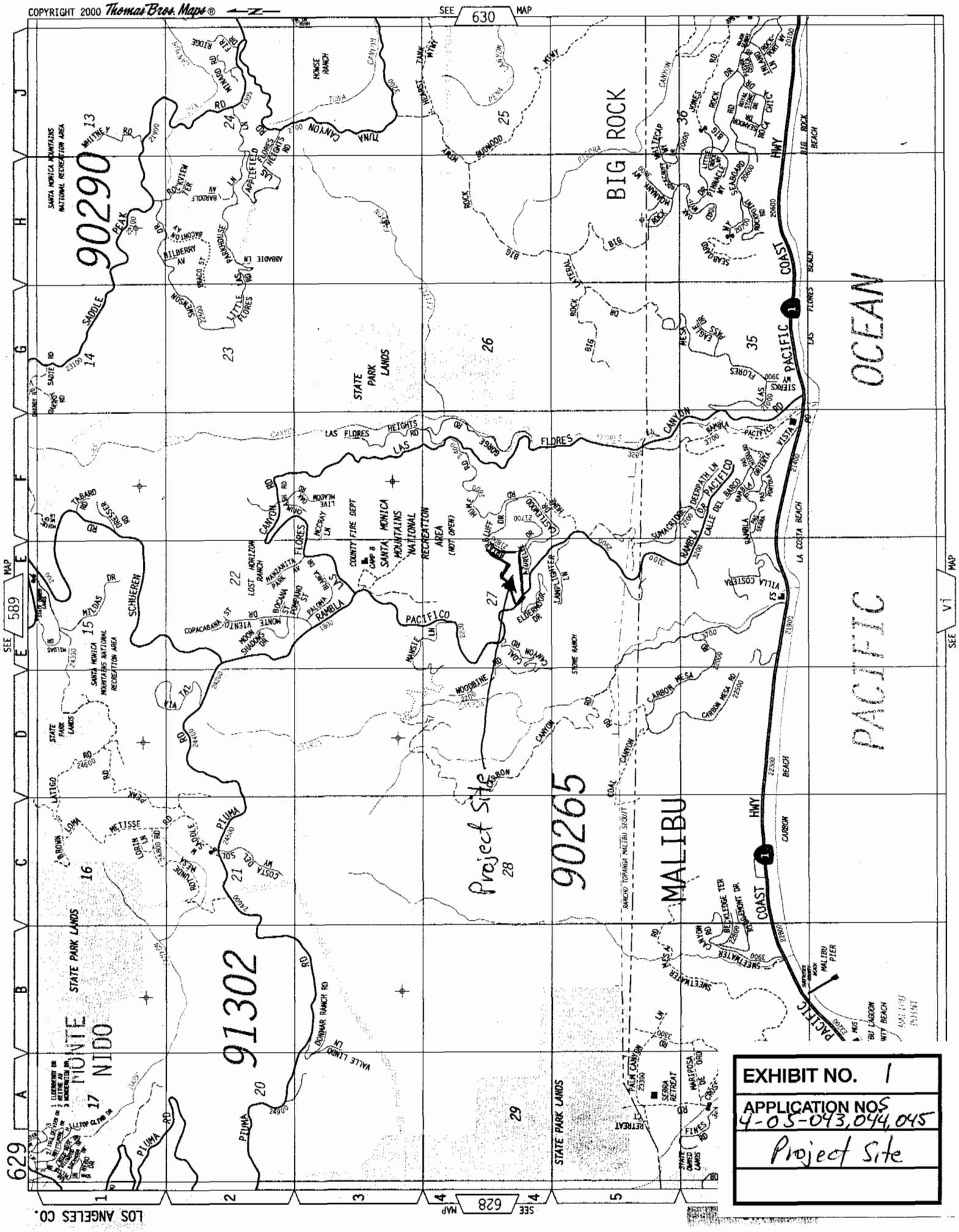
