOS SPP.	KANGAROO PAW	1 GAL	L
AH		ARCTOSTAPHYLOS DENSIFLORA 'HOWARD MCMINN'	HOWARD MCMINN MANZANITA	1 GAL	L
AR		ARTEMISIA CALIFORNICA 'POWIS CASTLE'	WORMWOOD	1 GAL	L
BD		BUDDLEIA DAVIDII	BUTTERFLY BUSH	1 GAL	L
CT		CHONDRPETALUM TECTORUM	CAPE RUSH	1 GAL	L
CX		CISTUS SPP.	ROCKROSE	1 GAL	L
DV		DIETES VEGETA	AFRICAN IRIS	1 GAL	L
GL		GAURA LINDHEIMERI	GAURA	1 GAL	L
JP		JUNCUS PATENS 'ELK BLUE'	ELK BLUE CALIFORNIA GRAY RUSH	1 GAL	L
KA		KNIPHOFIA SPP.	RED HOT POKER	1 GAL	L
LG		LOROPETALUM CHINENSE	CHINESE FRINGE FLOWER	1 GAL	L
MA		MIMULUS AURANTIACUS	STICKY MONKEYFLOWER	1 GAL	VL
MR		MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	L
PF		PENNISETUM X 'FAIRY TAILS'	FAIRY TAILS FOUNTAIN GRASS	1 GAL	L
PN		PUNICA GRANATUM 'NANA'	DWARF POMEGRANATE	1 GAL	L
RH		RHAMNUS CALIFORNICA	CALIFORNIA COFFEEBERRY	1 GAL	L
RC		ROSA CALIFORNICA	CALIFORNIA WILD ROSE	1 GAL	L
GROUND COVERS		BOTANICAL NAME	COMMON NAME	CONT.	WATER USE
AU		ARCTOSTAPHYLOS UVA-URSI 'POINT REYES'	POINT REYES KINNINNICK	1 GAL	L
AE		ARCTOSTAPHYLOS X 'EMERALD CARPET'	EMERALD CARPET MANZANITA	1 GAL	L
BP		BACCHARIS PILULARIS 'TWIN PEAKS'	TWIN PEAKS COYOTE BRUSH	1 GAL	L
CY		CEANOTHUS GRISEUS HORIZONTALIS 'YANKEE POINT'	YANKEE POINT CARMEL CREEPER	1 GAL	L
CD		COTONEASTER DAMMERI 'LOWFAST'	LOWFAST BEARBERRY COTONEASTER	1 GAL	L
MP		MYOPORUM PARVIFOLIUM 'PINK'	PINK TRAILING MYOPORUM	1 GAL	L



PLANT SCHEDULE

TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE
	ARB	ARBUTUS UNEDO	STRAWBERRY TREE MULTI-TRUNK	24"BOX	L
	COC	CERCIS OCCIDENTALIS	WESTERN REDBUD MULTI-TRUNK	24"BOX	VL
	LAG	LAGERSTROEMIA INDICA	GRAPE MYRTLE	24"BOX	L
	OLE	OLEA EUROPAEA 'SWAN HILL'	SWAN HILL OLIVE MULTI-TRUNK	24"BOX	VL
	PIS	PISTACIA CHINENSIS 'KEITH DAVEY'	KEITH DAVEY CHINESE PISTACHE	24"BOX	L
	PLA	PLATANUS X ACERIFOLIA 'COLUMBIA'	COLUMBIA LONDON PLANE TREE	24"BOX	L
	QUE	QUERCUS AGRIFOLIA	COAST LIVE OAK	24"BOX	L
	QUL	QUERCUS LOBATA	VALLEY OAK	24"BOX	L
	RHU	RHUS LANCEA	AFRICAN SUMAC	24"BOX	L
	SCH	SCHINUS MOLLE	CALIFORNIA PEPPER	24"BOX	L
	VAC	VITEX AGNUS-CASTUS	CHASTE TREE	24"BOX	L
SHRUBS					
	AB	ANIGOZANTHOS SPP.	KANGAROO PAW	1 GAL	L
	AH	ARCTOSTAPHYLOS DENSIFLORA 'HOWARD MCMINN'	HOWARD MCMINN MANZANITA	1 GAL	L
	AR	ARTEMISIA CALIFORNICA 'POWIS CASTLE'	WORMWOOD	1 GAL	L
	BD	BUDDLEIA DAVIDII	BUTTERFLY BUSH	1 GAL	L
	CT	CHONDRPETALUM TECTORUM	CAPE RUSH	1 GAL	L
	CX	CISTUS SPP.	ROCKROSE	1 GAL	L
	DV	DIETES VEGETA	AFRICAN IRIS	1 GAL	L
	GL	GAURA LINDHEIMERI	GAURA	1 GAL	L
	JP	JUNCUS PATENS 'ELK BLUE'	ELK BLUE CALIFORNIA GRAY RUSH	1 GAL	L
	KA	KNIPHOFIA SPP.	RED HOT POKER	1 GAL	L
	LG	LOROPETALUM CHINENSE	CHINESE FRINGE FLOWER	1 GAL	L
	MA	MIMULUS AURANTIACUS	STICKY MONKEYFLOWER	1 GAL	VL
	MR	MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	L
	PF	PENNISETUM X 'FAIRY TAILS'	FAIRY TAILS FOUNTAIN GRASS	1 GAL	L
	PN	PUNICA GRANATUM 'NANA'	DWARF POMEGRANATE	1 GAL	L
	RH	RHAMNUS CALIFORNICA	CALIFORNIA COFFEEBERRY	1 GAL	L
	RC	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	1 GAL	L
GROUND COVERS					
	AU	ARCTOSTAPHYLOS UVA-URSI 'POINT REYES'	POINT REYES KINNIKINNICK	1 GAL	L
	AE	ARCTOSTAPHYLOS X 'EMERALD CARPET'	EMERALD CARPET MANZANITA	1 GAL	L
	BP	BACCHARIS PILULARIS 'TWIN PEAKS'	TWIN PEAKS COYOTE BRUSH	1 GAL	L
	CY	CEANOTHUS GRISEUS HORIZONTALIS 'YANKEE POINT'	YANKEE POINT CARMEL CREEPER	1 GAL	L
	CD	COTONEASTER DAMMERI 'LOWFAST'	LOWFAST BEARBERRY COTONEASTER	1 GAL	L
	MP	MYOPORUM PARVIFOLIUM 'PINK'	PINK TRAILING MYOPORUM	1 GAL	L



PLANT SCHEDULE

TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE
	ARB	ARBUTUS UNEDO	STRAWBERRY TREE MULTI-TRUNK	24"BOX	L
	COC	CERCIS OCCIDENTALIS	WESTERN REDBUD MULTI-TRUNK	24"BOX	VL
	LAG	LAGERSTROEMIA INDICA	GRAPE MYRTLE	24"BOX	L
	OLE	OLEA EUROPAEA 'SWAN HILL'	SWAN HILL OLIVE MULTI-TRUNK	24"BOX	VL
	PIS	PISTACIA CHINENSIS 'KEITH DAVEY'	KEITH DAVEY CHINESE PISTACHE	24"BOX	L
	PLA	PLATANUS X ACERIFOLIA 'COLUMBIA'	COLUMBIA LONDON PLANE TREE	24"BOX	L
	QUE	QUERCUS AGRIFOLIA	COAST LIVE OAK	24"BOX	L
	QUL	QUERCUS LOBATA	VALLEY OAK	24"BOX	L
	RHU	RHUS LANCEA	AFRICAN SUMAC	24"BOX	L
	SCH	SCHINUS MOLLE	CALIFORNIA PEPPER	24"BOX	L
	VAC	VITEX AGNUS-CASTUS	CHASTE TREE	24"BOX	L
SHRUBS		BOTANICAL NAME	COMMON NAME	SIZE	WATER USE
AB		ANIGOZANTHOS SPP.	KANGAROO PAW	1 GAL	L
AH		ARCTOSTAPHYLOS DENSIFLORA 'HOWARD MCINN'	HOWARD MCINN MANZANITA	1 GAL	L
AR		ARTEMISIA CALIFORNICA 'POWIS CASTLE'	WORMWOOD	1 GAL	L
BD		BUDDLEIA DAVIDII	BUTTERFLY BUSH	1 GAL	L
CT		CHONDRPETALUM TECTORUM	CAPE RUSH	1 GAL	L
CX		CISTUS SPP.	ROCKROSE	1 GAL	L
DV		DIETES VEGETA	AFRICAN IRIS	1 GAL	L
GL		GAURA LINDHEIMERI	GAURA	1 GAL	L
JP		JUNCUS PATENS 'ELK BLUE'	ELK BLUE CALIFORNIA GRAY RUSH	1 GAL	L
KA		KNIPHOFIA SPP.	RED HOT POKER	1 GAL	L
LG		LOROPETALUM CHINENSE	CHINESE FRINGE FLOWER	1 GAL	L
MA		MIMULUS AURANTIACUS	STICKY MONKEYFLOWER	1 GAL	VL
MR		MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	L
PF		PENNISETUM X 'FAIRY TAILS'	FAIRY TAILS FOUNTAIN GRASS	1 GAL	L
PN		PUNICA GRANATUM 'NANA'	DWARF POMEGRANATE	1 GAL	L
RH		RHAMNUS CALIFORNICA	CALIFORNIA COFFEEBERRY	1 GAL	L
RC		ROSA CALIFORNICA	CALIFORNIA WILD ROSE	1 GAL	L
GROUND COVERS		BOTANICAL NAME	COMMON NAME	CONT.	WATER USE
AU		ARCTOSTAPHYLOS UVA-URSI 'POINT REYES'	POINT REYES KINNIKINNICK	1 GAL	L
AE		ARCTOSTAPHYLOS X 'EMERALD CARPET'	EMERALD CARPET MANZANITA	1 GAL	L
BP		BACCHARIS PILULARIS 'TWIN PEAKS'	TWIN PEAKS COYOTE BRUSH	1 GAL	L
CY		CEANOTHUS GRISEUS HORIZONTALIS 'YANKEE POINT'	YANKEE POINT CARMEL CREEPER	1 GAL	L
CD		COTONEASTER DAMMERI 'LOWFAST'	LOWFAST BEARBERRY COTONEASTER	1 GAL	L
MP		MYOPORUM PARVIFOLIUM 'PINK'	PINK TRAILING MYOPORUM	1 GAL	L

TREES



Arbutus unedo
Strawberry Tree Multi-Trunk



Cercis occidentalis
Western Redbud Multi-Trunk



Olea europaea 'Swan Hill'
Fruitless Olive



Pistacia chinensis 'Keith Davey'
Keith Davey Chinese Pistache



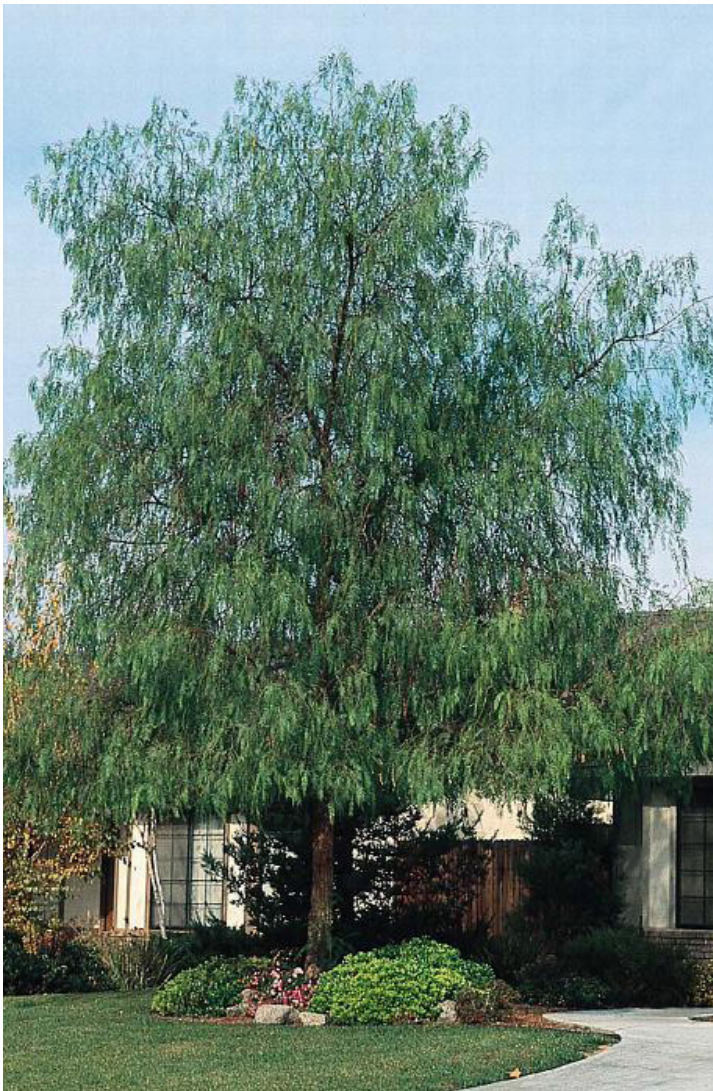
Platanus x acerifolia 'Columbia'
Columbia London Plane Tree



Quercus agrifolia
Coast Live Oak



Quercus lobata
Valley oak



Schinus molle
California Pepper Tree

SHRUBS



Anigozanthus spp.
Kangaroo Paw



Artemisia californica 'Powis Castle'
Wormwood



Bouteloua gracilis
Blue Grama Grass



Buddleja davidii
Butterfly Bush



Chondropetalum tectorum
Cape Rush



Diets vegeta
African Iris



Gaura lindheimeri
Gaura



Hypericum x moserianum
Gold Flower



Kniphofia spp.
Red Hot Poker



Lantana montevidensis
Purple Trailing Lantana



Lomandra longifolia 'Breeze'
Dwarf Mat Rush



Mimulus aurantiacus 'Jelly Bean Orange'
Jelly Bean Orange Sticky Monkeyflower



Nepeta x faassenii
Catmint



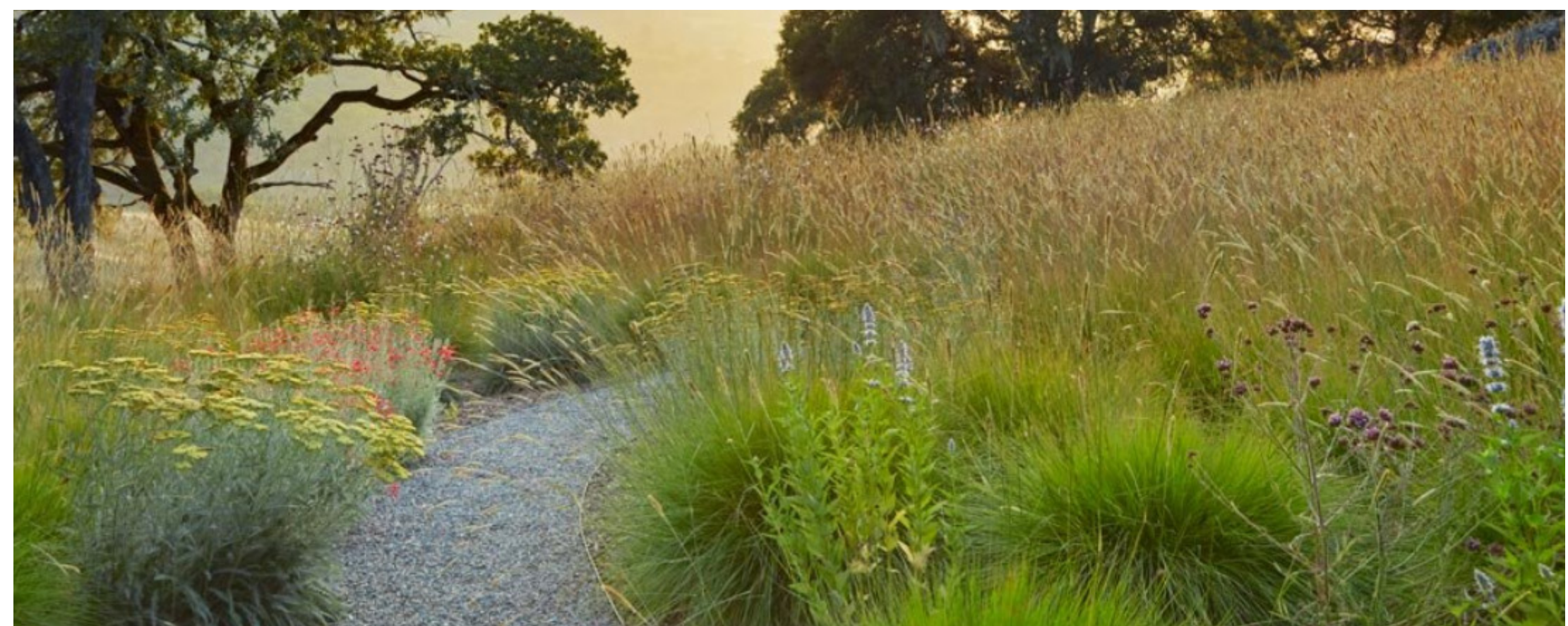
Pennisetum x 'Fairy Tails'
Fairy Tails Fountain Grass

