

Job #11-222-P

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May 31, 2013

Mr. John Bailey
Lusardi Construction Company
1570 Linda Vista Drive
San Marcos, California 92069

**Stability of Planned 1½:1 Cut Slopes, Proposed Residential Developments
Cielo Ridge, Off Del Dios Highway, San Diego County (A.P.N.'s 265-300-02, -05, & -03)**

I. Introduction

The above referenced property was previously studied by this office in regards to potential geologic hazards associated with planned residential developments. Our efforts resulted in the following report:

“Geologic Reconnaissance, Proposed Residential Developments - Cielo Ridge, Off Del Dios Highway, San Diego County (A.P.N.'s 265-300-02, -05, and -03),” Job #11-222-P, dated August 31, 2011.

The preceding was reviewed in connection with this effort and is on file with our office.

At the time of our geologic reconnaissance, all planned graded embankments (cut and fill slopes) were programmed for 2:1 (horizontal to vertical) gradients maximum. Subsequent to the issue of the referenced report a more recent Grading Concept Plan has been prepared by Excel Engineering (not dated), which show revised cut slope gradients now proposed at 1½:1 gradients. A copy of the latest Grading Concept Plans showing new revised cut slopes are attached as Plates 1 through 3.

The purpose of this transmittal is to review the current plans and provide an opinion on the stability of the revised 1½:1 gradient cut slopes. As part of this effort, a site visit and inspection of the planned cut slope locations was conducted by the undersigned geologist on May 23, 2013.

II. Planned Cut Embankments / Geologic Conditions

The properties studied for the referenced report include three separate locations designated as Sites 1, 2, and 3, and are indicated on a Preliminary Grading Plan attached as Plate 1. Pertinent locations planned for cut slopes generally consist of ridge lines and hillsides with intervening canyons. More detailed descriptions of the individual study locations are provided in the referenced Geologic Reconnaissance Report. Site specific details for the planned 1½:1 cut slope locations are as follows:

Site 1 (Plate 2): Generally modest cut embankments, approaching 25 feet high maximum, are planned along the entry roadway connected to Via Dora, along the upper, north portion of Lot 17, and between the driveways for Lots 17 and 18. Large, significant cut embankments are planned along the northern margins of the driveway and building pad in association with the development of Lot 18. These cut slopes will approach 70 and 80 feet high respectively, with both having two drainage terraces incorporated into their design. Planned cut slopes within Site 1 are expected to expose hard and competent crystalline bedrock units which will be grossly stable at 1½:1 maximum gradients to proposed design heights. The bedrock is impacted by local jointing which may lead to small surficial block failures. Therefore, a debris fence or elevated curb should be installed along the toe of cut slopes adjacent to roadways or driveways.

Site 2: Site 2 is a ridge top with no exposed cut slopes planned.

Site 3 (Plate 3): Modest cut embankments on the order of 35 feet high maximum are planned for the upslope portions of Lots 2 and 15. Large, significant cut slopes are planned along upslope portions of Street "C" and Street "D". The planned graded cut embankments along the north side of Street "C" will approach 70 feet high maximum, and graded cut embankments along the east margin of two sections of Street "D" will approach 55 feet high maximum. The current plans (Plate 3) show no drainage terraces for any cut slope within Site 3.

Cut slopes in Site 3 will expose two distinct metavolcanic bedrock types. The approximate contact between the rock types is indicated on Plate 3. In general, the southeast portion of Site 3 is underlain by largely massive, dark-colored andesitic rocks which will be exposed locally along portions of the Lot 15 cut slope and the most easterly section of the Street "D" cut slopes. The remainder of the cut slopes in Site 3 are expected to expose light-colored rhyolitic rocks. Both rock types are expected to be grossly stable at 1½:1 gradients to the proposed maximum design heights with respect to deep seated and surficial failures. However, the light-colored rhyolite rocks are locally mantled by a modest residual soil cover which may indicate the rock is less resistant to weathering and susceptible to surface erosion. Consequently, proper slope face protection with selected vegetation and landscaping will be necessary. Drainage terraces at 35 feet maximum

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vertical heights are also recommended, if civil designs allow it. A debris fence or elevated curb may additionally be considered along the toe of cut slopes adjacent to roadways or driveways.