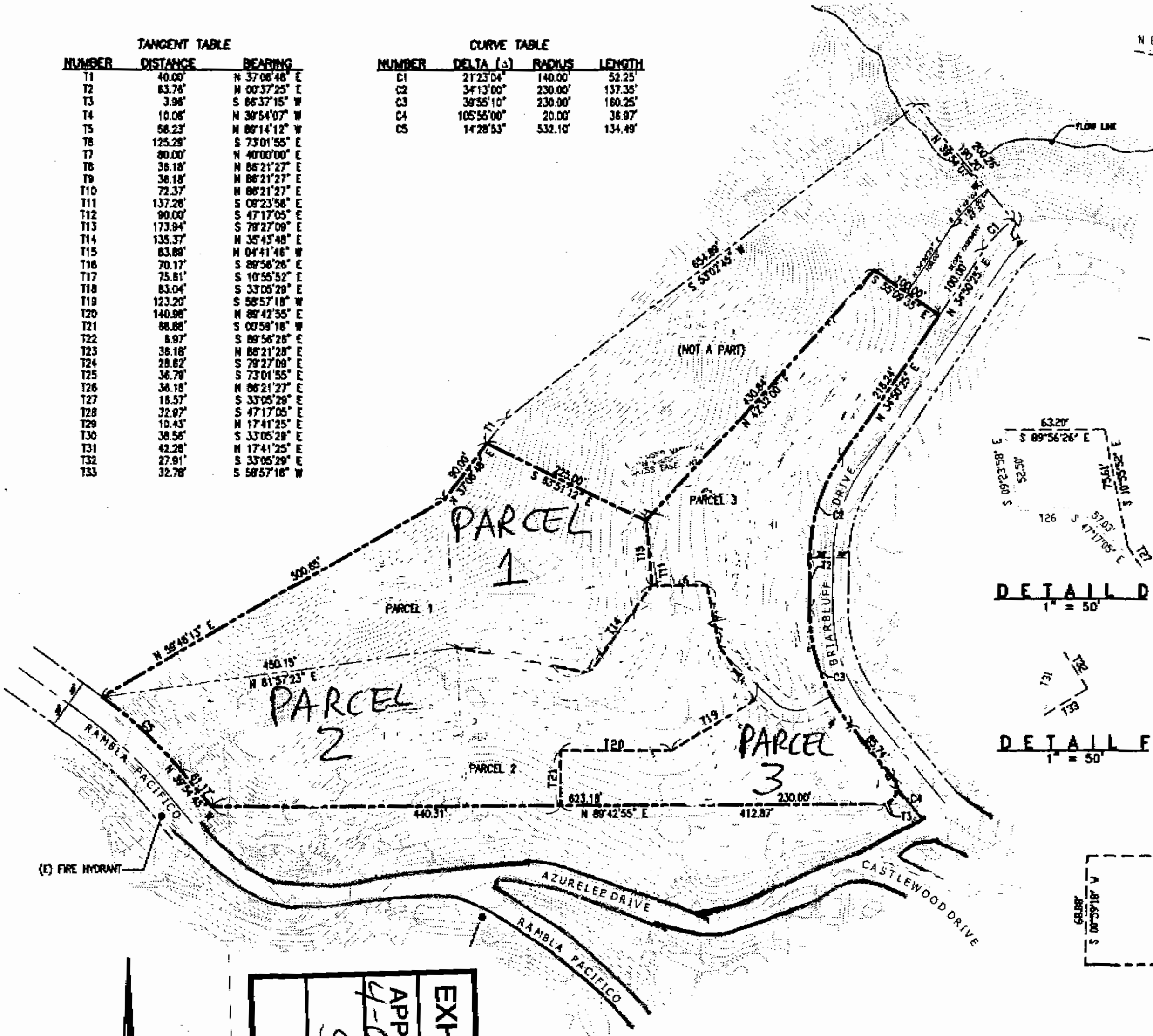