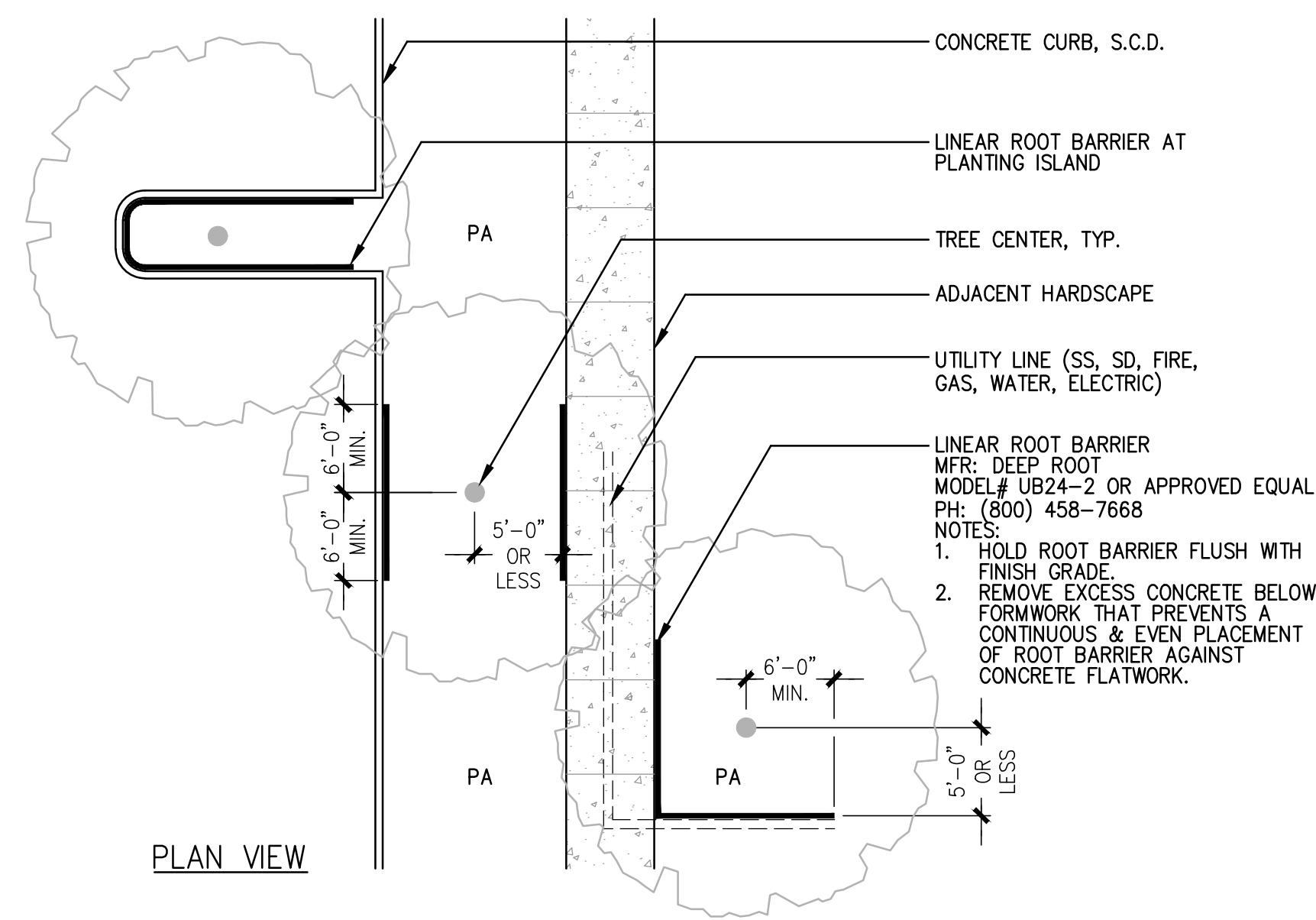


Salvia microphylla 'Hot Lips'
Hot Lips Littleleaf Sage

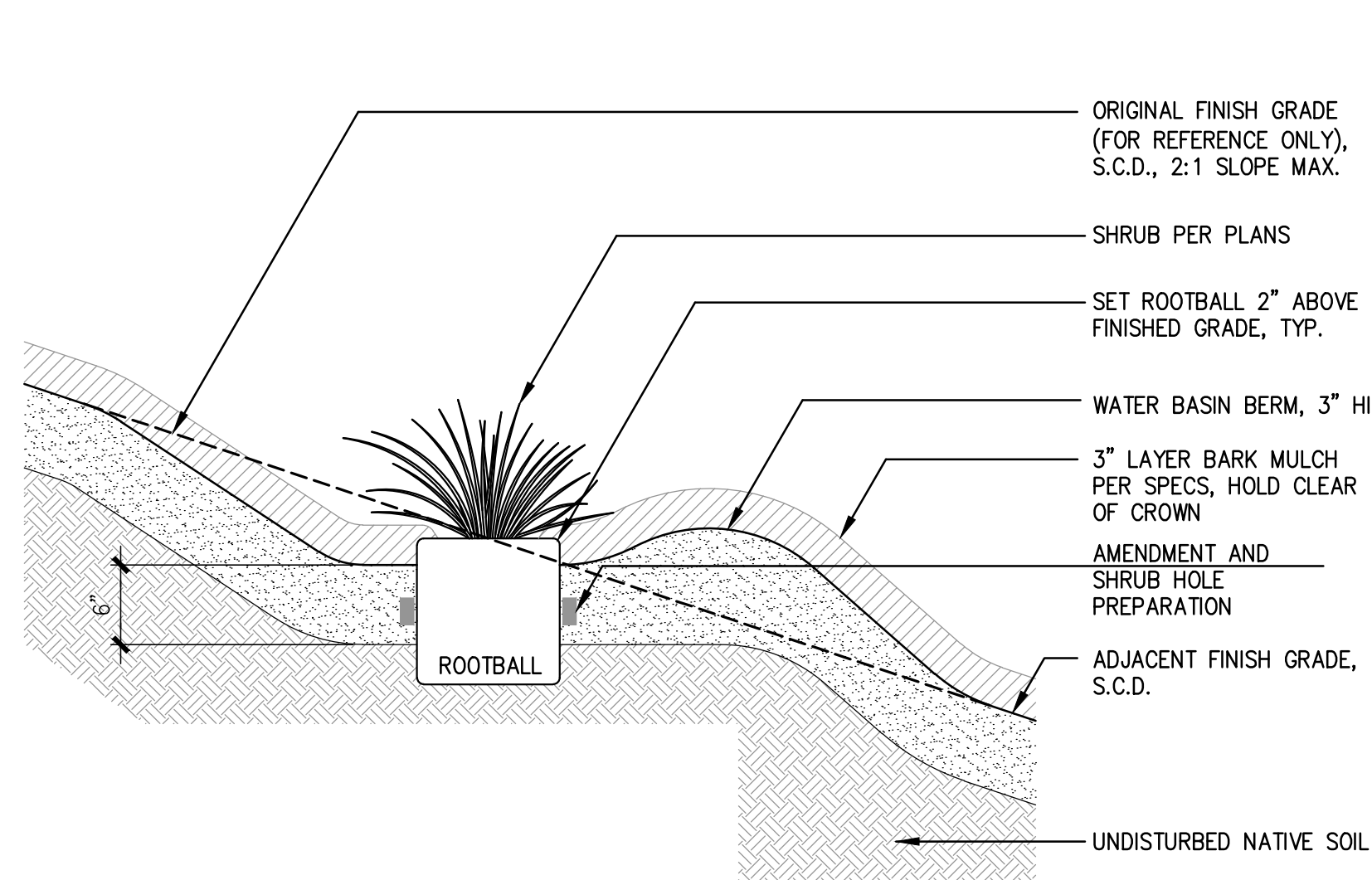


Scaevola albida 'Mauve Clusters'
Botanical Name

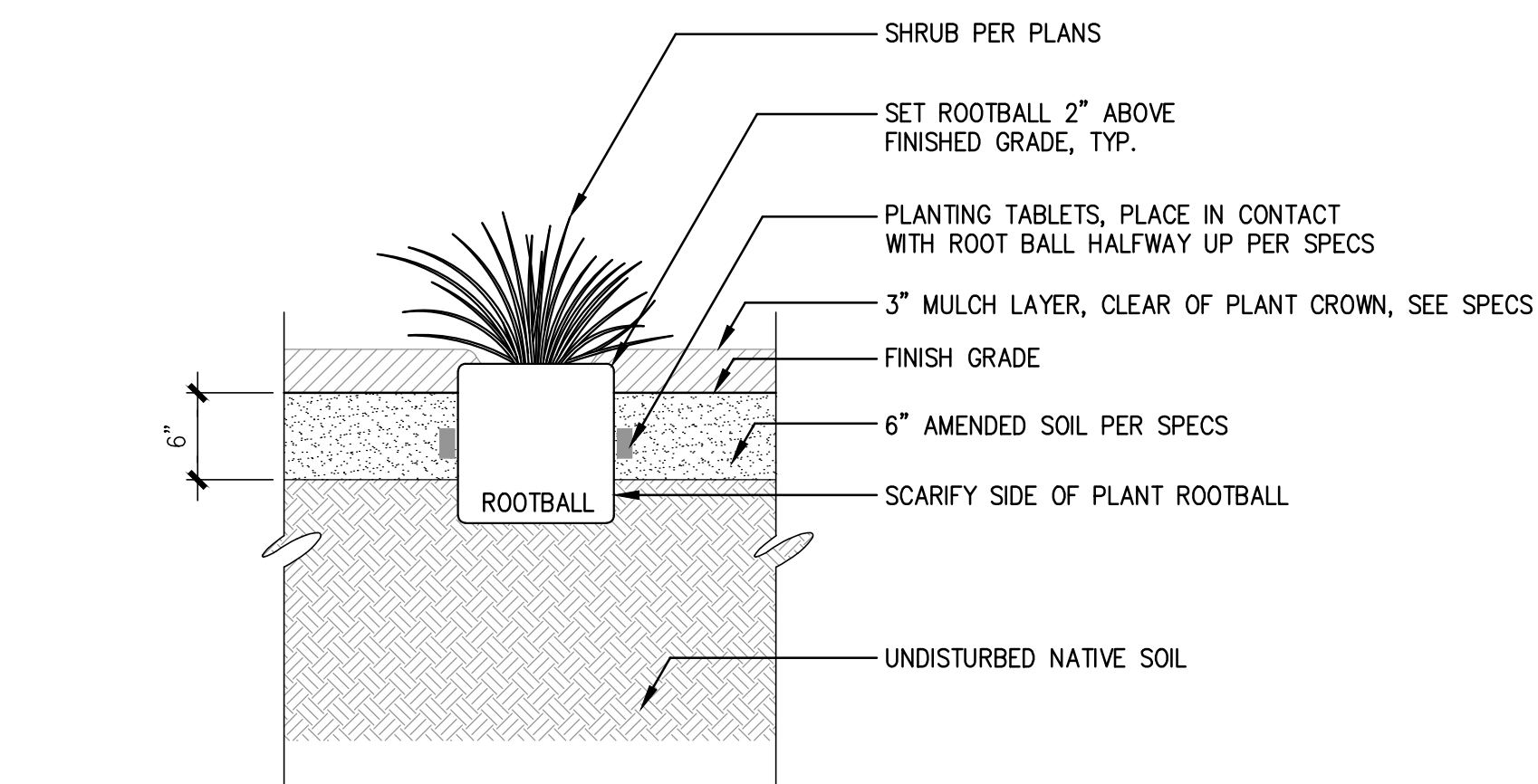




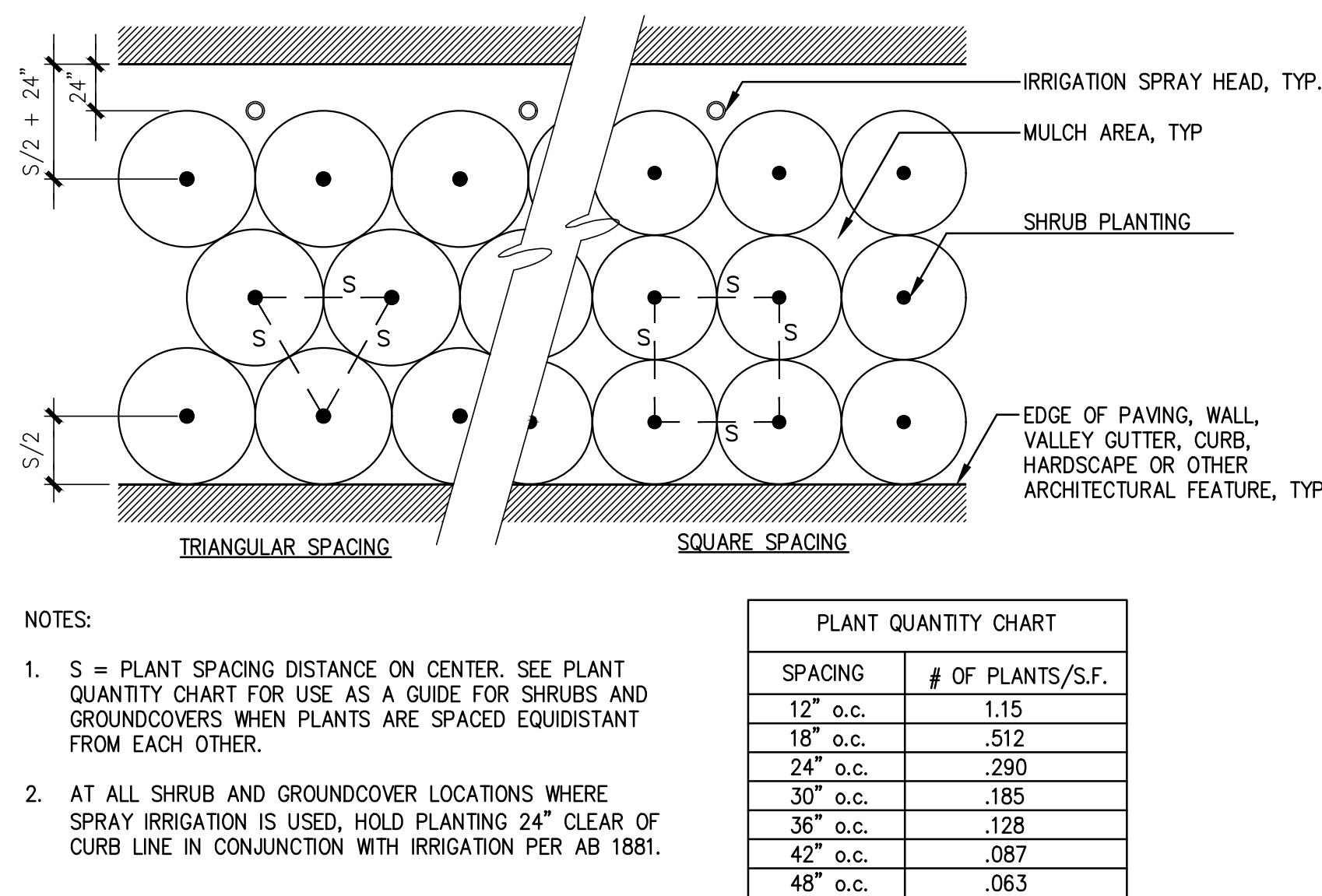
6 LINEAR ROOT BARRIER
SCALE: 1" = 10'-0"



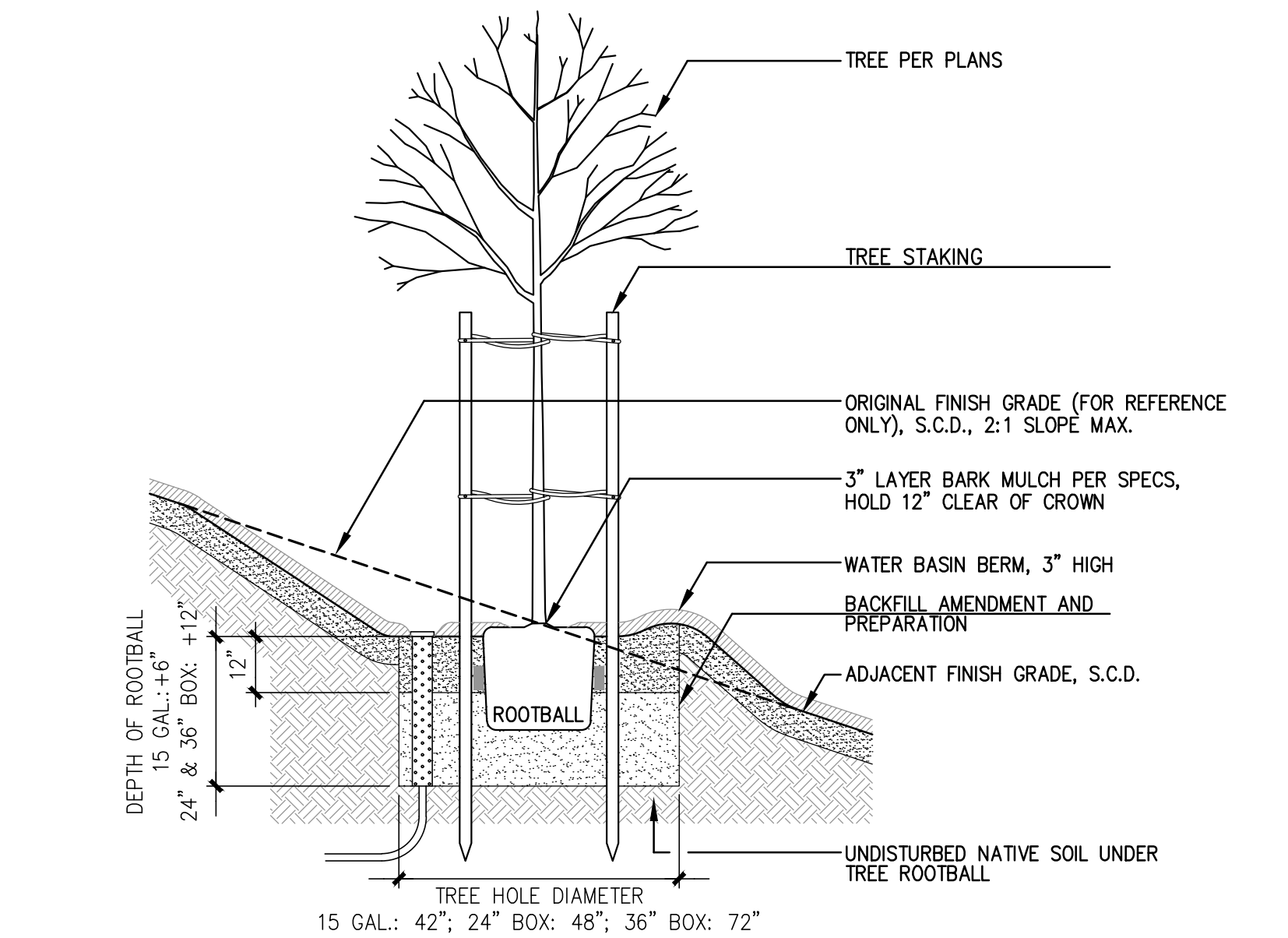
5 SHRUB PLANTING ON SLOPE
SCALE: 1" = 1'-0"