III. Conclusions / Recommendations

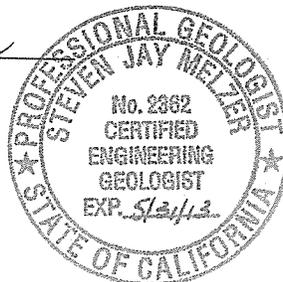
1. All planned graded cut slopes exposing crystalline or metavolcanic bedrock are expected to be grossly stable at 1½:1 gradients to maximum design heights.
2. All cut embankments should be monitored and inspected during grading by the project geotechnical engineer/geologist to confirm overall stability, and to provide modified recommendations for slope construction (if warranted) should adverse conditions or structure be exposed in the cut embankments.
3. All graded slopes greater than 35 feet in height, should be provided with a minimum 6 feet wide drainage terrace at a minimum 35 foot intervals or mid-height where only one is required.
4. A subdrain may be necessary along the toe of cut slopes to protect downslope improvements from runoff that may be transmitted along jointed or more weathered rock. This should be determined in the field based on actual exposures.
5. Well developed concrete brow ditches should be installed along the top of all graded slopes. Runoff shall not be allowed to flow over the slope face. Exposed slopes should be landscaped and well maintained.

If you have any questions or need clarification, please do not hesitate to contact the undersigned. Reference to our **Job #11-222-P** will help to expedite our response to your inquiries.

We appreciate this opportunity to be of service to you.

VINJE & MIDDLETON ENGINEERING, INC.