COPYRIGHT 2000 Thomas Bros. Maps®
SEE 630 MAP
SEE 589 MAP
SEE 628 MAP
LOS ANGELES CO.
90290
90265
91302
BIG ROCK
MALIBU
MONTE NIDO
PACIFIC OCEAN
PACIFIC COAST HWY
STATE PARK LANDS
SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA
COUNTY FIRE DEPT
Project Site
EXHIBIT NO. 1
APPLICATION NOS 4-05-043,044,045
Project Site

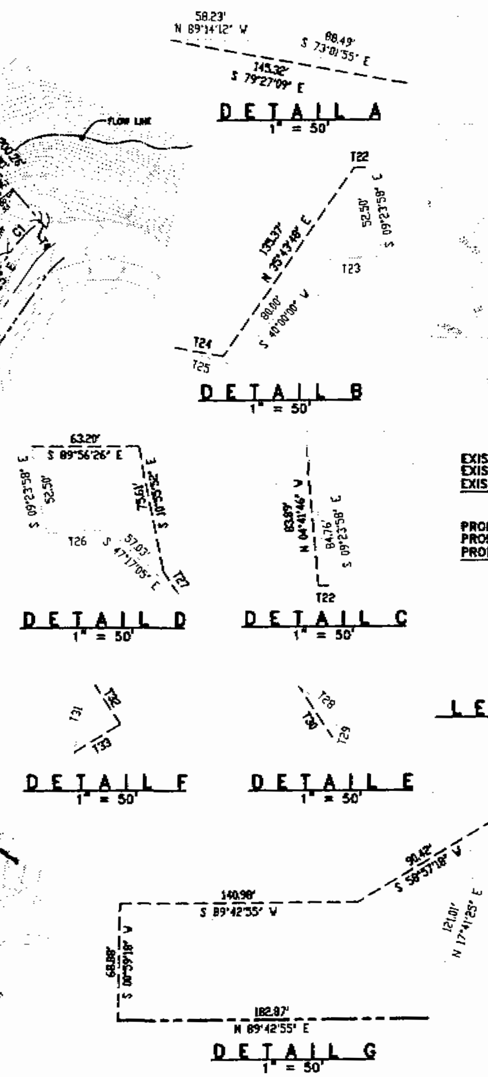
TANGENT TABLE

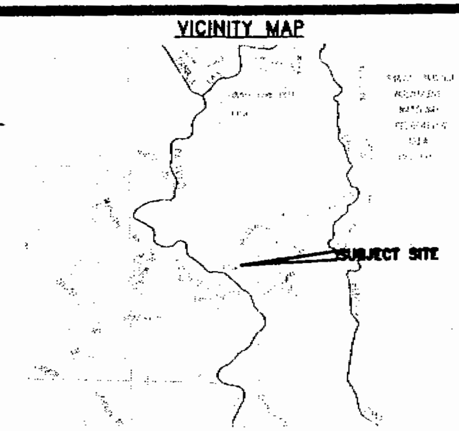
NUMBER	DISTANCE	BEARING
T1	40.00'	N 37°06'48" E
T2	83.76'	N 00°37'25" E
T3	3.96'	S 86°37'15" W
T4	10.06'	N 30°54'07" W
T5	58.23'	N 89°14'12" W
T6	125.29'	S 73°01'55" E
T7	80.00'	N 40°00'00" E
T8	36.18'	N 86°21'27" E
T9	36.18'	N 86°21'27" E
T10	72.37'	N 86°21'27" E
T11	137.28'	S 09°23'58" E
T12	90.00'	S 47°17'05" E
T13	173.84'	S 79°27'09" E
T14	135.37'	N 35°43'48" E
T15	83.89'	N 04°41'46" W
T16	70.17'	S 89°56'26" E
T17	75.81'	S 10°55'52" E
T18	83.04'	S 33°05'29" E
T19	123.20'	S 58°57'18" W
T20	140.98'	N 89°42'55" E
T21	68.88'	S 00°59'18" W
T22	8.97'	S 89°56'26" E
T23	36.18'	N 86°21'28" E
T24	28.82'	S 79°27'09" E
T25	36.78'	S 73°01'55" E
T26	36.18'	N 86°21'27" E
T27	18.57'	S 33°05'29" E
T28	32.97'	S 47°17'05" E
T29	10.43'	N 17°41'25" E
T30	38.56'	S 33°05'28" E
T31	42.28'	N 17°41'25" E
T32	27.91'	S 33°05'29" E
T33	32.78'	S 58°57'18" W

CURVE TABLE

NUMBER	DELTA (Δ)	RADIUS	LENGTH
C1	21°23'04"	140.00'	52.25'
C2	34°13'00"	230.00'	137.35'
C3	39°55'10"	230.00'	160.25'
C4	105°56'00"	20.00'	36.97'
C5	14°28'53"	532.10'	134.49'







AREAS

EXISTING PARCEL 1	100,048 Sq.Ft.	2.30 Ac.
EXISTING PARCEL 2	132,801 Sq.Ft.	3.05 Ac.
EXISTING PARCEL 3	109,311 Sq.Ft.	2.51 Ac.
TOTAL	342,160 Sq.Ft.	7.86 Ac.
PROPOSED PARCEL 1	97918 Sq.Ft.	2.25 Ac.
PROPOSED PARCEL 2	123848 Sq.Ft.	2.84 Ac.
PROPOSED PARCEL 3	120394 Sq.Ft.	2.77 Ac.
TOTAL	342,160 Sq.Ft.	7.86 Ac.