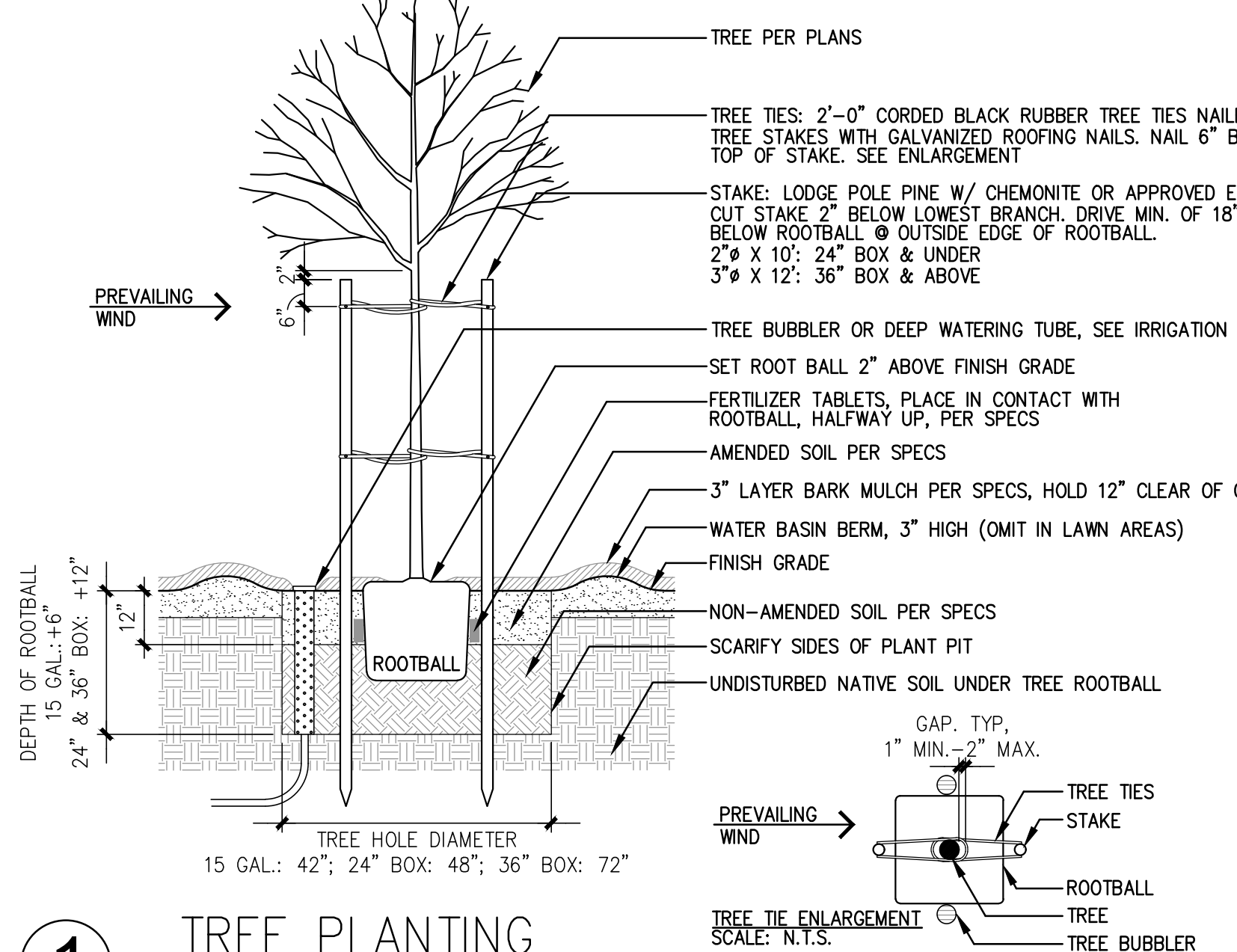
4 SHRUB PLANTING
SCALE: 1" = 1'-0"



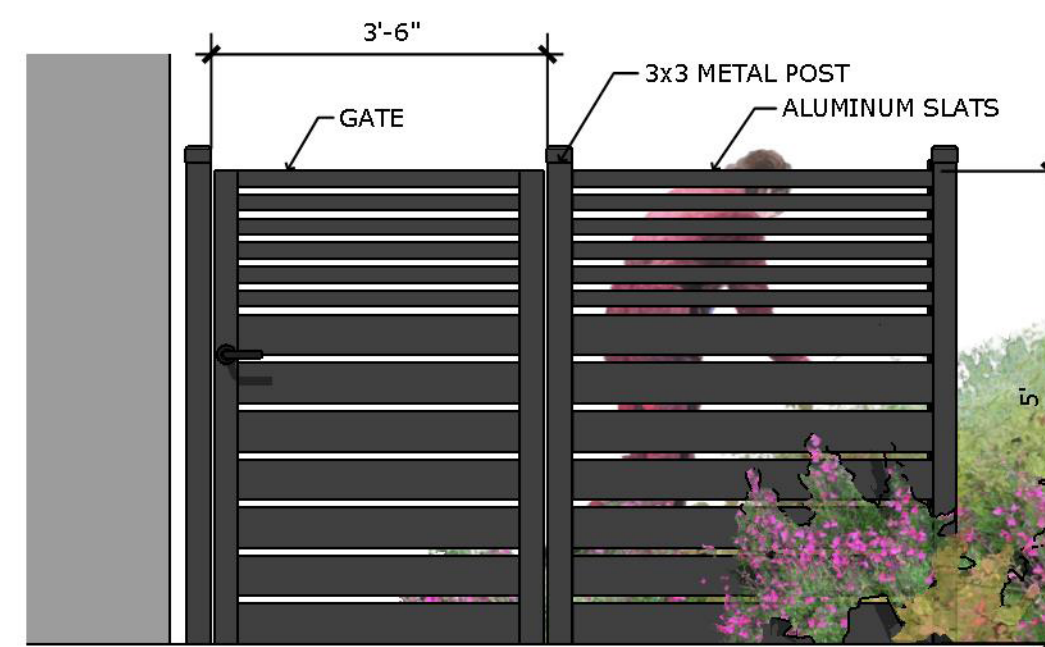
3 PLANT SPACING
SCALE: 1" = 1'-0"



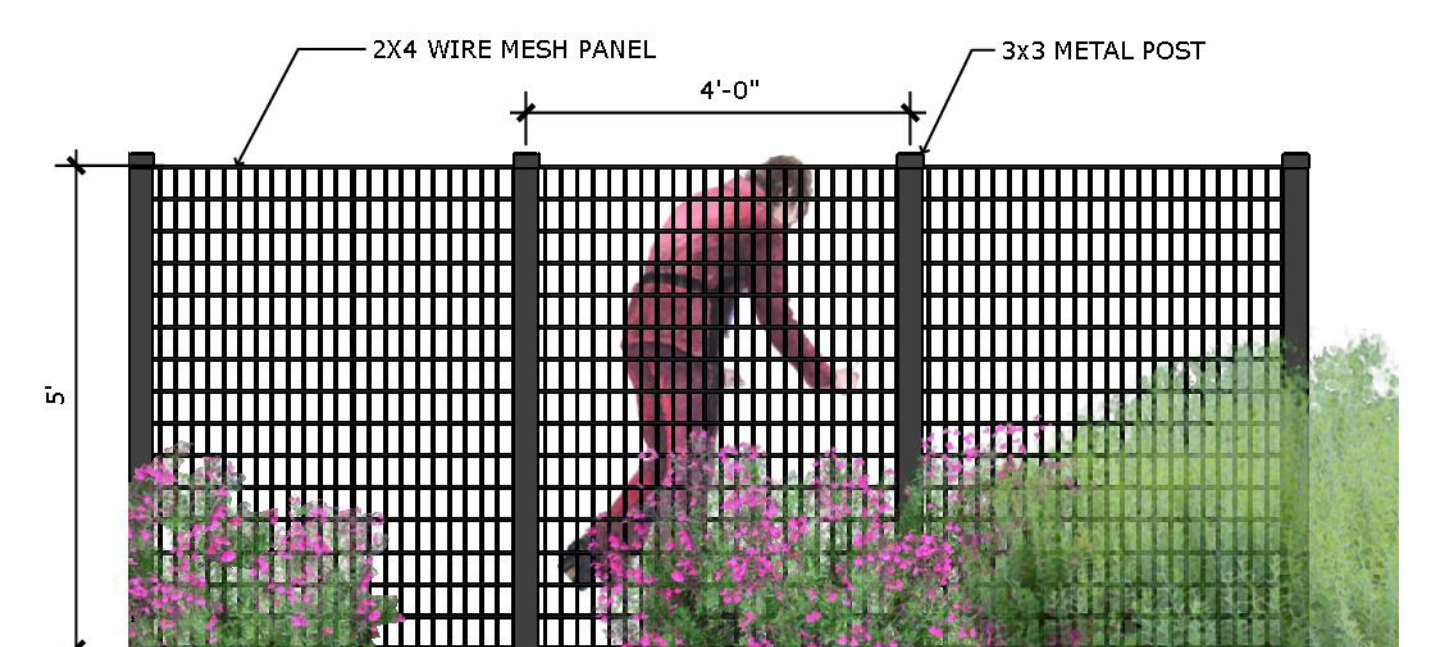
2 TREE PLANTING ON SLOPE
SCALE: 3/8" = 1'-0"



1 TREE PLANTING
SCALE: 3/8" = 1'-0"



8 PRIVACY FENCE / GATE
SCALE: 1/2" = 1'-0"



7 VIEW FENCE
SCALE: 1/2" = 1'-0"

**PRELIMINARY STORMWATER CONTROL
PLAN**

for

**455 Livorna Road
Alamo, California**

April, 2025

**Stone Valley Farm
455 Livorna Road
Alamo, CA 94507**

prepared by:

**dk Engineering
1931 San Miguel Dr., Suite 100
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Attachments

Attachment A: Stormwater Control Plan Exhibit
Attachment B: BAHM Livorna Road Output
Attachment C: IMP Calculator Sizing Output

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	455 Livorna Road
Application Submittal Date	
Project Location	455 Livorna Road 193-010-014 & 193-010-039
Name of Developer	Stone Valley Farm
Project Phase No.	N/A
Project Type and Description	Construction of nine single-family residential homes
Project Watershed	Las Trampas Creek Watershed
Total Project Site Area (acres)	±13.65
Total Area of Land Disturbed (acres)	±8.80
Total New Impervious Surface Area (sq. ft.)	43,794 square feet
Total Replaced Impervious Surface Area	38,814 square feet
Total Pre-Project Impervious Surface Area	38,814 square feet
Total Post-Project Impervious Surface Area	82,608 square feet
50% Rule[*]	Does not apply
Project Density	≤1 Dwelling Units/Acre (Very Low Density)
Applicable Special Project Categories [Complete even if all treatment is LID]	None
Percent LID and non-LID treatment	100% impervious surface is treated by bioretention
HM Compliance [†]	Applies

[*50% rule applies if:

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

[†HM required (unless project meets one of the exemptions in *Guidebook Chapter 1 – Hydromodification Management Requirements – Exemptions*) if:

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

II. SETTING

II.A. Project Location and Description

The project is located at 455 Livorna Road in Alamo, California, and consists of nine single-family homes developed on a 13.65-acre site zoned R-40 for very low-density residential use. The design incorporates eight on-site detention basins to manage and treat stormwater runoff prior to discharge. Emphasizing sustainability and site sensitivity, the layout aims to preserve the existing topography as much as possible, maintaining natural drainage patterns and maximizing pervious surfaces throughout the development.



II.B. Existing Site Features and Conditions

The site, encompassing 13.65 total acres, was previously developed as a single-family residence and includes existing improvements such as a driveway, detached garage, and multiple accessory sheds. With an average slope of approximately 37%, the topography generally directs drainage from east to west, descending from the hillside near Legacy Drive. As stormwater moves downslope, it diverges—

flowing either north toward Livorna Road or south toward an existing ephemeral stream located adjacent to the residential development along the southern boundary of the property. The site is predominantly covered with pervious, grassy vegetation, with only a minimal amount of impervious surfaces. The existing site is comprised of hydrologic soil group D and has a mean annual precipitation of 23 inches.

II.C. Opportunities and Constraints for Stormwater Control

The project includes eight on-site detention basins designed to manage, treat, and discharge surface runoff in accordance with existing drainage patterns. Four basins located along the southern portion of the site collect stormwater and discharges through flow dissipators into an existing ephemeral stream that runs adjacent to the neighboring residential development on Camino Monte Sol. The remaining four basins, situated on the northern side, direct treated runoff into the existing stormwater infrastructure along Livorna Road. The grading and drainage design prioritizes maximizing landscaped, pervious areas to reduce overall runoff, while ensuring that all impervious surfaces are routed efficiently to the appropriate detention basins for treatment and controlled discharge.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

The drainage design directs stormwater runoff through eight strategically placed detention basins, as detailed in Attachment A – Stormwater Control Plan Exhibit. These basins treat runoff before discharging through flow dissipators to either the ephemeral stream along the southern boundary or the storm drain infrastructure along Livorna Road. The site layout is optimized to reduce the extent of impervious surfaces and maintains the natural flow direction of stormwater across the property.

III.B. Bioretention or other Integrated Management Practices

In addition to following the 4% sizing rule under the Contra Costa County C3 guidebook, the bioretention facilities have been designed with the Bay Area Hydrology Model to meet hydromodification management requirements for the development.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

Table 2. Drainage Management Areas

<i>DMA Name</i>	<i>Area (SF)</i>	<i>Surface Type/Description</i>	<i>DMA Type/Drains to</i>
<i>DMA 1-R</i>	<i>3,527</i>	<i>Conventional Roof</i>	<i>Bioretention Facility IMP 1</i>
<i>DMA 1-A</i>	<i>3,741</i>	<i>Concrete or Asphalt</i>	
<i>DMA 1-C</i>	<i>486</i>	<i>Concrete or Asphalt</i>	
<i>DMA 1-L</i>	<i>9,234</i>	<i>Landscape</i>	
<i>DMA 2-R</i>	<i>1,519</i>	<i>Conventional Roof</i>	<i>Bioretention Facility IMP 2</i>
<i>DMA 2-A</i>	<i>386</i>	<i>Concrete or Asphalt</i>	
<i>DMA 2-C</i>	<i>172</i>	<i>Concrete or Asphalt</i>	
<i>DMA 2-L</i>	<i>4,014</i>	<i>Landscape</i>	
<i>DMA 3-R</i>	<i>7,580</i>	<i>Conventional Roof</i>	<i>Bioretention Facility IMP 3</i>
<i>DMA 3-A</i>	<i>19,502</i>	<i>Concrete or Asphalt</i>	
<i>DMA 3-C</i>	<i>1,099</i>	<i>Concrete or Asphalt</i>	
<i>DMA 3-L</i>	<i>31,814</i>	<i>Landscape</i>	
<i>DMA 4-R</i>	<i>4,053</i>	<i>Conventional Roof</i>	<i>Bioretention Facility IMP 4</i>
<i>DMA 4-A</i>	<i>1,443</i>	<i>Concrete or Asphalt</i>	
<i>DMA 4-C</i>	<i>568</i>	<i>Concrete or Asphalt</i>	
<i>DMA 4-L</i>	<i>8,800</i>	<i>Landscape</i>	
<i>DMA 5-L</i>	<i>234,047</i>	<i>Landscape</i>	<i>Self-Treating</i>
<i>DMA 6-R</i>	<i>3,018</i>	<i>Conventional Roof</i>	<i>Bioretention Facility IMP 5</i>
<i>DMA 6-A</i>	<i>2,041</i>	<i>Concrete or Asphalt</i>	
<i>DMA 6-C</i>	<i>1,012</i>	<i>Concrete or Asphalt</i>	
<i>DMA 6-L</i>	<i>7,482</i>	<i>Landscape</i>	

<i>DMA 7-R</i>	<i>3,018</i>	<i>Conventional Roof</i>	<i>Bioretention Facility IMP 6</i>
<i>DMA 7-A</i>	<i>2,041</i>	<i>Concrete or Asphalt</i>	
<i>DMA 7-C</i>	<i>1,012</i>	<i>Concrete or Asphalt</i>	
<i>DMA 7-L</i>	<i>7,004</i>	<i>Landscape</i>	
<i>DMA 8-R</i>	<i>3,591</i>	<i>Conventional Roof</i>	<i>Bioretention Facility IMP 7</i>
<i>DMA 8-A</i>	<i>1,516</i>	<i>Concrete or Asphalt</i>	
<i>DMA 8-C</i>	<i>218</i>	<i>Concrete or Asphalt</i>	
<i>DMA 8-L</i>	<i>6,588</i>	<i>Landscape</i>	
<i>DMA 9-A</i>	<i>16,589</i>	<i>Concrete or Asphalt</i>	<i>Bioretention Facility IMP 8</i>
<i>DMA 9-L</i>	<i>10,023</i>	<i>Landscape</i>	
<i>DMA 10-L</i>	<i>170,507</i>	<i>Landscape</i>	<i>Self-Treating</i>

IV.A.1. Drainage Management Area Descriptions

DMA 1, totaling approximately 16,988 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 1 is sent to a 424 square foot “IMP 1 – Bioretention Facility” where the runoff is treated and discharged into the existing stormwater infrastructure located on Livorna Road.

DMA 2, totaling approximately 6,091 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 2 is sent to a 221 square foot “IMP 2 – Bioretention Facility” where the runoff is treated and discharged into the existing stormwater infrastructure located on Livorna Road.

DMA 3, totaling approximately 59,995 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 3 is sent to a 1,737 square foot “IMP 3 – Bioretention Facility” where the runoff is treated and discharged into the existing stormwater infrastructure located on Livorna Road.

DMA 4, totaling approximately 14,864 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 4 is sent to a 420 square foot “IMP 4 – Bioretention Facility” where the runoff is treated and discharged into the existing stormwater infrastructure located on Livorna Road.