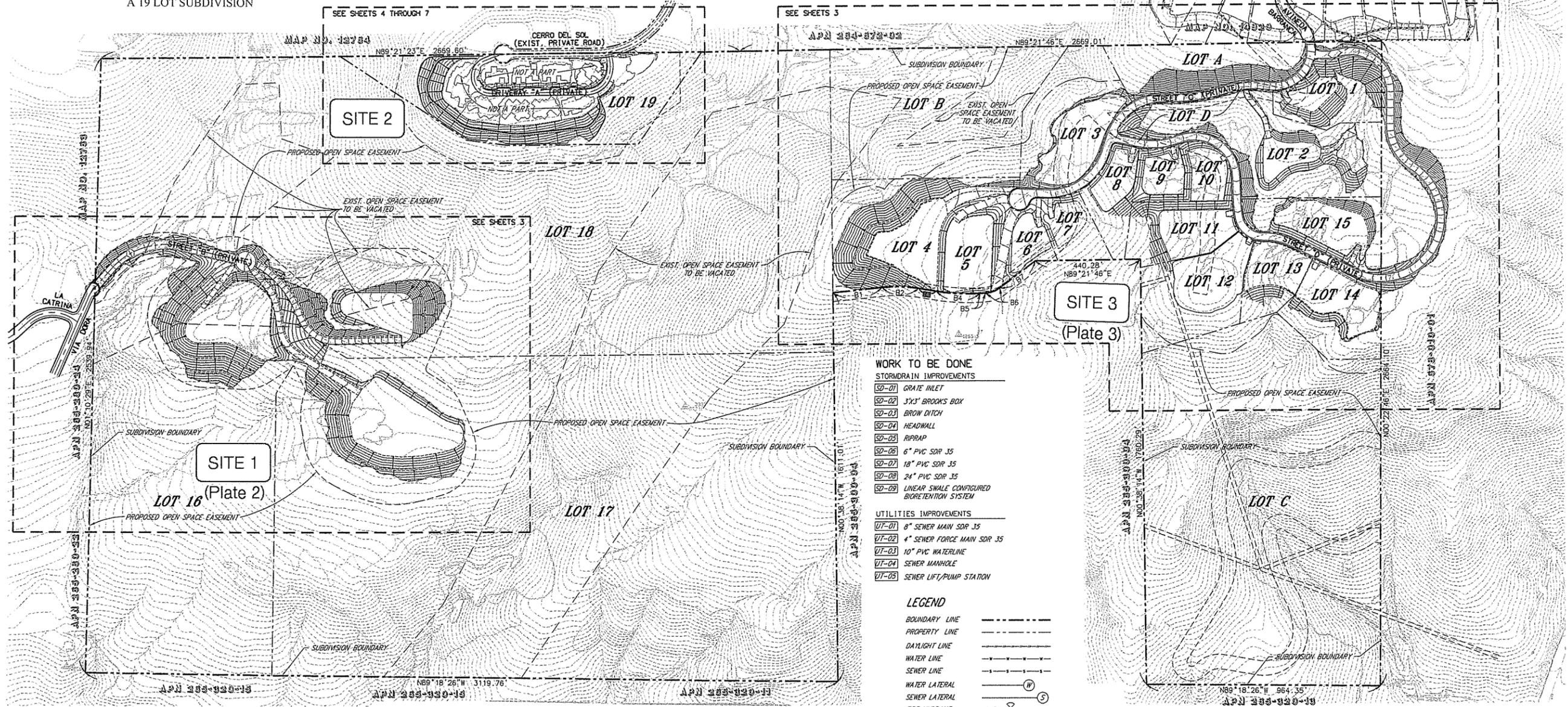

Steven J. Melzer
CEG #2362



Attachments

Distribution: Addressee (3, e-mail)
Mr. Mike Levin, Excel Engineering (3, e-mail)

PRELIMINARY GRADING PLAN
FOR COUNTY OF SAN DIEGO TRACT NO. 5456-RPL2
A 19 LOT SUBDIVISION



- WORK TO BE DONE**
- STORMDRAIN IMPROVEMENTS**
- SD-01 GRATE INLET
 - SD-02 3'X3' BROOKS BOX
 - SD-03 BROW DITCH
 - SD-04 HEADWALL
 - SD-05 RIPRAP
 - SD-06 6" PVC SDR 35
 - SD-07 18" PVC SDR 35
 - SD-08 24" PVC SDR 35
 - SD-09 LINEAR SWALE CONFIGURED BIORETENTION SYSTEM
- UTILITIES IMPROVEMENTS**
- UT-01 8" SEWER MAIN SDR 35
 - UT-02 4" SEWER FORCE MAIN SDR 35
 - UT-03 10" PVC WATERLINE
 - UT-04 SEWER MANHOLE
 - UT-05 SEWER LIFT/PUMP STATION

- LEGEND**
- BOUNDARY LINE
 - PROPERTY LINE
 - DAYLIGHT LINE
 - WATER LINE
 - SEWER LINE
 - WATER LATERAL
 - SEWER LATERAL
 - FIRE HYDRANT
 - FILL SLOPE 2:1
 - CUT SLOPE 1.5:1
 - FINISH FLOOR EL FF=1144.00
 - BLDG UNIT DESIGNATION 1A
 - STAIRS
 - RETAINING WALL

LOT AREA SUMMARY

LOT NO.	GA [acres]	NA [acres]	PA [sq. ft.]
1	2.772	2.497	17,439.97
2	6.206	6.206	39,881.18
3	4.302	4.302	73,600.78
4	5.679	5.679	65,084.30
5	1.716	1.716	97,835.74
6	1.483	1.132	26,638.93
7	1.285	1.285	21,049.61
8	1.552	1.552	30,232.71
9	1.004	1.004	27,578.59
10	1.019	1.019	33,552.62
11	2.280	2.280	32,319.66
12	3.446	3.446	71,018.50
13	1.532	1.532	41,094.72
14	2.813	2.813	59,404.20
15	2.735	2.735	56,515.95
16	30.449	30.090	104,279.76
17	72.394	72.374	163,876.46
18	69.792	69.399	41,468.85
19	9.399	9.150	
A	3.189	3.189	
B	10.341	10.341	
C	32.102	32.102	
D	2.805	2.805	
TOTAL	270.285		

LEGAL DESCRIPTION
THE NORTHWEST QUARTER AND A PORTION OF NORTHEAST QUARTER OF SECTION 13, TOWNSHIP 13 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA.

SOURCE OF TOPOGRAPHY
AERIAL PHOTOGRAMMETRY BY ANALYTICAL PHOTOGRAMMETRIC SURVEYS, INC. DATED MARCH 15, 2002.