RECORD DATA

C OF C 101,987

LEGAL DESCRIPTION

PARCELS 1, 2, & 3, CERTIFICATE OF COMPLIANCE 101,987, RECORDED JUNE 28, 2002, INSTRUMENT NO. 02-1478563, IN THE OFFICE OF COUNTY RECORDER, LOS ANGELES COUNTY, CA

TENTATIVE LOT LINE ADJUSTMENT MAP NUMBER 101,987

OWNERS INFORMATION

PROPOSED PARCEL 1: KABIR SUNDHER APN: 4453-006-043

PROPOSED PARCEL 2: SPOONY SINGH APN: 4453-006-044

PROPOSED PARCEL 3: SEAN TEJ SUNDHER APN: 4453-006-045

LEGEND

- - - - - EXISTING LOT LINES PER C OF C 101,987 TO BE ADJUSTED

------ PROPOSED LOT LINES

— — — ORIGINAL ADJUSTED LOT LINES PER PM 7447

PREPARED BY
L. Liston & Associates, Inc.
31902
LEONARD LISTON RCE DATE 04-27-2004

EXHIBIT NO. 2
APPLICATION NOS
4-05-043, 044, 045
Subject 3 Parcels

EXISTING PARCEL 1
PER C OF C
APN 4453-006-043
(RAUBIE)

FIRE ACCESS QUANTITIES
TOTAL CUT=1341 CY

FIRE/SAFETY ACCESS
CUT SLOPE DISTURBED
(AREA=2,637.94 SQ.FT. EXEMPT)

PARCEL 1
APN 4453-006-043

SIDE YARD
TOTAL CUT=1304 CY
TOTAL FILL=ø CY

CUT SLOPE

FIRE ACCESS ROAD

FIRE/SAFETY ACCESS
TURNAROUND DISTURBED
(OFF-SITE AREA=
11,981.75 SQ.FT. EXEMPT)

FIRE ACCESS QUANTITIES
TOTAL FILL=3875 CY
(REMEDIAL GRADING)

POOL

PROPOSED
RESIDENCE

FIRE/SAFETY ACCESS
FILL SLOPE DISTURBED
(AREA=4,516 SQ.FT. EXEMPT)

FIRE/SAFETY ACCESS
TURNAROUND DISTURBED
(ON-SITE AREA=
4,294.84 SQ.FT. EXEMPT)

SIDE YARD
CUT SLOPE

STRUCTURE QUANTITIES
TOTAL CUT=1612 CY
TOTAL FILL=ø CY

FIRE ACCESS ROAD

BRIARBLUFF ROAD

PARCEL 2

PARCEL 3
APN 4453-006-045
2186 BRIAR BLUFF ROAD
(TEJ)

TOTAL BUILDABLE PAD AREA= 9,991 SQ.FT.

SCALE: 1"=50'

0 50 100 150'

REGISTERED PROFESSIONAL ENGINEER
LEONARD T. LISTON
No.
Exp.
STATE OF CALIFORNIA

LC ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
889 Pierce Court, Suite 101, Thousand Oaks, California 91360
(805)497-1244 (818)991-7148 FAX (818)991-5942 Email: workfiles@lcgroupinc.com