DMA 5, totaling approximately 234,047 square feet, drains by self-treating landscape.

DMA 6, totaling approximately 13,553 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 6 is sent to a 394 square foot “IMP 5 – Bioretention Facility” where the runoff is treated and discharged through flow dissipators into the existing ephemeral stream that runs adjacent to the neighboring residential development on Camino Monte Sol.

DMA 7, totaling approximately 13,075 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 7 is sent to a 429 square foot

“IMP 6 – Bioretention Facility” where the runoff is treated and discharged through flow dissipators into the existing ephemeral stream that runs adjacent to the neighboring residential development on Camino Monte Sol.

DMA 8, totaling approximately 11,913 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 8 is sent to a 429 square foot “IMP 7 – Bioretention Facility” where the runoff is treated and discharged through flow dissipators into the existing ephemeral stream that runs adjacent to the neighboring residential development on Camino Monte Sol.

DMA 9, totaling approximately 26,612 square feet, is composed of asphalt, concrete or hardscape, and landscaping. Runoff from DMA 9 is sent to a 891 square foot “IMP 8 – Bioretention Facility” where the runoff is treated and discharged through flow dissipators into the existing ephemeral stream that runs adjacent to the neighboring residential development on Camino Monte Sol.

DMA 10, totaling approximately 170,507 square feet, drains by self-treating landscape.

IV.B. Integrated Management Practice Descriptions

The IMP for the site is bioretention (as shown on Attachment A). The bioretention area is designed with a minimum ponding depth of 6”, minimum 2” of freeboard, a bioretention soil mix depth of 18” and a minimum base rock depth of 12”.

IV.C. Tabulation and Sizing Calculations

All Bioretention Facilities (IMP 1 – 8) have been sized and designed based on the 4% sizing rule under the Contra Costa County C3 guidebook as well as the Contra Costa Clean Water Program IMP Sizing Tool. The output from the IMP Sizing Tool is provided in Attachment C. In addition, the facility was modeled using the Bay Area Hydrology Model to meet hydromodification management requirements, with the results available in Attachment B.

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

Potential sources of pollutants may include on-site dumping into storm drain inlets, the need for future or structural pest control, landscape/outdoor pesticide use, unprotected materials used for roofing, gutters and trim, air conditioning condensation, streets and sidewalk debris, and trash enclosures. To account for these potential sources, the source control table below lists control opportunities.

V.B. Source Control Table

Table 3. Source Controls

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
On-site dumping into storm drain inlets	All accessible on-site inlets require stainless steel markers with statement “No Dumping – Drains to Creek”	Markings will be periodically replaced. Inlets and pipes conveying stormwater to BMPs will be inspected and maintained as part of BMP Operation and Maintenance Plan.
Need for future indoor or structural pest		Integrated Pest Management (IPM) information will be provided to

control		property owners.
Landscape/outdoor pesticide use	Final landscape plans will: Be designed to minimize irrigation and runoff and to minimize use of fertilizers and pesticides that can contribute to stormwater pollution. Specific plantings within bioretention areas and swales that are tolerant of the sandy loam soil and periodic inundation. Include pest-resistant plants. Include plantings appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Landscape will be maintained using minimum or no pesticides. IPM information will be provided to property owners
Roofing, gutters and Trim	Do not utilize roofing, gutter or architecture trim materials made of copper or other unprotected materials that would leach into the storm water runoff.	
Air conditioning	Air conditioner condensation shall be directed to landscaped areas or plumbed to the sanitary sewer.	
Streets and Sidewalks		Sweep streets and sidewalks to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer, not to the storm drain.

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

The ownership and responsibility for maintenance of the facilities will be determined when approved project improvements are available.

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

The maintenance requirements will be provided when approved project improvements are available.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

Table 4. Construction Plan C.3 Checklist

Stormwater

Control

Plan

Page #

BMP Description

See Plan Sheet #s

Attachment A	IMP 1 – 8 Bioretention Facilities	10
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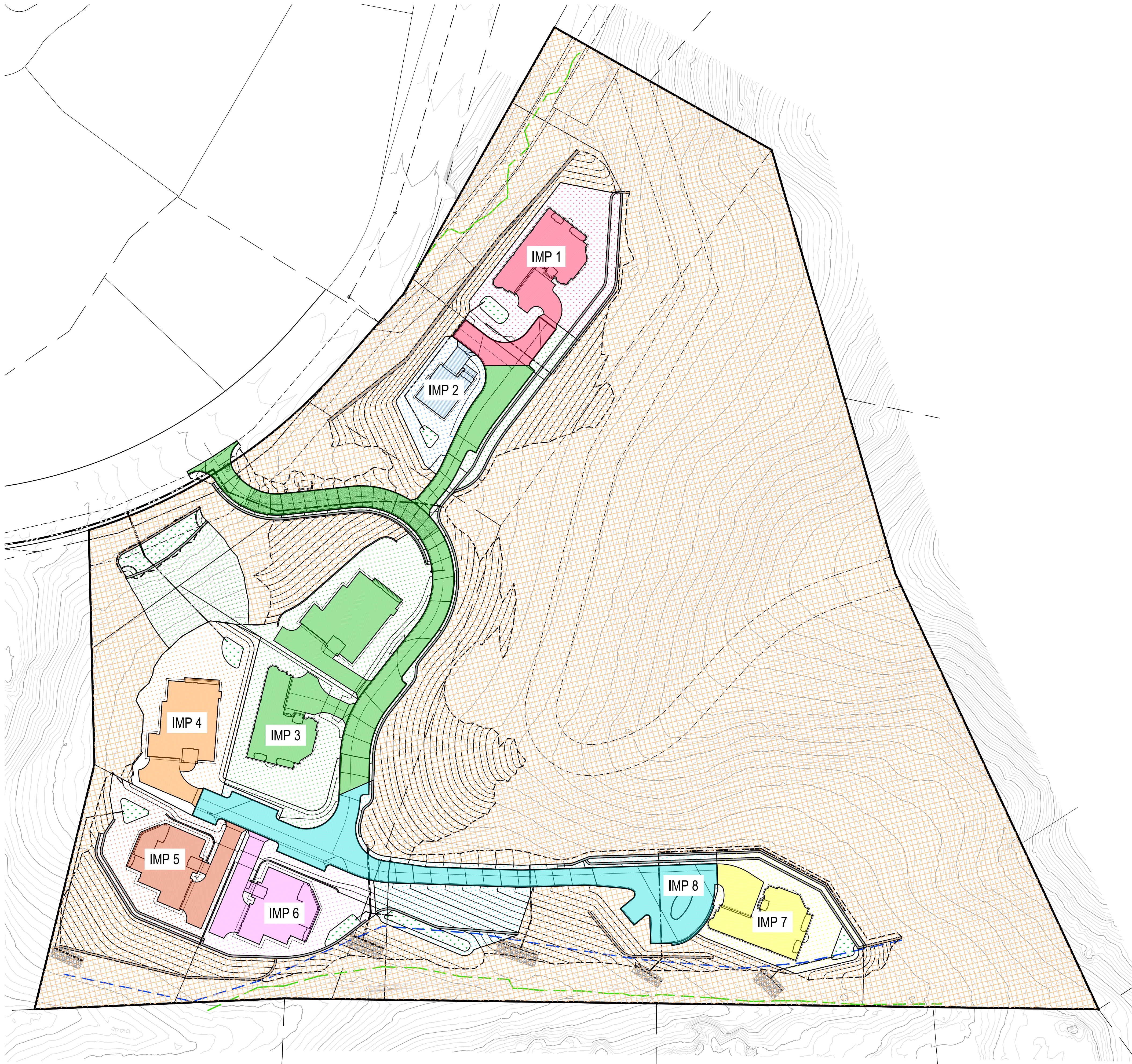
VIII. CERTIFICATIONS

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 R2-2015-0049.

By

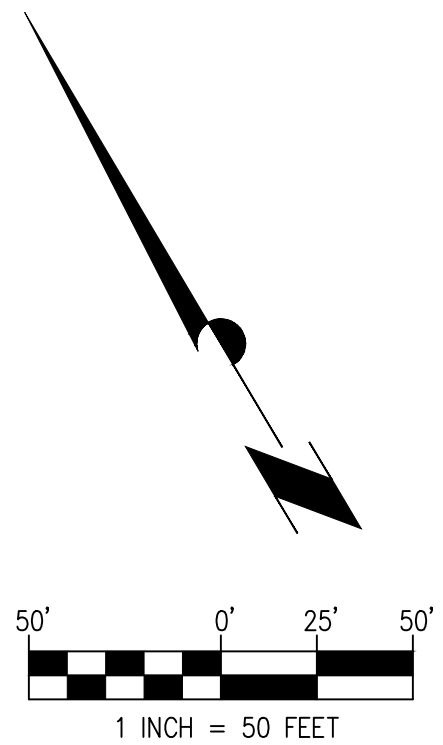
Print Name

ATTACHMENT A
STORMWATER CONTROL PLAN EXHIBIT



- LEGEND**
- BIOLOGICAL RIPARIAN LIMIT/TOP OF BANK
 - CREEK STRUCTURE SETBACK LINE
 - GRADING DAYLIGHT LINE

SWCP LEGEND				
IMP	IMPERVIOUS		PERVIOUS	
	ROOF, CONCRETE, PAVEMENT, ETC.		LANDSCAPING	PROVIDED BIORETENTION
IMP-1		7,754 SF		9,233 SF 424 SF
IMP-2		2,077 SF		4,014 SF 221 SF
IMP-3		28,180 SF		31,814 SF 1,737 SF
IMP-4		6,064 SF		8,800 SF 420 SF
IMP-5		6,071 SF		7,483 SF 394 SF
IMP-6		6,071 SF		7,004 SF 429 SF
IMP-7		5,325 SF		6,588 SF 429 SF
IMP-8		16,589 SF		10,022 SF 891 SF
SELF TREATING	N/A			404,554 SF



STONE VALLEY FARM
455 LIVORNA ROAD
STORM WATER CONTROL PLAN
CONTRA COSTA COUNTY, CA
APRIL 28, 2025



ATTACHMENT B
BAHM LIVORNA ROAD OUTPUT

BAHM2023
PROJECT REPORT

General Model Information

BAHM2023 Project Name: 24-1035 BAHM

Site Name: Livorna
Site Address: 455 Livorna rd
City: Alamo CA
Report Date: 4/24/2025
Gage: St Marys
Data Start: 1972/10/01
Data End: 2021/09/30
Timestep: Hourly
Precip Scale: 1.000
Version Date: 2024/06/19

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Low Flow Threshold for POC2:	10 Percent of the 2 Year
High Flow Threshold for POC2:	10 Year

Landuse Basin Data

Pre-Project Land Use

Basin 3

Bypass: No

GroundWater: No

Pervious Land Use acre

C D,Grass,Mod(5-10%) 0.28

C D,Grass,Ste(10-20) 0.89

C D,Grass,Very(>20%) 3.88

Pervious Total 5.05

Impervious Land Use acre

Roof Area 0.12

Driveways,Flat(0-5%) 0.02

Driveways,Mod(5-10%) 0.21

Driveways,St(10-20%) 0.04

Impervious Total 0.39

Basin Total 5.44

Element Flow Components:

Surface Interflow

Groundwater

Component Flows To:

POC 2 POC 2

Basin 2

Bypass: No

GroundWater: No

Pervious Land Use	acre
C D,Grass,Mod(5-10%)	0.03
C D,Grass,Ste(10-20)	0.03
C D,Grass,Very(>20%)	0.36

Pervious Total 0.42

Impervious Land Use acre

Impervious Total 0

Basin Total 0.42

Element Flow Components:

Surface Interflow

Groundwater

Component Flows To:

POC 1 POC 1

Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	acre
C D,Grass,Mod(5-10%)	0.34
C D,Grass,Ste(10-20)	0.6
C D,Grass,Very(>20%)	5.77

Pervious Total 6.71

Impervious Land Use	acre
Roof Area	0.08
Driveways,Flat(0-5%)	0.19
Driveways,Mod(5-10%)	0.04
Driveways,St(10-20%)	0.19

Impervious Total 0.5

Basin Total 7.21

Element Flow Components:

Surface Interflow

Component Flows To:

POC 1 POC 1

Groundwater

Mitigated Land Use

Basin 1

Bypass: No

GroundWater: No

Pervious Land Use acre

C D,Shrub,Flat(0-5%) 0.17

C D,Shrub,Very(>20%) 0.05

Pervious Total 0.22

Impervious Land Use acre

Roads,Flat(0-5%) 0.06

Roof Area 0.08

Driveways,Flat(0-5%) 0.03

Sidewalks,Flat(0-5%) 0.01

Impervious Total 0.18

Basin Total 0.4

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Surface retention 1 Surface retention 1

Basin 5

Bypass: Yes

GroundWater: No

Pervious Land Use acre

C D,Grass,Ste(10-20) 0.26

C D,Grass,Very(>20%) 5.07

Pervious Total 5.33

Impervious Land Use acre

Sidewalks,Flat(0-5%) 0.04

Impervious Total 0.04

Basin Total 5.37

Element Flow Componants:

Surface Interflow

Groundwater

Componant Flows To:

POC 1 POC 1

Basin 3

Bypass: No

GroundWater: No

Pervious Land Use	acre
C D,Shrub,Flat(0-5%)	0.32
C D,Grass,Very(>20%)	0.27
C D,Grass,Ste(10-20)	0.13

Pervious Total 0.72

Impervious Land Use	acre
Roads,Flat(0-5%)	0.06
Roads,Steep(10-20%)	0.22
Roof Area	0.17
Driveways,Flat(0-5%)	0.08
Driveways,St(10-20%)	0.01
Driveways,Very(>20%)	0.09
Sidewalks,Flat(0-5%)	0.02

Impervious Total 0.65

Basin Total 1.37

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Surface retention 3 Surface retention 3

Basin 4

Bypass: No

GroundWater: No

Pervious Land Use acre
C D,Shrub,Flat(0-5%) 0.2

Pervious Total 0.2

Impervious Land Use acre
Roof Area 0.09
Driveways,Flat(0-5%) 0.03
Sidewalks,Flat(0-5%) 0.01

Impervious Total 0.13

Basin Total 0.33

Element Flow Componants:

Surface Interflow Groundwater

Componant Flows To:

Surface retention 4 Surface retention 4

Basin 2

Bypass: No

GroundWater: No

Pervious Land Use acre
C D,Shrub,Flat(0-5%) 0.08

Pervious Total 0.08

Impervious Land Use acre
Roof Area 0.03
Driveways,Flat(0-5%) 0.01

Impervious Total 0.04

Basin Total 0.12

Element Flow Componants:

Surface Interflow Groundwater

Componant Flows To:

Surface retention 2 Surface retention 2

Basin 6

Bypass: No

GroundWater: No

Pervious Land Use acre

C D,Shrub,Flat(0-5%) 0.16

C D,Shrub,Very(>20%) 0.01

Pervious Total 0.17

Impervious Land Use acre

Roof Area 0.07

Driveways,Flat(0-5%) 0.03

Driveways,St(10-20%) 0.01

Sidewalks,Flat(0-5%) 0.02

Impervious Total 0.13

Basin Total 0.3

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Surface retention 5 Surface retention 5

Basin 7

Bypass: No

GroundWater: No

Pervious Land Use acre

C D,Shrub,Flat(0-5%) 0.16

C D,Shrub,Very(>20%) 0.01

Pervious Total 0.17

Impervious Land Use acre

Roof Area 0.07

Driveways,Flat(0-5%) 0.03

Driveways,Mod(5-10%) 0.01

Sidewalks,Flat(0-5%) 0.02

Impervious Total 0.13

Basin Total 0.3

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Surface retention 6 Surface retention 6

Basin 8

Bypass: No

GroundWater: No

Pervious Land Use acre
C D,Shrub,Flat(0-5%) 0.19

Pervious Total 0.19

Impervious Land Use acre
Roof Area 0.06

Impervious Total 0.06

Basin Total 0.25

Element Flow Componants:

Surface Interflow Groundwater

Componant Flows To:

Surface retention 7 Surface retention 7

Basin 9

Bypass: No

GroundWater: No

Pervious Land Use	acre
C D,Grass,Very(>20%)	0.16
C D,Shrub,Mod(5-10%)	0.05
C D,Grass,Ste(10-20)	0.02

Pervious Total 0.23

Impervious Land Use	acre
Roads,Mod(5-10%)	0.29
Roads,Steep(10-20%)	0.09

Impervious Total 0.38

Basin Total 0.61

Element Flow Componants:

Surface	Interflow	Groundwater
---------	-----------	-------------

Componant Flows To:

Surface retention 8 Surface retention 8

Basin 10

Bypass: Yes

GroundWater: No

Pervious Land Use	acre
C D,Grass,Very(>20%)	3.62
C D,Grass,Ste(10-20)	0.18
C D,Grass,Mod(5-10%)	0.02
C D,Grass,Flat(0-5%)	0.03

Pervious Total 3.85

Impervious Land Use	acre
Sidewalks,Flat(0-5%)	0.06

Impervious Total 0.06

Basin Total 3.91

Element Flow Componants:

Surface Interflow

Componant Flows To:

POC 2 POC 2

Groundwater

Routing Elements

Pre-Project Routing

Mitigated Routing

Bioretention 1

Bottom Length: 28.28 ft.
 Bottom Width: 15.00 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 1
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 6.647
 Total Volume Through Riser (ac-ft.): 0.326
 Total Volume Through Facility (ac-ft.): 29.205
 Percent Infiltrated: 22.76
 Total Precip Applied to Facility: 2.259
 Total Evap From Facility: 0.877
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 2
 Offset (in.): 6
 Flow Through Underdrain (ac-ft.): 22.232
 Total Outflow (ac-ft.): 29.205
 Percent Through Underdrain: 76.12
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0298	0.0000	0.0000	0.0000
0.0440	0.0294	0.0002	0.0000	0.0000
0.0879	0.0290	0.0003	0.0000	0.0000
0.1319	0.0285	0.0005	0.0000	0.0000
0.1758	0.0281	0.0007	0.0000	0.0000
0.2198	0.0277	0.0009	0.0000	0.0000
0.2637	0.0273	0.0011	0.0000	0.0000
0.3077	0.0268	0.0012	0.0000	0.0000
0.3516	0.0264	0.0014	0.0000	0.0000
0.3956	0.0260	0.0016	0.0000	0.0000
0.4396	0.0256	0.0019	0.0010	0.0010
0.4835	0.0252	0.0021	0.0010	0.0010
0.5275	0.0248	0.0023	0.0010	0.0010
0.5714	0.0244	0.0025	0.0010	0.0010
0.6154	0.0240	0.0027	0.0010	0.0010
0.6593	0.0236	0.0030	0.0010	0.0010
0.7033	0.0232	0.0032	0.0010	0.0010
0.7473	0.0228	0.0034	0.0010	0.0010
0.7912	0.0224	0.0037	0.0010	0.0010