ASSESSOR'S PARCEL NUMBERS
265-300-02, 03 & 05

OWNER CERTIFICATE
I HEREBY CERTIFY THAT I AM THE RECORD OWNER OF THE PROPERTY SHOWN ON THIS TENTATIVE SUBDIVISION MAP AND THAT SAID MAP SHOWS MY ENTIRE CONTIGUOUS OWNERSHIP. I UNDERSTAND THAT PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS OR RAILROAD RIGHTS OF WAY.

OWNER / DEVELOPER
CEILO 182, LLC
1570 LINDA VISTA DRIVE
SAN MARCOS, CA 92078-3808

MANAGING MEMBER
Warren Colward

ENGINEER OF WORK
EXCEL ENGINEERING
440 STATE PLACE
ESCONDIDO, CA 92029
PHONE (760) 745-8118
FAX (760) 745-1830

PROFESSIONAL ENGINEER
No. 45629
Exp. 12-31-14
CIVIL
STATE OF CALIFORNIA

02/01/2013
DATE

REFERENCE NOTE
1. FOR MORE INFORMATION RELATED TO MAPS & EASEMENTS FOR THIS PROJECT, PLEASE SEE THE TENTATIVE MAP TITLED "COUNTY OF SAN DIEGO TRACT NO. 5456-RPL3, A 19 LOT SUBDIVISION, LOTS 1-18 AS TO SINGLE FAMILY RESIDENTIAL & LOT 19 (THE COLONY AT CELO) AS A CONDOMINIUM LOT FOR 19 AIR SPACE UNITS."

EARTHWORK QUANTITIES
TOTAL CUT: 468,500 CY
TOTAL FILL: 468,500 CY

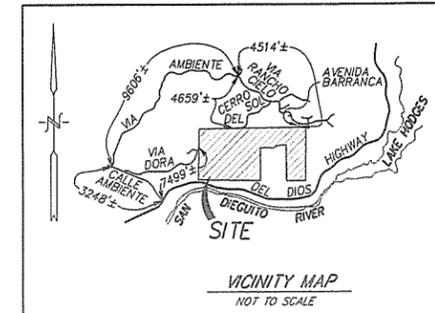
ABBREVIATION
TG = TOP OF GRATE
FS = FINISH SURFACE
IE = INVERT ELEVATION
TW = TOP OF WALL
BW = BOTTOM OF WALL
FL = FLOW LINE

DATA TABLE

NO.	DELTA/BEARING	RADIUS	LENGTH
B1	N84°15'27"E	--	204.74'
B2	14°52'25"	600.00'	155.76'
B3	N80°52'08"W	--	76.29'
B4	12°27'07"	840.00'	182.56'
B5	N86°40'45"E	--	22.49'
B6	33°27'26"	110.00'	64.23'
B7	N53°13'19"E	--	185.77'