EXHIBIT NO. 3
APPLICATION NO. 4-05-043
Site Plan
Parcel 1

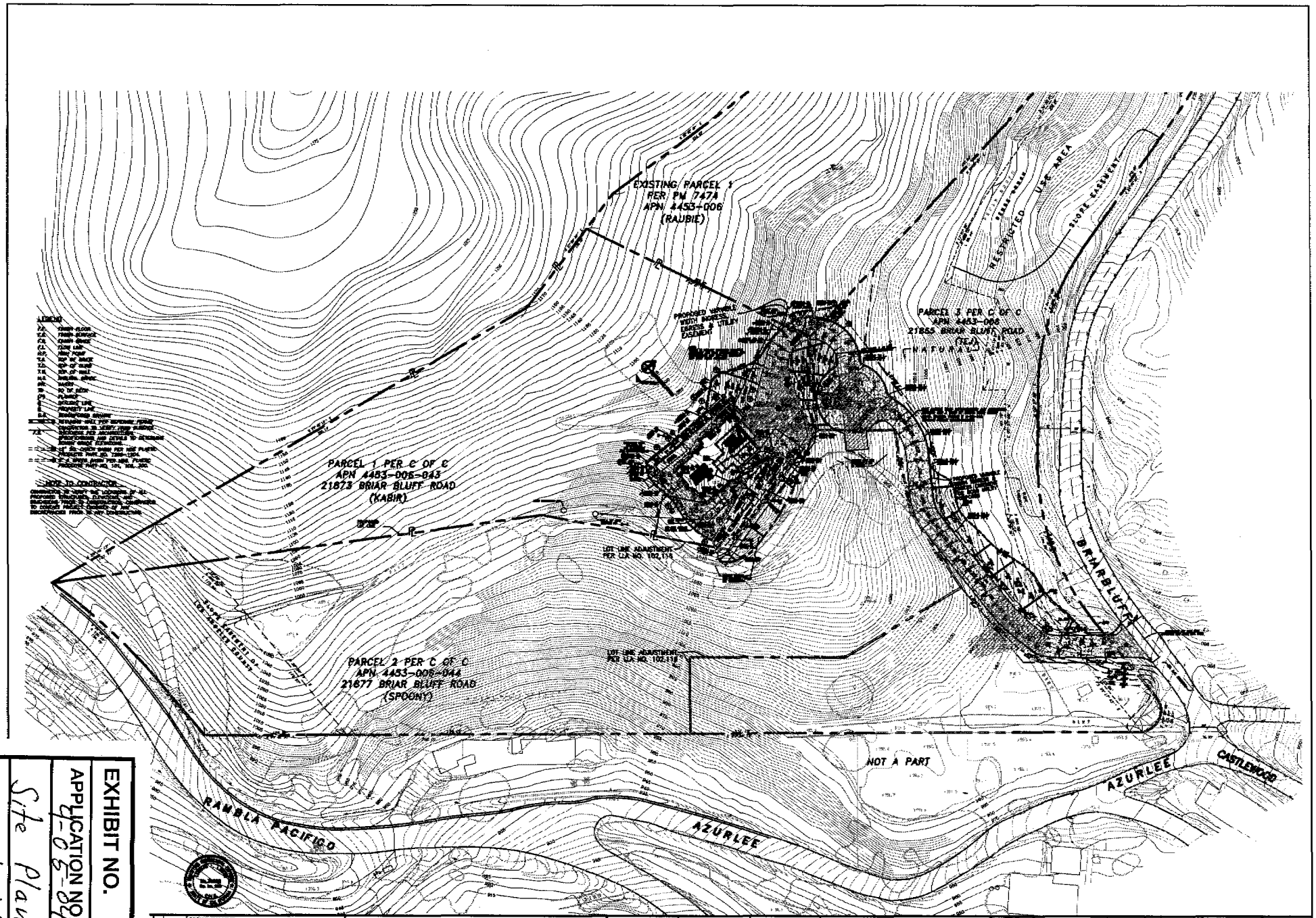


EXHIBIT NO. 4
APPLICATION NO. 4-05-083
Site Plan
Detail Parcel 1

COUNTY OF LOS ANGELES

5706

PARCEL 1 (ALTERNATIVE)
OVERALL SITE PLAN
KABIR & SUSSMAN
21873 BRIAR BLUFF ROAD, RAMBLA
PACIFICO MALIBU, L.A. COUNTY, CALIFORNIA