0.8352	0.0220	0.0039	0.0010	0.0010
0.8791	0.0216	0.0042	0.0010	0.0010
0.9231	0.0212	0.0045	0.0010	0.0010
0.9670	0.0209	0.0047	0.0010	0.0010
1.0110	0.0205	0.0050	0.0010	0.0010
1.0549	0.0201	0.0053	0.0010	0.0010
1.0989	0.0198	0.0056	0.0010	0.0010
1.1429	0.0194	0.0059	0.0010	0.0010
1.1868	0.0190	0.0062	0.0010	0.0010
1.2308	0.0187	0.0065	0.0010	0.0010
1.2747	0.0183	0.0068	0.0010	0.0010
1.3187	0.0180	0.0071	0.0010	0.0010
1.3626	0.0176	0.0074	0.0010	0.0010
1.4066	0.0173	0.0077	0.0010	0.0010
1.4505	0.0169	0.0081	0.0010	0.0010
1.4945	0.0166	0.0084	0.0010	0.0010
1.5385	0.0163	0.0088	0.0010	0.0010
1.5824	0.0159	0.0092	0.0010	0.0010
1.6264	0.0156	0.0096	0.0010	0.0010
1.6703	0.0153	0.0100	0.0010	0.0010
1.7143	0.0150	0.0104	0.0010	0.0010
1.7582	0.0147	0.0108	0.0010	0.0010
1.8022	0.0143	0.0112	0.0010	0.0010
1.8462	0.0140	0.0116	0.0010	0.0010
1.8901	0.0137	0.0121	0.0010	0.0010
1.9341	0.0134	0.0125	0.0010	0.0010
1.9780	0.0131	0.0129	0.0010	0.0010
2.0220	0.0128	0.0134	0.0010	0.0010
2.0659	0.0125	0.0139	0.0010	0.0010
2.1099	0.0122	0.0143	0.0010	0.0010
2.1538	0.0119	0.0148	0.0010	0.0010
2.1978	0.0117	0.0153	0.0010	0.0010
2.2418	0.0114	0.0158	0.0010	0.0010
2.2857	0.0111	0.0163	0.0010	0.0010
2.3297	0.0108	0.0168	0.0010	0.0010
2.3736	0.0105	0.0173	0.0010	0.0010
2.4176	0.0103	0.0178	0.0010	0.0010
2.4615	0.0100	0.0184	0.0010	0.0010
2.5000	0.0097	0.0188	0.0010	0.0010

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.0298	0.0188	0.0000	0.0491	0.0000
2.5440	0.0303	0.0202	0.0000	0.0491	0.0000
2.5879	0.0307	0.0215	0.0000	0.0520	0.0000
2.6319	0.0312	0.0229	0.0000	0.0534	0.0000
2.6758	0.0316	0.0242	0.0000	0.0549	0.0000
2.7198	0.0321	0.0256	0.0000	0.0563	0.0000
2.7637	0.0325	0.0271	0.0000	0.0577	0.0000
2.8077	0.0330	0.0285	0.0000	0.0592	0.0000
2.8516	0.0335	0.0300	0.0000	0.0606	0.0000
2.8956	0.0339	0.0314	0.0000	0.0620	0.0000
2.9396	0.0344	0.0329	0.0000	0.0635	0.0000
2.9835	0.0349	0.0345	0.0000	0.0649	0.0000
3.0275	0.0354	0.0360	0.0000	0.0664	0.0000
3.0714	0.0358	0.0376	0.0000	0.0678	0.0000
3.1154	0.0363	0.0392	0.0000	0.0692	0.0000
3.1593	0.0368	0.0408	0.0000	0.0707	0.0000

3.2033	0.0373	0.0424	0.0000	0.0721	0.0000
3.2473	0.0378	0.0441	0.0000	0.0736	0.0000
3.2912	0.0383	0.0457	0.0000	0.0750	0.0000
3.3352	0.0388	0.0474	0.0000	0.0764	0.0000
3.3791	0.0393	0.0491	0.0000	0.0779	0.0000
3.4231	0.0398	0.0509	0.0000	0.0792	0.0000
3.4670	0.0403	0.0526	0.0000	0.0792	0.0000
3.5110	0.0409	0.0544	0.0000	0.0792	0.0000
3.5549	0.0414	0.0562	0.0000	0.0792	0.0000
3.5989	0.0419	0.0581	0.0000	0.0792	0.0000
3.6429	0.0424	0.0599	0.0000	0.0792	0.0000
3.6868	0.0430	0.0618	0.0000	0.0792	0.0000
3.7308	0.0435	0.0637	0.0000	0.0792	0.0000
3.7747	0.0440	0.0656	0.0000	0.0792	0.0000
3.8187	0.0446	0.0676	0.0000	0.0792	0.0000
3.8626	0.0451	0.0695	0.0113	0.0792	0.0000
3.9066	0.0456	0.0715	0.0120	0.0792	0.0000
3.9505	0.0462	0.0735	0.0136	0.0792	0.0000
3.9945	0.0467	0.0756	0.0153	0.0792	0.0000
4.0000	0.0468	0.0758	0.0162	0.0792	0.0000

Bioretention 2

Bottom Length: 19.70 ft.
 Bottom Width: 11.20 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 1
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 2.763
 Total Volume Through Riser (ac-ft.): 0.009
 Total Volume Through Facility (ac-ft.): 7.785
 Percent Infiltrated: 35.49
 Total Precip Applied to Facility: 0.802
 Total Evap From Facility: 0.38
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 2
 Offset (in.): 6
 Flow Through Underdrain (ac-ft.): 5.013
 Total Outflow (ac-ft.): 7.785
 Percent Through Underdrain: 64.39
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0118	0.0000	0.0000	0.0000
0.0440	0.0117	0.0001	0.0000	0.0000
0.0879	0.0116	0.0002	0.0000	0.0000
0.1319	0.0115	0.0003	0.0000	0.0000
0.1758	0.0114	0.0004	0.0000	0.0000
0.2198	0.0113	0.0004	0.0000	0.0000
0.2637	0.0111	0.0005	0.0000	0.0000
0.3077	0.0110	0.0006	0.0000	0.0000
0.3516	0.0109	0.0007	0.0000	0.0000
0.3956	0.0108	0.0008	0.0000	0.0000
0.4396	0.0107	0.0009	0.0005	0.0005
0.4835	0.0106	0.0011	0.0005	0.0005
0.5275	0.0104	0.0012	0.0005	0.0005
0.5714	0.0103	0.0013	0.0005	0.0005
0.6154	0.0102	0.0014	0.0005	0.0005
0.6593	0.0101	0.0015	0.0005	0.0005
0.7033	0.0100	0.0016	0.0005	0.0005
0.7473	0.0098	0.0017	0.0005	0.0005
0.7912	0.0097	0.0018	0.0005	0.0005
0.8352	0.0096	0.0020	0.0005	0.0005
0.8791	0.0095	0.0021	0.0005	0.0005

0.9231	0.0094	0.0022	0.0005	0.0005
0.9670	0.0092	0.0023	0.0005	0.0005
1.0110	0.0091	0.0025	0.0005	0.0005
1.0549	0.0090	0.0026	0.0005	0.0005
1.0989	0.0089	0.0027	0.0005	0.0005
1.1429	0.0088	0.0029	0.0005	0.0005
1.1868	0.0086	0.0030	0.0005	0.0005
1.2308	0.0085	0.0031	0.0005	0.0005
1.2747	0.0084	0.0033	0.0005	0.0005
1.3187	0.0083	0.0034	0.0005	0.0005
1.3626	0.0082	0.0036	0.0005	0.0005
1.4066	0.0080	0.0037	0.0005	0.0005
1.4505	0.0079	0.0039	0.0005	0.0005
1.4945	0.0078	0.0040	0.0005	0.0005
1.5385	0.0077	0.0042	0.0005	0.0005
1.5824	0.0076	0.0044	0.0005	0.0005
1.6264	0.0075	0.0045	0.0005	0.0005
1.6703	0.0073	0.0047	0.0005	0.0005
1.7143	0.0072	0.0049	0.0005	0.0005
1.7582	0.0071	0.0051	0.0005	0.0005
1.8022	0.0070	0.0052	0.0005	0.0005
1.8462	0.0069	0.0054	0.0005	0.0005
1.8901	0.0067	0.0056	0.0005	0.0005
1.9341	0.0066	0.0058	0.0005	0.0005
1.9780	0.0065	0.0060	0.0005	0.0005
2.0220	0.0064	0.0062	0.0005	0.0005
2.0659	0.0063	0.0064	0.0005	0.0005
2.1099	0.0061	0.0066	0.0005	0.0005
2.1538	0.0060	0.0068	0.0005	0.0005
2.1978	0.0059	0.0070	0.0005	0.0005
2.2418	0.0058	0.0072	0.0005	0.0005
2.2857	0.0057	0.0074	0.0005	0.0005
2.3297	0.0055	0.0076	0.0005	0.0005
2.3736	0.0054	0.0078	0.0005	0.0005
2.4176	0.0053	0.0080	0.0005	0.0005
2.4615	0.0052	0.0082	0.0005	0.0005
2.5000	0.0051	0.0084	0.0005	0.0005

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.0118	0.0084	0.0000	0.0255	0.0000
2.5440	0.0120	0.0089	0.0000	0.0255	0.0000
2.5879	0.0121	0.0095	0.0000	0.0270	0.0000
2.6319	0.0122	0.0100	0.0000	0.0278	0.0000
2.6758	0.0123	0.0105	0.0000	0.0285	0.0000
2.7198	0.0124	0.0111	0.0000	0.0293	0.0000
2.7637	0.0126	0.0116	0.0000	0.0300	0.0000
2.8077	0.0127	0.0122	0.0000	0.0308	0.0000
2.8516	0.0128	0.0127	0.0000	0.0315	0.0000
2.8956	0.0129	0.0133	0.0000	0.0323	0.0000
2.9396	0.0130	0.0139	0.0000	0.0330	0.0000
2.9835	0.0132	0.0144	0.0000	0.0338	0.0000
3.0275	0.0133	0.0150	0.0000	0.0345	0.0000
3.0714	0.0134	0.0156	0.0000	0.0353	0.0000
3.1154	0.0135	0.0162	0.0000	0.0360	0.0000
3.1593	0.0136	0.0168	0.0000	0.0368	0.0000
3.2033	0.0138	0.0174	0.0000	0.0375	0.0000
3.2473	0.0139	0.0180	0.0000	0.0383	0.0000

3.2912	0.0140	0.0186	0.0000	0.0390	0.0000
3.3352	0.0141	0.0192	0.0000	0.0398	0.0000
3.3791	0.0142	0.0199	0.0000	0.0405	0.0000
3.4231	0.0144	0.0205	0.0000	0.0413	0.0000
3.4670	0.0145	0.0211	0.0000	0.0420	0.0000
3.5110	0.0146	0.0218	0.0000	0.0426	0.0000
3.5549	0.0147	0.0224	0.0000	0.0426	0.0000
3.5989	0.0148	0.0231	0.0000	0.0426	0.0000
3.6429	0.0150	0.0237	0.0000	0.0426	0.0000
3.6868	0.0151	0.0244	0.0000	0.0426	0.0000
3.7308	0.0152	0.0250	0.0000	0.0426	0.0000
3.7747	0.0153	0.0257	0.0000	0.0426	0.0000
3.8187	0.0154	0.0264	0.0000	0.0426	0.0000
3.8626	0.0155	0.0271	0.0059	0.0426	0.0000
3.9066	0.0157	0.0278	0.0062	0.0426	0.0000
3.9505	0.0158	0.0284	0.0071	0.0426	0.0000
3.9945	0.0159	0.0291	0.0080	0.0426	0.0000
4.0000	0.0159	0.0292	0.0089	0.0426	0.0000

Bioretention 3

Bottom Length: 69.50 ft.
 Bottom Width: 25.00 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 2
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 35.167
 Total Volume Through Riser (ac-ft.): 5.878
 Total Volume Through Facility (ac-ft.): 103.177
 Percent Infiltrated: 34.08
 Total Precip Applied to Facility: 4.989
 Total Evap From Facility: 2.192
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 3
 Offset (in.): 18
 Flow Through Underdrain (ac-ft.): 62.132
 Total Outflow (ac-ft.): 103.177
 Percent Through Underdrain: 60.22
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0519	0.0000	0.0000	0.0000
0.0549	0.0518	0.0008	0.0000	0.0000
0.1099	0.0516	0.0017	0.0000	0.0000
0.1648	0.0514	0.0025	0.0000	0.0000
0.2198	0.0512	0.0034	0.0000	0.0000
0.2747	0.0511	0.0042	0.0000	0.0000
0.3297	0.0509	0.0051	0.0000	0.0000
0.3846	0.0507	0.0059	0.0040	0.0040
0.4396	0.0505	0.0068	0.0040	0.0040
0.4945	0.0503	0.0077	0.0040	0.0040
0.5495	0.0501	0.0085	0.0040	0.0040
0.6044	0.0499	0.0094	0.0040	0.0040
0.6593	0.0497	0.0103	0.0040	0.0040
0.7143	0.0495	0.0112	0.0040	0.0040
0.7692	0.0493	0.0120	0.0040	0.0040
0.8242	0.0492	0.0129	0.0040	0.0040
0.8791	0.0490	0.0138	0.0040	0.0040
0.9341	0.0488	0.0147	0.0040	0.0040
0.9890	0.0486	0.0156	0.0040	0.0040
1.0440	0.0484	0.0165	0.0040	0.0040
1.0989	0.0482	0.0174	0.0040	0.0040

1.1538	0.0480	0.0184	0.0040	0.0040
1.2088	0.0478	0.0193	0.0040	0.0040
1.2637	0.0476	0.0202	0.0040	0.0040
1.3187	0.0475	0.0211	0.0040	0.0040
1.3736	0.0473	0.0221	0.0040	0.0040
1.4286	0.0471	0.0230	0.0040	0.0040
1.4835	0.0469	0.0239	0.0040	0.0040
1.5385	0.0467	0.0250	0.0040	0.0040
1.5934	0.0465	0.0260	0.0040	0.0040
1.6484	0.0463	0.0270	0.0040	0.0040
1.7033	0.0461	0.0281	0.0040	0.0040
1.7582	0.0459	0.0291	0.0040	0.0040
1.8132	0.0458	0.0302	0.0040	0.0040
1.8681	0.0456	0.0312	0.0040	0.0040
1.9231	0.0454	0.0323	0.0040	0.0040
1.9780	0.0452	0.0333	0.0040	0.0040
2.0330	0.0450	0.0344	0.0040	0.0040
2.0879	0.0448	0.0355	0.0040	0.0040
2.1429	0.0446	0.0365	0.0040	0.0040
2.1978	0.0444	0.0376	0.0040	0.0040
2.2527	0.0442	0.0387	0.0040	0.0040
2.3077	0.0441	0.0398	0.0040	0.0040
2.3626	0.0439	0.0409	0.0040	0.0040
2.4176	0.0437	0.0420	0.0040	0.0040
2.4725	0.0435	0.0431	0.0040	0.0040
2.5275	0.0433	0.0442	0.0040	0.0040
2.5824	0.0431	0.0453	0.0040	0.0040
2.6374	0.0429	0.0464	0.0040	0.0040
2.6923	0.0427	0.0475	0.0040	0.0040
2.7473	0.0425	0.0487	0.0040	0.0040
2.8022	0.0423	0.0498	0.0040	0.0040
2.8571	0.0422	0.0509	0.0040	0.0040
2.9121	0.0420	0.0521	0.0040	0.0040
2.9670	0.0418	0.0532	0.0040	0.0040
3.0220	0.0416	0.0543	0.0040	0.0040
3.0769	0.0414	0.0555	0.0040	0.0040
3.1319	0.0412	0.0566	0.0040	0.0040
3.1868	0.0410	0.0578	0.0040	0.0040
3.2418	0.0408	0.0590	0.0040	0.0040
3.2967	0.0406	0.0601	0.0040	0.0040
3.3516	0.0405	0.0613	0.0040	0.0040
3.4066	0.0403	0.0625	0.0040	0.0040
3.4615	0.0401	0.0637	0.0040	0.0040
3.5000	0.0399	0.0645	0.0040	0.0040

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
3.5000	0.0519	0.0645	0.0000	0.1800	0.0000
3.5549	0.0521	0.0673	0.0000	0.1800	0.0000
3.6099	0.0523	0.0702	0.0000	0.1800	0.0000
3.6648	0.0525	0.0731	0.0000	0.1800	0.0000
3.7198	0.0527	0.0760	0.0000	0.1800	0.0000
3.7747	0.0529	0.0789	0.0000	0.1800	0.0000
3.8297	0.0531	0.0818	0.0000	0.1800	0.0000
3.8846	0.0533	0.0847	0.0000	0.1800	0.0000
3.9396	0.0535	0.0876	0.0000	0.1800	0.0000
3.9945	0.0536	0.0906	0.0000	0.1800	0.0000
4.0495	0.0538	0.0935	0.0000	0.1800	0.0000