SHEET INDEX

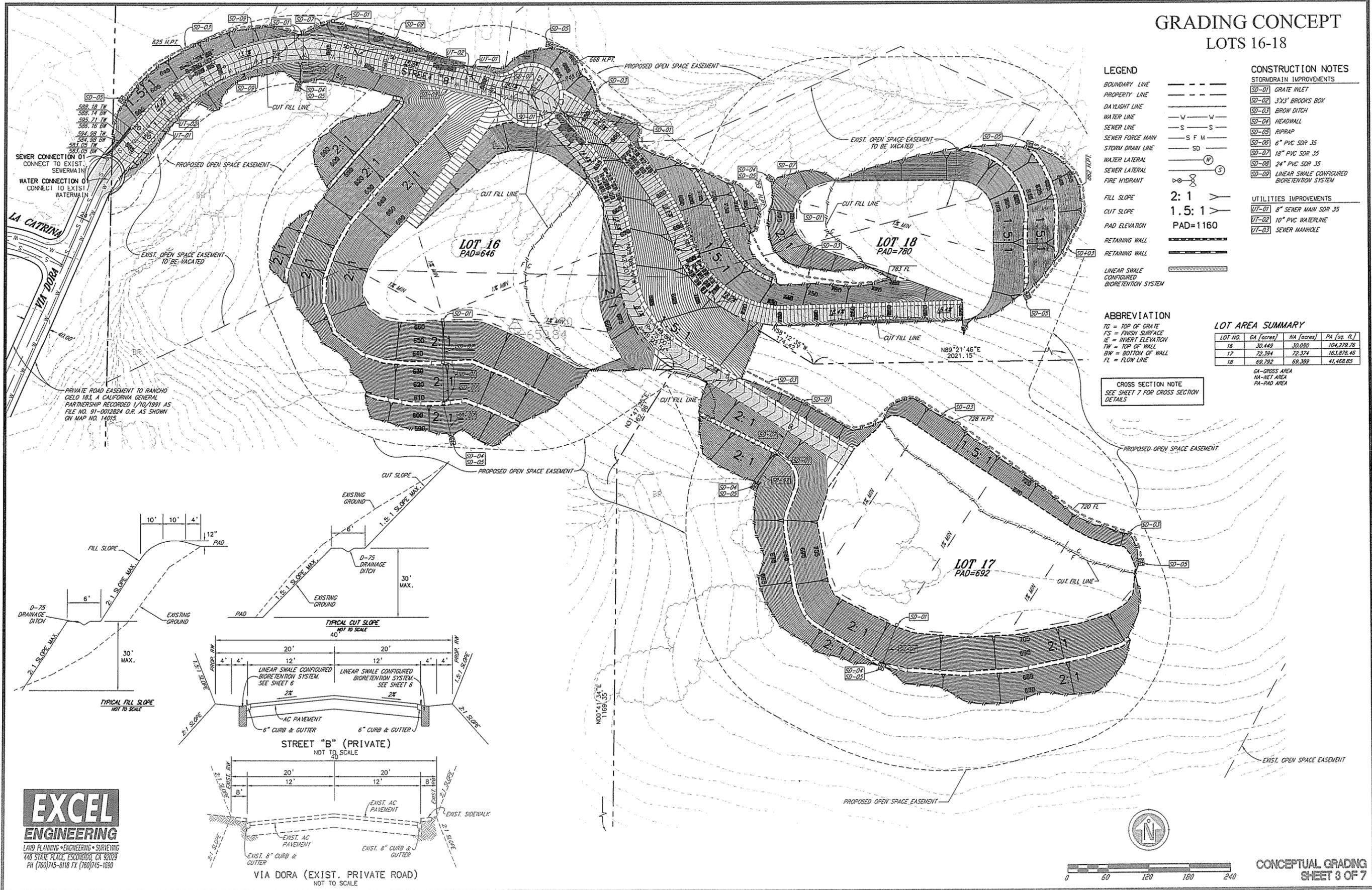
SHEET 1 TITLE SHEET
SHEETS 2 - 5 CONCEPTUAL GRADING PLANS
SHEETS 6 & 7 PROJECT SECTIONS



GA-GROSS AREA
NA-NET AREA
PA-PAD AREA

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LAND PLANNING • ENGINEERING • SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029
PH (760) 745-8118 FX (760) 745-1830

GRADING CONCEPT LOTS 16-18



LEGEND

- BOUNDARY LINE: - - - - -
- PROPERTY LINE: - - - - -
- DAYLIGHT LINE: - - - - -
- WATER LINE: W - - - - W
- SEWER LINE: S - - - - S
- SEWER FORCE MAIN: S F M - - - - -
- STORM DRAIN LINE: SD - - - - -
- WATER LATERAL: W - - - - W
- SEWER LATERAL: S - - - - S
- FIRE HYDRANT: (Symbol)
- FILL SLOPE: 2:1
- CUT SLOPE: 1.5:1
- PAD ELEVATION: PAD=1160
- RETAINING WALL: (Symbol)
- RETAINING WALL: (Symbol)
- LINEAR SWALE CONFIGURED BIORETENTION SYSTEM: (Symbol)