4.1044	0.0540	0.0965	0.0000	0.1800	0.0000
4.1593	0.0542	0.0995	0.0000	0.1800	0.0000
4.2143	0.0544	0.1025	0.0000	0.1800	0.0000
4.2692	0.0546	0.1055	0.0000	0.1800	0.0000
4.3242	0.0548	0.1085	0.0000	0.1800	0.0000
4.3791	0.0550	0.1115	0.0000	0.1800	0.0000
4.4341	0.0552	0.1145	0.0000	0.1800	0.0000
4.4890	0.0553	0.1175	0.0000	0.1800	0.0000
4.5440	0.0555	0.1206	0.0000	0.1800	0.0000
4.5989	0.0557	0.1236	0.0000	0.1800	0.0000
4.6538	0.0559	0.1267	0.0000	0.1800	0.0000
4.7088	0.0561	0.1298	0.0000	0.1800	0.0000
4.7637	0.0563	0.1329	0.0000	0.1800	0.0000
4.8187	0.0565	0.1360	0.0000	0.1800	0.0000
4.8736	0.0567	0.1391	0.0000	0.1800	0.0000
4.9286	0.0569	0.1422	0.0000	0.1800	0.0000
4.9835	0.0570	0.1453	0.0000	0.1800	0.0000
5.0000	0.0571	0.1463	0.0000	0.1800	0.0000

Bioretention 4

Bottom Length: 20.50 ft.
 Bottom Width: 20.50 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 1
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 6.219
 Total Volume Through Riser (ac-ft.): 0.098
 Total Volume Through Facility (ac-ft.): 22.611
 Percent Infiltrated: 27.5
 Total Precip Applied to Facility: 2.037
 Total Evap From Facility: 0.845
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 2
 Offset (in.): 6
 Flow Through Underdrain (ac-ft.): 16.294
 Total Outflow (ac-ft.): 22.611
 Percent Through Underdrain: 72.06
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0289	0.0000	0.0000	0.0000
0.0440	0.0286	0.0002	0.0000	0.0000
0.0879	0.0281	0.0003	0.0000	0.0000
0.1319	0.0277	0.0005	0.0000	0.0000
0.1758	0.0273	0.0007	0.0000	0.0000
0.2198	0.0269	0.0009	0.0000	0.0000
0.2637	0.0265	0.0010	0.0000	0.0000
0.3077	0.0261	0.0012	0.0000	0.0000
0.3516	0.0256	0.0014	0.0000	0.0000
0.3956	0.0252	0.0016	0.0000	0.0000
0.4396	0.0248	0.0018	0.0000	0.0010
0.4835	0.0244	0.0020	0.0000	0.0010
0.5275	0.0241	0.0022	0.0000	0.0010
0.5714	0.0237	0.0025	0.0000	0.0010
0.6154	0.0233	0.0027	0.0000	0.0010
0.6593	0.0229	0.0029	0.0000	0.0010
0.7033	0.0225	0.0031	0.0000	0.0010
0.7473	0.0221	0.0034	0.0000	0.0010
0.7912	0.0218	0.0036	0.0000	0.0010
0.8352	0.0214	0.0039	0.0000	0.0010
0.8791	0.0210	0.0041	0.0000	0.0010

0.9231	0.0207	0.0044	0.0000	0.0010
0.9670	0.0203	0.0046	0.0000	0.0010
1.0110	0.0199	0.0049	0.0000	0.0010
1.0549	0.0196	0.0052	0.0000	0.0010
1.0989	0.0192	0.0055	0.0000	0.0010
1.1429	0.0189	0.0057	0.0000	0.0010
1.1868	0.0185	0.0060	0.0000	0.0010
1.2308	0.0182	0.0063	0.0000	0.0010
1.2747	0.0179	0.0066	0.0000	0.0010
1.3187	0.0175	0.0069	0.0000	0.0010
1.3626	0.0172	0.0073	0.0111	0.0010
1.4066	0.0169	0.0076	0.0119	0.0010
1.4505	0.0165	0.0079	0.0135	0.0010
1.4945	0.0162	0.0082	0.0152	0.0010
1.5385	0.0159	0.0086	0.0161	0.0010
1.5824	0.0156	0.0090	0.0179	0.0010
1.6264	0.0153	0.0093	0.0200	0.0010
1.6703	0.0149	0.0097	0.0215	0.0010
1.7143	0.0146	0.0101	0.0244	0.0010
1.7582	0.0143	0.0105	0.0255	0.0010
1.8022	0.0140	0.0109	0.0269	0.0010
1.8462	0.0137	0.0113	0.0306	0.0010
1.8901	0.0134	0.0118	0.0320	0.0010
1.9341	0.0131	0.0122	0.0333	0.0010
1.9780	0.0129	0.0126	0.0353	0.0010
2.0220	0.0126	0.0131	0.0389	0.0010
2.0659	0.0123	0.0135	0.0408	0.0010
2.1099	0.0120	0.0140	0.0421	0.0010
2.1538	0.0117	0.0144	0.0451	0.0010
2.1978	0.0115	0.0149	0.0473	0.0010
2.2418	0.0112	0.0154	0.0525	0.0010
2.2857	0.0109	0.0159	0.0573	0.0010
2.3297	0.0107	0.0164	0.0618	0.0010
2.3736	0.0104	0.0169	0.0659	0.0010
2.4176	0.0102	0.0174	0.0699	0.0010
2.4615	0.0099	0.0179	0.0737	0.0010
2.5000	0.0096	0.0184	0.0782	0.0010

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.0289	0.0184	0.0000	0.0486	0.0000
2.5440	0.0294	0.0196	0.0000	0.0486	0.0000
2.5879	0.0298	0.0209	0.0000	0.0515	0.0000
2.6319	0.0302	0.0223	0.0000	0.0529	0.0000
2.6758	0.0307	0.0236	0.0000	0.0543	0.0000
2.7198	0.0311	0.0250	0.0000	0.0558	0.0000
2.7637	0.0316	0.0263	0.0000	0.0572	0.0000
2.8077	0.0320	0.0277	0.0000	0.0586	0.0000
2.8516	0.0325	0.0292	0.0000	0.0600	0.0000
2.8956	0.0329	0.0306	0.0000	0.0615	0.0000
2.9396	0.0334	0.0320	0.0000	0.0629	0.0000
2.9835	0.0339	0.0335	0.0000	0.0643	0.0000
3.0275	0.0343	0.0350	0.0000	0.0657	0.0000
3.0714	0.0348	0.0365	0.0000	0.0672	0.0000
3.1154	0.0353	0.0381	0.0000	0.0686	0.0000
3.1593	0.0357	0.0396	0.0000	0.0700	0.0000
3.2033	0.0362	0.0412	0.0000	0.0714	0.0000
3.2473	0.0367	0.0428	0.0000	0.0729	0.0000

3.2912	0.0372	0.0445	0.0000	0.0743	0.0000
3.3352	0.0377	0.0461	0.0000	0.0757	0.0000
3.3791	0.0382	0.0478	0.0000	0.0771	0.0000
3.4231	0.0387	0.0495	0.0000	0.0786	0.0000
3.4670	0.0392	0.0512	0.0000	0.0792	0.0000
3.5110	0.0397	0.0529	0.0122	0.0792	0.0000
3.5549	0.0402	0.0546	0.1365	0.0792	0.0000
3.5989	0.0407	0.0564	0.3281	0.0792	0.0000
3.6429	0.0412	0.0582	0.5635	0.0792	0.0000
3.6868	0.0417	0.0600	0.8261	0.0792	0.0000
3.7308	0.0422	0.0619	1.0991	0.0792	0.0000
3.7747	0.0427	0.0638	1.3657	0.0792	0.0000
3.8187	0.0433	0.0656	1.6096	0.0792	0.0000
3.8626	0.0438	0.0676	1.8176	0.0792	0.0000
3.9066	0.0443	0.0695	1.9818	0.0792	0.0000
3.9505	0.0449	0.0715	2.1028	0.0792	0.0000
3.9945	0.0454	0.0734	2.1930	0.0792	0.0000
4.0000	0.0455	0.0737	2.3112	0.0792	0.0000

Bioretention 5

Bottom Length: 19.70 ft.
 Bottom Width: 20.00 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 1
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 5.874
 Total Volume Through Riser (ac-ft.): 0.078
 Total Volume Through Facility (ac-ft.): 21.445
 Percent Infiltrated: 27.39
 Total Precip Applied to Facility: 1.975
 Total Evap From Facility: 0.807
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 2
 Offset (in.): 6
 Flow Through Underdrain (ac-ft.): 15.493
 Total Outflow (ac-ft.): 21.445
 Percent Through Underdrain: 72.25
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0279	0.0000	0.0000	0.0000
0.0440	0.0275	0.0002	0.0000	0.0000
0.0879	0.0271	0.0003	0.0000	0.0000
0.1319	0.0267	0.0005	0.0000	0.0000
0.1758	0.0263	0.0006	0.0000	0.0000
0.2198	0.0259	0.0008	0.0000	0.0000
0.2637	0.0255	0.0010	0.0000	0.0000
0.3077	0.0251	0.0012	0.0000	0.0000
0.3516	0.0247	0.0013	0.0000	0.0000
0.3956	0.0243	0.0015	0.0000	0.0000
0.4396	0.0239	0.0017	0.0009	0.0009
0.4835	0.0235	0.0019	0.0009	0.0009
0.5275	0.0231	0.0021	0.0009	0.0009
0.5714	0.0227	0.0023	0.0009	0.0009
0.6154	0.0223	0.0025	0.0009	0.0009
0.6593	0.0220	0.0027	0.0009	0.0009
0.7033	0.0216	0.0030	0.0009	0.0009
0.7473	0.0212	0.0032	0.0009	0.0009
0.7912	0.0208	0.0034	0.0009	0.0009
0.8352	0.0205	0.0037	0.0009	0.0009
0.8791	0.0201	0.0039	0.0009	0.0009

0.9231	0.0198	0.0041	0.0009	0.0009
0.9670	0.0194	0.0044	0.0009	0.0009
1.0110	0.0191	0.0046	0.0009	0.0009
1.0549	0.0187	0.0049	0.0009	0.0009
1.0989	0.0184	0.0052	0.0009	0.0009
1.1429	0.0180	0.0054	0.0009	0.0009
1.1868	0.0177	0.0057	0.0009	0.0009
1.2308	0.0174	0.0060	0.0009	0.0009
1.2747	0.0170	0.0063	0.0009	0.0009
1.3187	0.0167	0.0066	0.0009	0.0009
1.3626	0.0164	0.0069	0.0009	0.0009
1.4066	0.0161	0.0072	0.0009	0.0009
1.4505	0.0157	0.0075	0.0009	0.0009
1.4945	0.0154	0.0078	0.0009	0.0009
1.5385	0.0151	0.0082	0.0009	0.0009
1.5824	0.0148	0.0085	0.0009	0.0009
1.6264	0.0145	0.0089	0.0009	0.0009
1.6703	0.0142	0.0092	0.0009	0.0009
1.7143	0.0139	0.0096	0.0009	0.0009
1.7582	0.0136	0.0100	0.0009	0.0009
1.8022	0.0133	0.0104	0.0009	0.0009
1.8462	0.0130	0.0108	0.0009	0.0009
1.8901	0.0127	0.0112	0.0009	0.0009
1.9341	0.0124	0.0116	0.0009	0.0009
1.9780	0.0122	0.0120	0.0009	0.0009
2.0220	0.0119	0.0125	0.0009	0.0009
2.0659	0.0116	0.0129	0.0009	0.0009
2.1099	0.0113	0.0133	0.0009	0.0009
2.1538	0.0111	0.0138	0.0009	0.0009
2.1978	0.0108	0.0142	0.0009	0.0009
2.2418	0.0105	0.0147	0.0009	0.0009
2.2857	0.0103	0.0152	0.0009	0.0009
2.3297	0.0100	0.0156	0.0009	0.0009
2.3736	0.0098	0.0161	0.0009	0.0009
2.4176	0.0095	0.0166	0.0009	0.0009
2.4615	0.0093	0.0171	0.0009	0.0009
2.5000	0.0090	0.0175	0.0009	0.0009

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.0279	0.0175	0.0000	0.0456	0.0000
2.5440	0.0283	0.0188	0.0000	0.0456	0.0000
2.5879	0.0287	0.0200	0.0000	0.0483	0.0000
2.6319	0.0292	0.0213	0.0000	0.0496	0.0000
2.6758	0.0296	0.0226	0.0000	0.0509	0.0000
2.7198	0.0300	0.0239	0.0000	0.0523	0.0000
2.7637	0.0305	0.0252	0.0000	0.0536	0.0000
2.8077	0.0309	0.0266	0.0000	0.0550	0.0000
2.8516	0.0314	0.0280	0.0000	0.0563	0.0000
2.8956	0.0318	0.0293	0.0000	0.0576	0.0000
2.9396	0.0323	0.0307	0.0000	0.0590	0.0000
2.9835	0.0327	0.0322	0.0000	0.0603	0.0000
3.0275	0.0332	0.0336	0.0000	0.0616	0.0000
3.0714	0.0336	0.0351	0.0000	0.0630	0.0000
3.1154	0.0341	0.0366	0.0000	0.0643	0.0000
3.1593	0.0346	0.0381	0.0000	0.0656	0.0000
3.2033	0.0350	0.0396	0.0000	0.0670	0.0000
3.2473	0.0355	0.0412	0.0000	0.0683	0.0000

3.2912	0.0360	0.0427	0.0000	0.0697	0.0000
3.3352	0.0365	0.0443	0.0000	0.0710	0.0000
3.3791	0.0370	0.0460	0.0000	0.0723	0.0000
3.4231	0.0374	0.0476	0.0000	0.0737	0.0000
3.4670	0.0379	0.0492	0.0000	0.0750	0.0000
3.5110	0.0384	0.0509	0.0000	0.0760	0.0000
3.5549	0.0389	0.0526	0.0000	0.0760	0.0000
3.5989	0.0394	0.0543	0.0000	0.0760	0.0000
3.6429	0.0399	0.0561	0.0000	0.0760	0.0000
3.6868	0.0404	0.0579	0.0000	0.0760	0.0000
3.7308	0.0409	0.0596	0.0000	0.0760	0.0000
3.7747	0.0415	0.0615	0.0000	0.0760	0.0000
3.8187	0.0420	0.0633	0.0000	0.0760	0.0000
3.8626	0.0425	0.0651	0.0104	0.0760	0.0000
3.9066	0.0430	0.0670	0.0111	0.0760	0.0000
3.9505	0.0435	0.0689	0.0126	0.0760	0.0000
3.9945	0.0441	0.0709	0.0141	0.0760	0.0000
4.0000	0.0441	0.0711	0.0159	0.0760	0.0000

Bioretention 6

Bottom Length: 35.75 ft.
 Bottom Width: 12.00 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 1
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 6.284
 Total Volume Through Riser (ac-ft.): 0.054
 Total Volume Through Facility (ac-ft.): 21.532
 Percent Infiltrated: 29.18
 Total Precip Applied to Facility: 2.155
 Total Evap From Facility: 0.894
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 2
 Offset (in.): 6
 Flow Through Underdrain (ac-ft.): 15.194
 Total Outflow (ac-ft.): 21.532
 Percent Through Underdrain: 70.56
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0315	0.0000	0.0000	0.0000
0.0440	0.0310	0.0002	0.0000	0.0000
0.0879	0.0306	0.0003	0.0000	0.0000
0.1319	0.0301	0.0005	0.0000	0.0000
0.1758	0.0297	0.0007	0.0000	0.0000
0.2198	0.0292	0.0009	0.0000	0.0000
0.2637	0.0287	0.0011	0.0000	0.0000
0.3077	0.0283	0.0013	0.0000	0.0000
0.3516	0.0278	0.0015	0.0000	0.0000
0.3956	0.0274	0.0017	0.0000	0.0000
0.4396	0.0270	0.0019	0.0010	0.0010
0.4835	0.0265	0.0021	0.0010	0.0010
0.5275	0.0261	0.0023	0.0010	0.0010
0.5714	0.0257	0.0026	0.0010	0.0010
0.6154	0.0252	0.0028	0.0010	0.0010
0.6593	0.0248	0.0030	0.0010	0.0010
0.7033	0.0244	0.0033	0.0010	0.0010
0.7473	0.0240	0.0035	0.0010	0.0010
0.7912	0.0236	0.0038	0.0010	0.0010
0.8352	0.0231	0.0041	0.0010	0.0010
0.8791	0.0227	0.0043	0.0010	0.0010

0.9231	0.0223	0.0046	0.0010	0.0010
0.9670	0.0219	0.0049	0.0010	0.0010
1.0110	0.0215	0.0052	0.0010	0.0010
1.0549	0.0211	0.0055	0.0010	0.0010
1.0989	0.0207	0.0058	0.0010	0.0010
1.1429	0.0203	0.0061	0.0010	0.0010
1.1868	0.0200	0.0064	0.0010	0.0010
1.2308	0.0196	0.0067	0.0010	0.0010
1.2747	0.0192	0.0070	0.0010	0.0010
1.3187	0.0188	0.0073	0.0010	0.0010
1.3626	0.0184	0.0077	0.0010	0.0010
1.4066	0.0181	0.0080	0.0010	0.0010
1.4505	0.0177	0.0084	0.0010	0.0010
1.4945	0.0173	0.0087	0.0010	0.0010
1.5385	0.0170	0.0091	0.0010	0.0010
1.5824	0.0166	0.0095	0.0010	0.0010
1.6264	0.0163	0.0099	0.0010	0.0010
1.6703	0.0159	0.0104	0.0010	0.0010
1.7143	0.0156	0.0108	0.0010	0.0010
1.7582	0.0152	0.0112	0.0010	0.0010
1.8022	0.0149	0.0117	0.0010	0.0010
1.8462	0.0145	0.0121	0.0010	0.0010
1.8901	0.0142	0.0126	0.0010	0.0010
1.9341	0.0139	0.0130	0.0010	0.0010
1.9780	0.0135	0.0135	0.0010	0.0010
2.0220	0.0132	0.0140	0.0010	0.0010
2.0659	0.0129	0.0145	0.0010	0.0010
2.1099	0.0126	0.0150	0.0010	0.0010
2.1538	0.0123	0.0155	0.0010	0.0010
2.1978	0.0120	0.0160	0.0010	0.0010
2.2418	0.0116	0.0165	0.0010	0.0010
2.2857	0.0113	0.0170	0.0010	0.0010
2.3297	0.0110	0.0176	0.0010	0.0010
2.3736	0.0107	0.0181	0.0010	0.0010
2.4176	0.0104	0.0187	0.0010	0.0010
2.4615	0.0101	0.0192	0.0010	0.0010
2.5000	0.0098	0.0197	0.0010	0.0010