CONSTRUCTION NOTES

STORMDRAIN IMPROVEMENTS

- SD-01 GRATE INLET
- SD-02 3'x3' BROOKS BOX
- SD-03 BROW DITCH
- SD-04 HEADWALL
- SD-05 RIPRAP
- SD-06 6" PVC SDR 35
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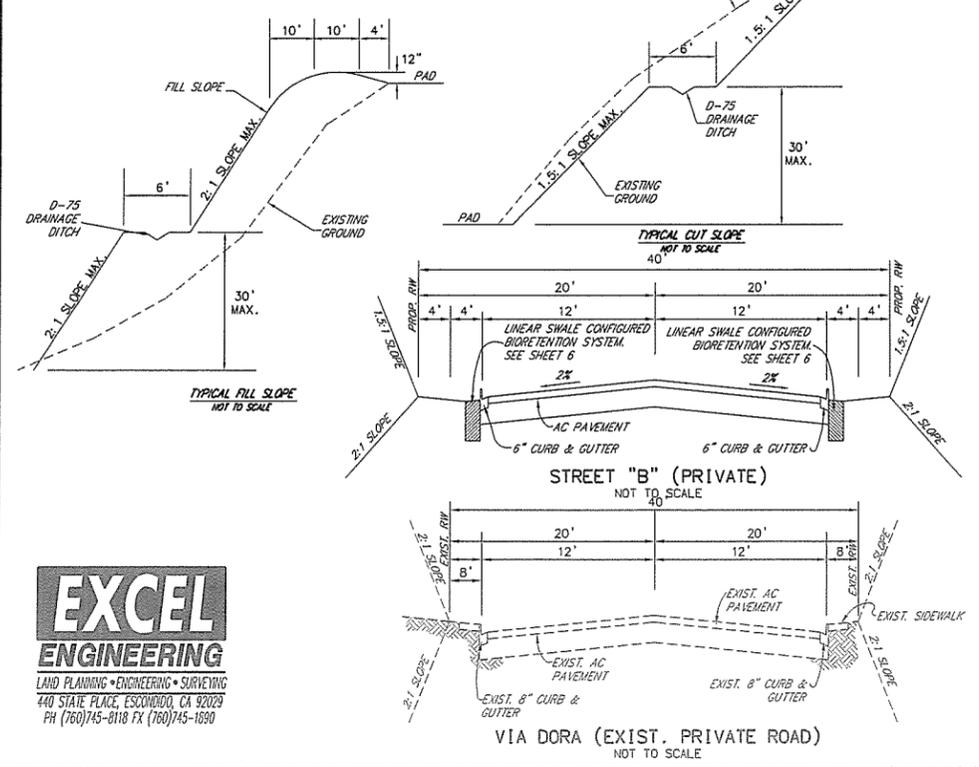
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GA-GROSS AREA
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CROSS SECTION NOTE
SEE SHEET 7 FOR CROSS SECTION DETAILS