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.0315	0.0197	0.0000	0.0497	0.0000
2.5440	0.0319	0.0211	0.0000	0.0497	0.0000
2.5879	0.0324	0.0225	0.0000	0.0526	0.0000
2.6319	0.0329	0.0240	0.0000	0.0540	0.0000
2.6758	0.0334	0.0254	0.0000	0.0555	0.0000
2.7198	0.0339	0.0269	0.0000	0.0569	0.0000
2.7637	0.0343	0.0284	0.0000	0.0584	0.0000
2.8077	0.0348	0.0299	0.0000	0.0598	0.0000
2.8516	0.0353	0.0315	0.0000	0.0613	0.0000
2.8956	0.0358	0.0330	0.0000	0.0627	0.0000
2.9396	0.0363	0.0346	0.0000	0.0642	0.0000
2.9835	0.0368	0.0362	0.0000	0.0657	0.0000
3.0275	0.0373	0.0379	0.0000	0.0671	0.0000
3.0714	0.0378	0.0395	0.0000	0.0686	0.0000
3.1154	0.0384	0.0412	0.0000	0.0700	0.0000
3.1593	0.0389	0.0429	0.0000	0.0715	0.0000
3.2033	0.0394	0.0446	0.0000	0.0729	0.0000
3.2473	0.0399	0.0463	0.0000	0.0744	0.0000

3.2912	0.0404	0.0481	0.0000	0.0758	0.0000
3.3352	0.0410	0.0499	0.0000	0.0773	0.0000
3.3791	0.0415	0.0517	0.0000	0.0788	0.0000
3.4231	0.0420	0.0535	0.0000	0.0792	0.0000
3.4670	0.0426	0.0554	0.0000	0.0792	0.0000
3.5110	0.0431	0.0573	0.0000	0.0792	0.0000
3.5549	0.0437	0.0592	0.0000	0.0792	0.0000
3.5989	0.0442	0.0611	0.0000	0.0792	0.0000
3.6429	0.0448	0.0631	0.0000	0.0792	0.0000
3.6868	0.0453	0.0651	0.0000	0.0792	0.0000
3.7308	0.0459	0.0671	0.0000	0.0792	0.0000
3.7747	0.0465	0.0691	0.0000	0.0792	0.0000
3.8187	0.0470	0.0712	0.0000	0.0792	0.0000
3.8626	0.0476	0.0732	0.0114	0.0792	0.0000
3.9066	0.0482	0.0753	0.0121	0.0792	0.0000
3.9505	0.0487	0.0775	0.0138	0.0792	0.0000
3.9945	0.0493	0.0796	0.0155	0.0792	0.0000
4.0000	0.0494	0.0799	0.0164	0.0792	0.0000

Bioretention 7

Bottom Length: 40.88 ft.
 Bottom Width: 10.50 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 1
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 5.326
 Total Volume Through Riser (ac-ft.): 0.01
 Total Volume Through Facility (ac-ft.): 15.119
 Percent Infiltrated: 35.23
 Total Precip Applied to Facility: 1.961
 Total Evap From Facility: 0.862
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 2
 Offset (in.): 6
 Flow Through Underdrain (ac-ft.): 9.783
 Total Outflow (ac-ft.): 15.119
 Percent Through Underdrain: 64.71
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0327	0.0000	0.0000	0.0000
0.0440	0.0323	0.0002	0.0000	0.0000
0.0879	0.0318	0.0003	0.0000	0.0000
0.1319	0.0313	0.0005	0.0000	0.0000
0.1758	0.0308	0.0007	0.0000	0.0000
0.2198	0.0303	0.0009	0.0000	0.0000
0.2637	0.0299	0.0011	0.0000	0.0000
0.3077	0.0294	0.0013	0.0000	0.0000
0.3516	0.0289	0.0015	0.0000	0.0000
0.3956	0.0285	0.0017	0.0000	0.0000
0.4396	0.0280	0.0019	0.0010	0.0010
0.4835	0.0275	0.0021	0.0010	0.0010
0.5275	0.0271	0.0024	0.0010	0.0010
0.5714	0.0266	0.0026	0.0010	0.0010
0.6154	0.0262	0.0028	0.0010	0.0010
0.6593	0.0257	0.0031	0.0010	0.0010
0.7033	0.0253	0.0033	0.0010	0.0010
0.7473	0.0249	0.0036	0.0010	0.0010
0.7912	0.0244	0.0039	0.0010	0.0010
0.8352	0.0240	0.0041	0.0010	0.0010
0.8791	0.0236	0.0044	0.0010	0.0010

0.9231	0.0231	0.0047	0.0010	0.0010
0.9670	0.0227	0.0050	0.0010	0.0010
1.0110	0.0223	0.0053	0.0010	0.0010
1.0549	0.0219	0.0056	0.0010	0.0010
1.0989	0.0214	0.0059	0.0010	0.0010
1.1429	0.0210	0.0062	0.0010	0.0010
1.1868	0.0206	0.0065	0.0010	0.0010
1.2308	0.0202	0.0068	0.0010	0.0010
1.2747	0.0198	0.0072	0.0010	0.0010
1.3187	0.0194	0.0075	0.0010	0.0010
1.3626	0.0190	0.0079	0.0010	0.0010
1.4066	0.0186	0.0082	0.0010	0.0010
1.4505	0.0182	0.0086	0.0010	0.0010
1.4945	0.0179	0.0089	0.0010	0.0010
1.5385	0.0175	0.0094	0.0010	0.0010
1.5824	0.0171	0.0098	0.0010	0.0010
1.6264	0.0167	0.0102	0.0010	0.0010
1.6703	0.0163	0.0106	0.0010	0.0010
1.7143	0.0160	0.0111	0.0010	0.0010
1.7582	0.0156	0.0115	0.0010	0.0010
1.8022	0.0152	0.0120	0.0010	0.0010
1.8462	0.0149	0.0125	0.0010	0.0010
1.8901	0.0145	0.0129	0.0010	0.0010
1.9341	0.0142	0.0134	0.0010	0.0010
1.9780	0.0138	0.0139	0.0010	0.0010
2.0220	0.0135	0.0144	0.0010	0.0010
2.0659	0.0131	0.0149	0.0010	0.0010
2.1099	0.0128	0.0154	0.0010	0.0010
2.1538	0.0124	0.0159	0.0010	0.0010
2.1978	0.0121	0.0165	0.0010	0.0010
2.2418	0.0118	0.0170	0.0010	0.0010
2.2857	0.0114	0.0176	0.0010	0.0010
2.3297	0.0111	0.0181	0.0010	0.0010
2.3736	0.0108	0.0187	0.0010	0.0010
2.4176	0.0105	0.0193	0.0010	0.0010
2.4615	0.0102	0.0198	0.0010	0.0010
2.5000	0.0099	0.0204	0.0010	0.0010

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.0327	0.0204	0.0000	0.0497	0.0000
2.5440	0.0332	0.0218	0.0000	0.0497	0.0000
2.5879	0.0337	0.0233	0.0000	0.0526	0.0000
2.6319	0.0342	0.0248	0.0000	0.0540	0.0000
2.6758	0.0347	0.0263	0.0000	0.0555	0.0000
2.7198	0.0352	0.0278	0.0000	0.0570	0.0000
2.7637	0.0357	0.0294	0.0000	0.0584	0.0000
2.8077	0.0362	0.0310	0.0000	0.0599	0.0000
2.8516	0.0368	0.0326	0.0000	0.0613	0.0000
2.8956	0.0373	0.0342	0.0000	0.0628	0.0000
2.9396	0.0378	0.0358	0.0000	0.0642	0.0000
2.9835	0.0383	0.0375	0.0000	0.0657	0.0000
3.0275	0.0389	0.0392	0.0000	0.0672	0.0000
3.0714	0.0394	0.0409	0.0000	0.0686	0.0000
3.1154	0.0399	0.0427	0.0000	0.0701	0.0000
3.1593	0.0405	0.0444	0.0000	0.0715	0.0000
3.2033	0.0410	0.0462	0.0000	0.0730	0.0000
3.2473	0.0415	0.0481	0.0000	0.0744	0.0000

3.2912	0.0421	0.0499	0.0000	0.0759	0.0000
3.3352	0.0427	0.0518	0.0000	0.0773	0.0000
3.3791	0.0432	0.0536	0.0000	0.0788	0.0000
3.4231	0.0438	0.0556	0.0000	0.0792	0.0000
3.4670	0.0443	0.0575	0.0000	0.0792	0.0000
3.5110	0.0449	0.0594	0.0000	0.0792	0.0000
3.5549	0.0455	0.0614	0.0000	0.0792	0.0000
3.5989	0.0460	0.0634	0.0000	0.0792	0.0000
3.6429	0.0466	0.0655	0.0000	0.0792	0.0000
3.6868	0.0472	0.0675	0.0000	0.0792	0.0000
3.7308	0.0478	0.0696	0.0000	0.0792	0.0000
3.7747	0.0483	0.0717	0.0000	0.0792	0.0000
3.8187	0.0489	0.0739	0.0000	0.0792	0.0000
3.8626	0.0495	0.0760	0.0114	0.0792	0.0000
3.9066	0.0501	0.0782	0.0121	0.0792	0.0000
3.9505	0.0507	0.0804	0.0138	0.0792	0.0000
3.9945	0.0513	0.0827	0.0155	0.0792	0.0000
4.0000	0.0514	0.0830	0.0164	0.0792	0.0000

Bioretention 8

Bottom Length: 84.83 ft.
 Bottom Width: 10.50 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 1
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 12.981
 Total Volume Through Riser (ac-ft.): 1.339
 Total Volume Through Facility (ac-ft.): 52.725
 Percent Infiltrated: 24.62
 Total Precip Applied to Facility: 4.021
 Total Evap From Facility: 1.61
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 2
 Offset (in.): 6
 Flow Through Underdrain (ac-ft.): 38.405
 Total Outflow (ac-ft.): 52.725
 Percent Through Underdrain: 72.84
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 12 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0497	0.0000	0.0000	0.0000
0.0440	0.0492	0.0003	0.0000	0.0000
0.0879	0.0487	0.0007	0.0000	0.0000
0.1319	0.0482	0.0011	0.0000	0.0000
0.1758	0.0477	0.0014	0.0000	0.0000
0.2198	0.0472	0.0018	0.0000	0.0000
0.2637	0.0466	0.0022	0.0000	0.0000
0.3077	0.0461	0.0026	0.0000	0.0000
0.3516	0.0456	0.0030	0.0000	0.0000
0.3956	0.0451	0.0034	0.0000	0.0000
0.4396	0.0446	0.0038	0.0021	0.0021
0.4835	0.0441	0.0043	0.0021	0.0021
0.5275	0.0436	0.0047	0.0021	0.0021
0.5714	0.0430	0.0052	0.0021	0.0021
0.6154	0.0425	0.0056	0.0021	0.0021
0.6593	0.0420	0.0061	0.0021	0.0021
0.7033	0.0415	0.0066	0.0021	0.0021
0.7473	0.0410	0.0070	0.0021	0.0021
0.7912	0.0405	0.0075	0.0021	0.0021
0.8352	0.0400	0.0080	0.0021	0.0021
0.8791	0.0395	0.0085	0.0021	0.0021

0.9231	0.0389	0.0091	0.0021	0.0021
0.9670	0.0384	0.0096	0.0021	0.0021
1.0110	0.0379	0.0101	0.0021	0.0021
1.0549	0.0374	0.0107	0.0021	0.0021
1.0989	0.0369	0.0112	0.0021	0.0021
1.1429	0.0364	0.0118	0.0021	0.0021
1.1868	0.0359	0.0123	0.0021	0.0021
1.2308	0.0353	0.0129	0.0021	0.0021
1.2747	0.0348	0.0135	0.0021	0.0021
1.3187	0.0343	0.0141	0.0021	0.0021
1.3626	0.0338	0.0147	0.0021	0.0021
1.4066	0.0333	0.0153	0.0021	0.0021
1.4505	0.0328	0.0159	0.0021	0.0021
1.4945	0.0323	0.0166	0.0021	0.0021
1.5385	0.0317	0.0173	0.0021	0.0021
1.5824	0.0312	0.0180	0.0021	0.0021
1.6264	0.0307	0.0187	0.0021	0.0021
1.6703	0.0302	0.0194	0.0021	0.0021
1.7143	0.0297	0.0201	0.0021	0.0021
1.7582	0.0292	0.0209	0.0021	0.0021
1.8022	0.0287	0.0216	0.0021	0.0021
1.8462	0.0282	0.0224	0.0021	0.0021
1.8901	0.0276	0.0232	0.0021	0.0021
1.9341	0.0271	0.0240	0.0021	0.0021
1.9780	0.0266	0.0247	0.0021	0.0021
2.0220	0.0261	0.0255	0.0021	0.0021
2.0659	0.0256	0.0264	0.0021	0.0021
2.1099	0.0251	0.0272	0.0021	0.0021
2.1538	0.0246	0.0280	0.0021	0.0021
2.1978	0.0240	0.0288	0.0021	0.0021
2.2418	0.0235	0.0297	0.0021	0.0021
2.2857	0.0230	0.0305	0.0021	0.0021
2.3297	0.0225	0.0314	0.0021	0.0021
2.3736	0.0220	0.0323	0.0021	0.0021
2.4176	0.0215	0.0332	0.0021	0.0021
2.4615	0.0210	0.0341	0.0021	0.0021
2.5000	0.0204	0.0348	0.0021	0.0021

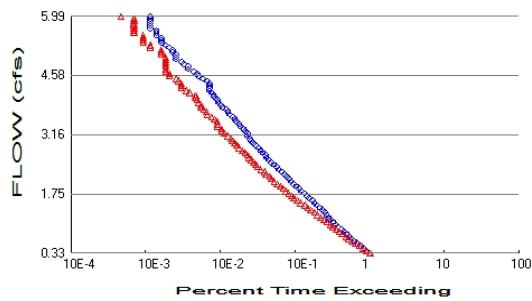
Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.0497	0.0348	0.0000	0.0843	0.0000
2.5440	0.0502	0.0370	0.0000	0.0843	0.0000
2.5879	0.0507	0.0393	0.0000	0.0843	0.0000
2.6319	0.0512	0.0415	0.0000	0.0843	0.0000
2.6758	0.0517	0.0438	0.0000	0.0843	0.0000
2.7198	0.0522	0.0460	0.0000	0.0843	0.0000
2.7637	0.0527	0.0483	0.0000	0.0843	0.0000
2.8077	0.0533	0.0507	0.0000	0.0843	0.0000
2.8516	0.0538	0.0530	0.0000	0.0843	0.0000
2.8956	0.0543	0.0554	0.0000	0.0843	0.0000
2.9396	0.0548	0.0578	0.0000	0.0843	0.0000
2.9835	0.0553	0.0602	0.0000	0.0843	0.0000
3.0275	0.0558	0.0627	0.0000	0.0843	0.0000
3.0714	0.0563	0.0651	0.0000	0.0843	0.0000
3.1154	0.0568	0.0676	0.0000	0.0843	0.0000
3.1593	0.0574	0.0701	0.0000	0.0843	0.0000
3.2033	0.0579	0.0727	0.0000	0.0843	0.0000
3.2473	0.0584	0.0752	0.0000	0.0843	0.0000

3.2912	0.0589	0.0778	0.0000	0.0843	0.0000
3.3352	0.0594	0.0804	0.0000	0.0843	0.0000
3.3791	0.0599	0.0830	0.0000	0.0843	0.0000
3.4231	0.0604	0.0857	0.0000	0.0843	0.0000
3.4670	0.0610	0.0883	0.0000	0.0843	0.0000
3.5110	0.0615	0.0910	0.0000	0.0843	0.0000
3.5549	0.0620	0.0937	0.0000	0.0843	0.0000
3.5989	0.0625	0.0965	0.0000	0.0843	0.0000
3.6429	0.0630	0.0992	0.0000	0.0843	0.0000
3.6868	0.0635	0.1020	0.0000	0.0843	0.0000
3.7308	0.0640	0.1048	0.0000	0.0843	0.0000
3.7747	0.0646	0.1076	0.0000	0.0843	0.0000
3.8187	0.0651	0.1105	0.0000	0.0843	0.0000
3.8626	0.0656	0.1134	0.0141	0.0843	0.0000
3.9066	0.0661	0.1163	0.0215	0.0843	0.0000
3.9505	0.0666	0.1192	0.0268	0.0843	0.0000
3.9945	0.0671	0.1221	0.0286	0.0843	0.0000
4.0000	0.0672	0.1225	0.0303	0.0843	0.0000

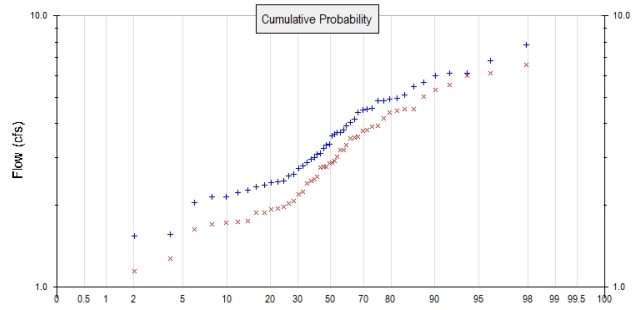
Analysis Results

POC 1



+ Pre-Project

x Mitigated



Pre-Project Landuse Totals for POC #1

Total Pervious Area: 7.13
Total Impervious Area: 0.5

Mitigated Landuse Totals for POC #1

Total Pervious Area: 6.55
Total Impervious Area: 1.04

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	Flow(cfs)
2 year	3.34928
5 year	4.92345
10 year	5.99002
25 year	6.84963

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	2.85954
5 year	4.40583
10 year	5.32024
25 year	6.11964

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #1

Year	Pre-Project	Mitigated
1973	5.499	5.044
1974	3.089	2.451
1975	4.543	3.915
1976	2.148	1.702
1977	2.041	1.632
1978	4.049	3.589
1979	2.563	2.236
1980	3.331	2.867
1981	3.114	2.402
1982	3.349	3.325
1983	5.990	5.571
1984	3.607	2.918
1985	5.687	4.532
1986	3.717	3.189

1987	2.953	2.756
1988	3.252	2.547
1989	2.270	1.721
1990	2.793	2.030
1991	1.542	1.275
1992	3.668	3.187
1993	4.958	3.779
1994	0.756	0.665
1995	4.412	3.529
1996	2.374	1.880
1997	7.814	6.612
1998	4.872	3.908
1999	2.442	1.927
2000	2.733	2.197
2001	2.232	1.754
2002	3.010	2.781
2003	6.850	6.120
2004	4.489	4.174
2005	3.792	2.860
2006	6.132	5.990
2007	2.453	1.949
2008	4.148	3.770
2009	2.346	1.872
2010	4.842	4.535
2011	2.880	2.501
2012	3.717	3.021
2013	4.923	4.454
2014	2.419	1.973
2015	3.931	2.774
2016	5.120	4.406
2017	6.148	5.320
2018	2.143	1.732
2019	4.524	3.562
2020	2.609	2.079
2021	1.557	1.147

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	7.8144	6.6120
2	6.8496	6.1196
3	6.1482	5.9896
4	6.1322	5.5705
5	5.9900	5.3202
6	5.6873	5.0442
7	5.4993	4.5348
8	5.1205	4.5317
9	4.9584	4.4536
10	4.9235	4.4058
11	4.8716	4.1741
12	4.8423	3.9150
13	4.5426	3.9083
14	4.5239	3.7794
15	4.4886	3.7696
16	4.4118	3.5885
17	4.1476	3.5621
18	4.0491	3.5292
19	3.9306	3.3248

20	3.7919	3.1895
21	3.7173	3.1872
22	3.7170	3.0209
23	3.6679	2.9178
24	3.6074	2.8674
25	3.3493	2.8595
26	3.3314	2.7808
27	3.2522	2.7737
28	3.1140	2.7562
29	3.0886	2.5468
30	3.0102	2.5014
31	2.9528	2.4512
32	2.8800	2.4020
33	2.7928	2.2363
34	2.7329	2.1970
35	2.6088	2.0794
36	2.5631	2.0299
37	2.4526	1.9728
38	2.4425	1.9488
39	2.4191	1.9275
40	2.3738	1.8800
41	2.3464	1.8722
42	2.2695	1.7541
43	2.2322	1.7318
44	2.1482	1.7206
45	2.1430	1.7017
46	2.0410	1.6316
47	1.5572	1.2751
48	1.5421	1.1468
49	0.7560	0.6655

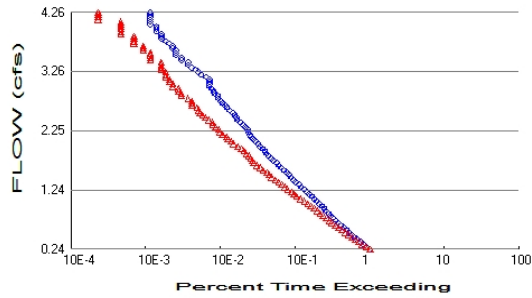
Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.3349	4300	4407	102	Pass
0.3921	3896	3897	100	Pass
0.4492	3579	3487	97	Pass
0.5063	3258	3149	96	Pass
0.5634	2981	2813	94	Pass
0.6205	2712	2538	93	Pass
0.6777	2503	2284	91	Pass
0.7348	2310	2075	89	Pass
0.7919	2139	1860	86	Pass
0.8490	1971	1686	85	Pass
0.9061	1805	1550	85	Pass
0.9633	1659	1377	83	Pass
1.0204	1522	1278	83	Pass
1.0775	1407	1162	82	Pass
1.1346	1303	1058	81	Pass
1.1918	1230	949	77	Pass
1.2489	1142	863	75	Pass
1.3060	1073	787	73	Pass
1.3631	1008	707	70	Pass
1.4202	926	640	69	Pass
1.4774	860	590	68	Pass
1.5345	791	519	65	Pass
1.5916	735	466	63	Pass
1.6487	666	418	62	Pass
1.7059	627	393	62	Pass
1.7630	584	359	61	Pass
1.8201	530	325	61	Pass
1.8772	491	302	61	Pass
1.9343	451	274	60	Pass
1.9915	414	250	60	Pass
2.0486	388	227	58	Pass
2.1057	363	208	57	Pass
2.1628	335	199	59	Pass
2.2200	312	178	57	Pass
2.2771	287	169	58	Pass
2.3342	264	151	57	Pass
2.3913	247	136	55	Pass
2.4484	226	129	57	Pass
2.5056	207	121	58	Pass
2.5627	193	112	58	Pass
2.6198	180	105	58	Pass
2.6769	173	99	57	Pass
2.7341	160	93	58	Pass
2.7912	149	85	57	Pass
2.8483	142	77	54	Pass
2.9054	128	72	56	Pass
2.9625	120	67	55	Pass
3.0197	111	63	56	Pass
3.0768	108	60	55	Pass
3.1339	101	55	54	Pass
3.1910	99	49	49	Pass
3.2482	94	45	47	Pass
3.3053	89	45	50	Pass

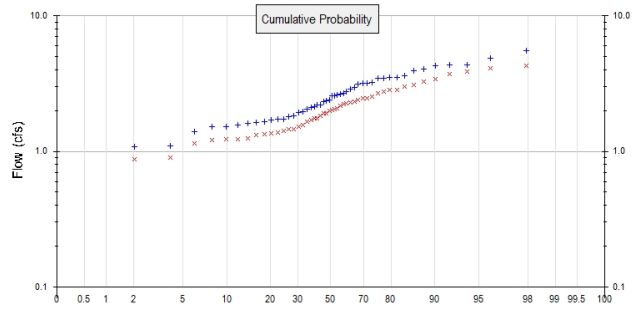
3.3624	80	40	50	Pass
3.4195	77	39	50	Pass
3.4766	71	39	54	Pass
3.5338	67	36	53	Pass
3.5909	64	33	51	Pass
3.6480	58	29	50	Pass
3.7051	55	28	50	Pass
3.7623	52	26	50	Pass
3.8194	46	24	52	Pass
3.8765	44	24	54	Pass
3.9336	41	22	53	Pass
3.9907	39	21	53	Pass
4.0479	37	20	54	Pass
4.1050	35	20	57	Pass
4.1621	33	17	51	Pass
4.2192	31	15	48	Pass
4.2764	31	13	41	Pass
4.3335	31	13	41	Pass
4.3906	31	13	41	Pass
4.4477	29	12	41	Pass
4.5048	25	11	44	Pass
4.5620	22	9	40	Pass
4.6191	21	9	42	Pass
4.6762	19	8	42	Pass
4.7333	16	8	50	Pass
4.7905	16	8	50	Pass
4.8476	14	8	57	Pass
4.9047	13	8	61	Pass
4.9618	11	8	72	Pass
5.0189	11	8	72	Pass
5.0761	11	7	63	Pass
5.1332	10	7	70	Pass
5.1903	10	7	70	Pass
5.2474	9	5	55	Pass
5.3046	8	5	62	Pass
5.3617	7	4	57	Pass
5.4188	7	4	57	Pass
5.4759	7	4	57	Pass
5.5330	6	4	66	Pass
5.5902	6	3	50	Pass
5.6473	6	3	50	Pass
5.7044	5	3	60	Pass
5.7615	5	3	60	Pass
5.8187	5	3	60	Pass
5.8758	5	3	60	Pass
5.9329	5	3	60	Pass
5.9900	5	2	40	Pass

POC 2



+ Pre-Project

x Mitigated



Pre-Project Landuse Totals for POC #2

Total Pervious Area: 5.05
Total Impervious Area: 0.39

Mitigated Landuse Totals for POC #2

Total Pervious Area: 4.61
Total Impervious Area: 0.76

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #2

Return Period	Flow(cfs)
2 year	2.38657
5 year	3.50777
10 year	4.26285
25 year	4.86957

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	Flow(cfs)
2 year	2.00066
5 year	2.83223
10 year	3.41988
25 year	4.11132

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #2

Year	Pre-Project	Mitigated
1973	3.911	3.282
1974	2.187	1.762
1975	3.228	2.476
1976	1.522	1.220
1977	1.393	1.139
1978	2.881	2.282
1979	1.806	1.466
1980	2.372	1.895
1981	2.207	1.714
1982	2.387	2.259
1983	4.263	3.694
1984	2.562	2.001
1985	4.034	2.997
1986	2.648	2.174
1987	2.103	1.906

1988	2.312	1.817
1989	1.610	1.224
1990	1.953	1.513
1991	1.093	0.895
1992	2.584	2.220
1993	3.516	2.666
1994	0.527	0.449
1995	3.137	2.401
1996	1.630	1.315
1997	5.554	4.273
1998	3.444	2.549
1999	1.731	1.367
2000	1.943	1.575
2001	1.575	1.242
2002	2.145	1.744
2003	4.870	3.875
2004	3.196	2.760
2005	2.686	2.062
2006	4.359	4.111
2007	1.734	1.381
2008	2.954	2.474
2009	1.666	1.331
2010	3.441	3.077
2011	2.047	1.652
2012	2.615	2.069
2013	3.508	2.837
2014	1.716	1.413
2015	2.778	2.011
2016	3.637	2.832
2017	4.363	3.420
2018	1.523	1.223
2019	3.197	2.319
2020	1.819	1.449
2021	1.088	0.872

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #2

Rank	Pre-Project	Mitigated
1	5.5541	4.2733
2	4.8696	4.1113
3	4.3629	3.8755
4	4.3587	3.6939
5	4.2629	3.4199
6	4.0336	3.2817
7	3.9106	3.0774
8	3.6375	2.9975
9	3.5161	2.8371
10	3.5078	2.8322
11	3.4445	2.7598
12	3.4406	2.6657
13	3.2281	2.5487
14	3.1966	2.4755
15	3.1962	2.4739
16	3.1371	2.4012
17	2.9542	2.3188
18	2.8813	2.2823
19	2.7776	2.2591
20	2.6858	2.2199

21	2.6476	2.1737
22	2.6152	2.0694
23	2.5844	2.0616
24	2.5616	2.0107
25	2.3866	2.0007
26	2.3720	1.9063
27	2.3119	1.8948
28	2.2068	1.8170
29	2.1874	1.7620
30	2.1453	1.7442
31	2.1026	1.7144
32	2.0467	1.6524
33	1.9526	1.5752
34	1.9429	1.5126
35	1.8192	1.4662
36	1.8060	1.4494
37	1.7343	1.4127
38	1.7314	1.3814
39	1.7156	1.3671
40	1.6659	1.3308
41	1.6303	1.3148
42	1.6097	1.2420
43	1.5748	1.2245
44	1.5232	1.2232
45	1.5220	1.2202
46	1.3929	1.1388
47	1.0930	0.8950
48	1.0877	0.8725
49	0.5267	0.4487

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.2387	4287	4411	102	Pass
0.2793	3884	3891	100	Pass
0.3200	3559	3456	97	Pass
0.3606	3246	3102	95	Pass
0.4013	2964	2788	94	Pass
0.4419	2701	2495	92	Pass
0.4825	2491	2258	90	Pass
0.5232	2292	2029	88	Pass
0.5638	2125	1834	86	Pass
0.6045	1951	1651	84	Pass
0.6451	1789	1500	83	Pass
0.6858	1650	1365	82	Pass
0.7264	1516	1256	82	Pass
0.7671	1394	1144	82	Pass
0.8077	1302	1030	79	Pass
0.8484	1226	938	76	Pass
0.8890	1134	866	76	Pass
0.9297	1068	783	73	Pass
0.9703	999	703	70	Pass
1.0110	920	645	70	Pass
1.0516	855	577	67	Pass
1.0923	785	512	65	Pass
1.1329	732	457	62	Pass
1.1736	664	420	63	Pass
1.2142	624	391	62	Pass
1.2549	573	346	60	Pass
1.2955	527	313	59	Pass
1.3362	485	286	58	Pass
1.3768	446	261	58	Pass
1.4175	408	235	57	Pass
1.4581	386	211	54	Pass
1.4988	361	194	53	Pass
1.5394	334	183	54	Pass
1.5801	309	162	52	Pass
1.6207	285	149	52	Pass
1.6614	265	132	49	Pass
1.7020	244	121	49	Pass
1.7426	223	116	52	Pass
1.7833	206	111	53	Pass
1.8239	189	104	55	Pass
1.8646	181	96	53	Pass
1.9052	171	90	52	Pass
1.9459	160	83	51	Pass
1.9865	148	74	50	Pass
2.0272	139	65	46	Pass
2.0678	128	60	46	Pass
2.1085	120	55	45	Pass
2.1491	110	52	47	Pass
2.1898	107	46	42	Pass
2.2304	102	43	42	Pass
2.2711	99	41	41	Pass
2.3117	94	37	39	Pass
2.3524	87	34	39	Pass

2.3930	80	34	42	Pass
2.4337	74	30	40	Pass
2.4743	71	27	38	Pass
2.5150	67	25	37	Pass
2.5556	64	23	35	Pass
2.5963	57	22	38	Pass
2.6369	53	21	39	Pass
2.6776	50	18	36	Pass
2.7182	46	18	39	Pass
2.7589	44	18	40	Pass
2.7995	41	16	39	Pass
2.8402	40	13	32	Pass
2.8808	36	13	36	Pass
2.9215	35	12	34	Pass
2.9621	33	12	36	Pass
3.0027	31	10	32	Pass
3.0434	31	10	32	Pass
3.0840	31	9	29	Pass
3.1247	31	9	29	Pass
3.1653	28	8	28	Pass
3.2060	24	8	33	Pass
3.2466	22	8	36	Pass
3.2873	20	7	35	Pass
3.3279	18	7	38	Pass
3.3686	16	7	43	Pass
3.4092	16	7	43	Pass
3.4499	13	5	38	Pass
3.4905	13	5	38	Pass
3.5312	11	5	45	Pass
3.5718	11	5	45	Pass
3.6125	11	4	36	Pass
3.6531	10	4	40	Pass
3.6938	10	4	40	Pass
3.7344	9	3	33	Pass
3.7751	8	3	37	Pass
3.8157	7	3	42	Pass
3.8564	7	3	42	Pass
3.8970	7	2	28	Pass
3.9377	6	2	33	Pass
3.9783	6	2	33	Pass
4.0190	6	2	33	Pass
4.0596	5	2	40	Pass
4.1003	5	2	40	Pass
4.1409	5	1	20	Pass
4.1816	5	1	20	Pass
4.2222	5	1	20	Pass
4.2629	5	1	20	Pass

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix
Pre-Project Schematic



Mitigated Schematic



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ATTACHMENT C
IMP CALCULATOR SIZING OUTPUT

Project Name: Livorna Road
Project Type: Standard LID WQ Treatment
Location: 455 Livorna Road
APN: 193-010-014 & 193-010-039
Drainage Area: 572585 sf
Mean Annual Precipitation: 23 in

I. Self-Treating Areas

DMA Name	Area (sq ft)
DMA5-L	234047
DMA10-L	170507

IV. Areas Draining to IMPs

IMP Name: IMP1

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA1-R	3,527	Conventional Roof	1.00	3,527
DMA1-A	3,741	Concrete or Asphalt	1.00	3,741
DMA1-C	486	Concrete or Asphalt	1.00	486
DMA1-L	9,233	Landscape	0.10	923
Total				8,677

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	347	424

IMP Name: IMP2

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA2-R	1,519	Conventional Roof	1.00	1,519
DMA2-A	386	Concrete or Asphalt	1.00	386
DMA2-C	172	Concrete or Asphalt	1.00	172
DMA2-L	4,014	Landscape	0.10	401
Total				2,478

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	99	221

IMP Name: IMP3

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA3-R	7,580	Conventional Roof	1.00	7,580
DMA3-A	19,502	Concrete or Asphalt	1.00	19,502
DMA3-C	1,099	Concrete or Asphalt	1.00	1,099
DMA3-L	31,814	Landscape	0.10	3,181
Total				31,362

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	1,254	1,737

IMP Name: IMP4

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post- Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA4-R	4,053	Conventional Roof	1.00	4,053
DMA4-A	1,443	Concrete or Asphalt	1.00	1,443
DMA4-C	568	Concrete or Asphalt	1.00	568
DMA4-L	8,800	Landscape	0.10	880
Total				6,944

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	278	420

IMP Name: IMP5

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post- Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA6-R	3,018	Conventional Roof	1.00	3,018
DMA6-A	2,041	Concrete or Asphalt	1.00	2,041
DMA6-C	1,012	Concrete or Asphalt	1.00	1,012
DMA6-L	7,482	Landscape	0.10	748
Total				6,819

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	273	394

IMP Name: IMP6

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post- Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA7-R	3,018	Conventional Roof	1.00	3,018
DMA7-A	2,041	Concrete or Asphalt	1.00	2,041
DMA7-C	1,012	Concrete or Asphalt	1.00	1,012
DMA7-L	7,004	Landscape	0.10	700
Total				6,771

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	271	429

IMP Name: IMP7

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post- Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA8-R	3,591	Conventional Roof	1.00	3,591

DMA8-A	1,516	Concrete or Asphalt	1.00	1,516
DMA8-C	218	Concrete or Asphalt	1.00	218
DMA8-L	6,588	Landscape	0.10	659
Total				5,984

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	239	429

IMP Name: IMP8

IMP Type: Bioretention Facility
Soil Type: D

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA9-A	16,589	Concrete or Asphalt	1.00	16,589
DMA9-L	10,023	Landscape	0.10	1,002
Total				17,591

	IMP Sizing Factor	Minimum	Proposed
Area	0.040	704	891

Software Tool Warnings

No warnings to report.

Report generated on 4/24/2025 12:00:00 AM by the [Contra Costa Clean Water Program](#) IMP Sizing Tool software (version 1.4.1.0).