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0 60 120 180 240

CONCEPTUAL GRADING SHEET 8 OF 7

GRADING CONCEPT LOTS 1-15

- CONSTRUCTION NOTES**
- STORMDRAIN IMPROVEMENTS**
- SD-01 GRATE INLET
 - SD-02 3'x3' BROOKS BOX
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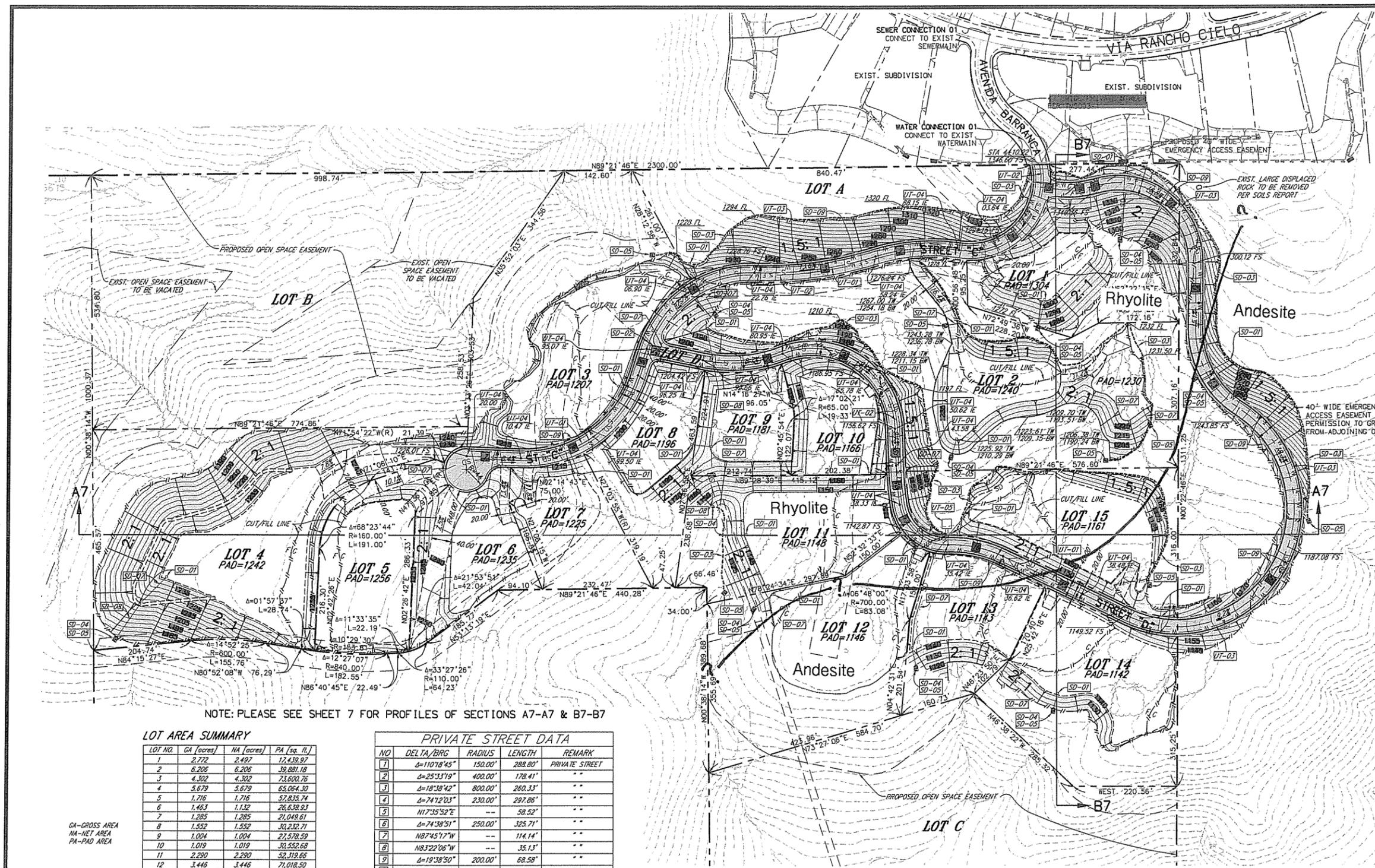
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NOTE: PLEASE SEE SHEET 7 FOR PROFILES OF SECTIONS A7-A7 & B7-B7

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15	2.735	2.735	56,515.95
A	3.189	3.189	
B	10.341	10.341	
C	32.102	32.102	
D	2.806	2.806	

PRIVATE STREET DATA

NO	DELTA/BRG	RADIUS	LENGTH	REMARK
1	Δ=110°18'45"	150.00'	288.80'	PRIVATE STREET
2	Δ=25°33'19"	400.00'	178.41'	"
3	Δ=18°38'42"	800.00'	280.33'	"
4	Δ=74°12'03"	230.00'	297.66'	"
5	N17°35'52"E	---	58.52'	"
6	Δ=74°38'51"	250.00'	325.71'	"
7	N87°45'17"W	---	114.14'	"
8	N83°22'06"W	---	35.13'	"
9	Δ=19°38'50"	200.00'	68.58'	"
10	N76°59'04"E	---	24.51'	"
11	Δ=103°23'42"	166.00'	299.56'	"
12	N00°22'46"E	---	136.99'	"
13	Δ=57°49'34"	200.00'	201.85'	"
14	Δ=173°09'06"	250.00'	755.52'	"
15	N64°17'42"W	---	287.14'	"
16	Δ=27°29'56"	250.00'	119.99'	"
17	Δ=83°15'45"	100.00'	145.32'	"
18	Δ=08°48'00"	700.00'	83.08'	"
19	N01°43'54"W	---	77.70'	"
20	Δ=108°18'33"	175.00'	333.87'	"
21	Δ=32°37'12"	300.00'	170.60'	"
22	N78°25'15"W	---	120.33'	"