2
8

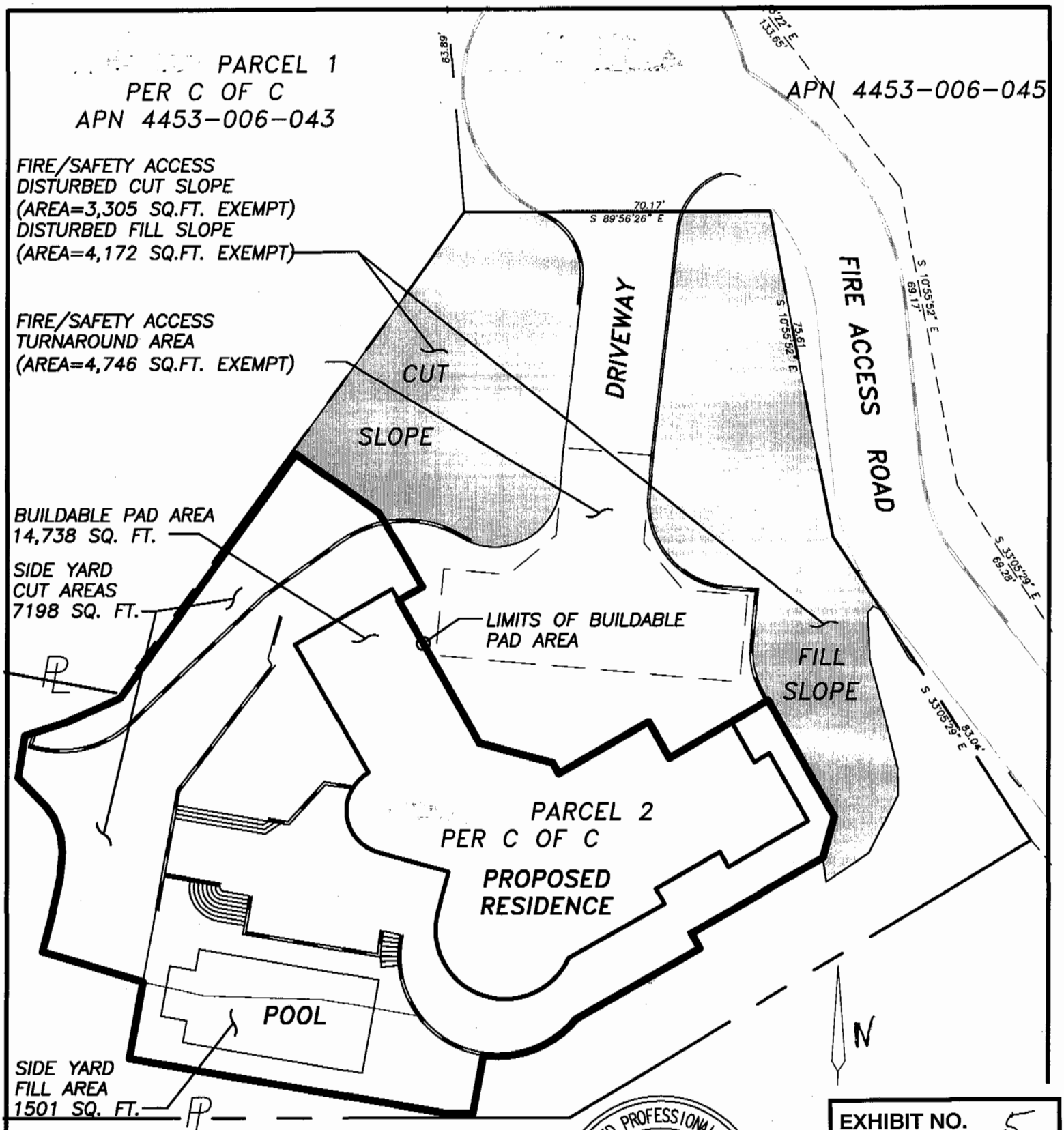


EXHIBIT NO.	5
APPLICATION NO.	4-05-044
Site Plan	
Parcel 2	

REGISTERED PROFESSIONAL ENGINEER
LEONARD I. LISTON
No.31902
Exp. Dec. 2006
CIVIL
STATE OF CALIFORNIA

SCALE: 1"=30'

0 30 60 90

LC ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
889 Pierce Court, Suite 101, Thousand Oaks, California 91360
(805)497-1244 (818)991-7148 FAX (818)991-5942 Email: workfiles@lcegroupinc.com

4-05-044

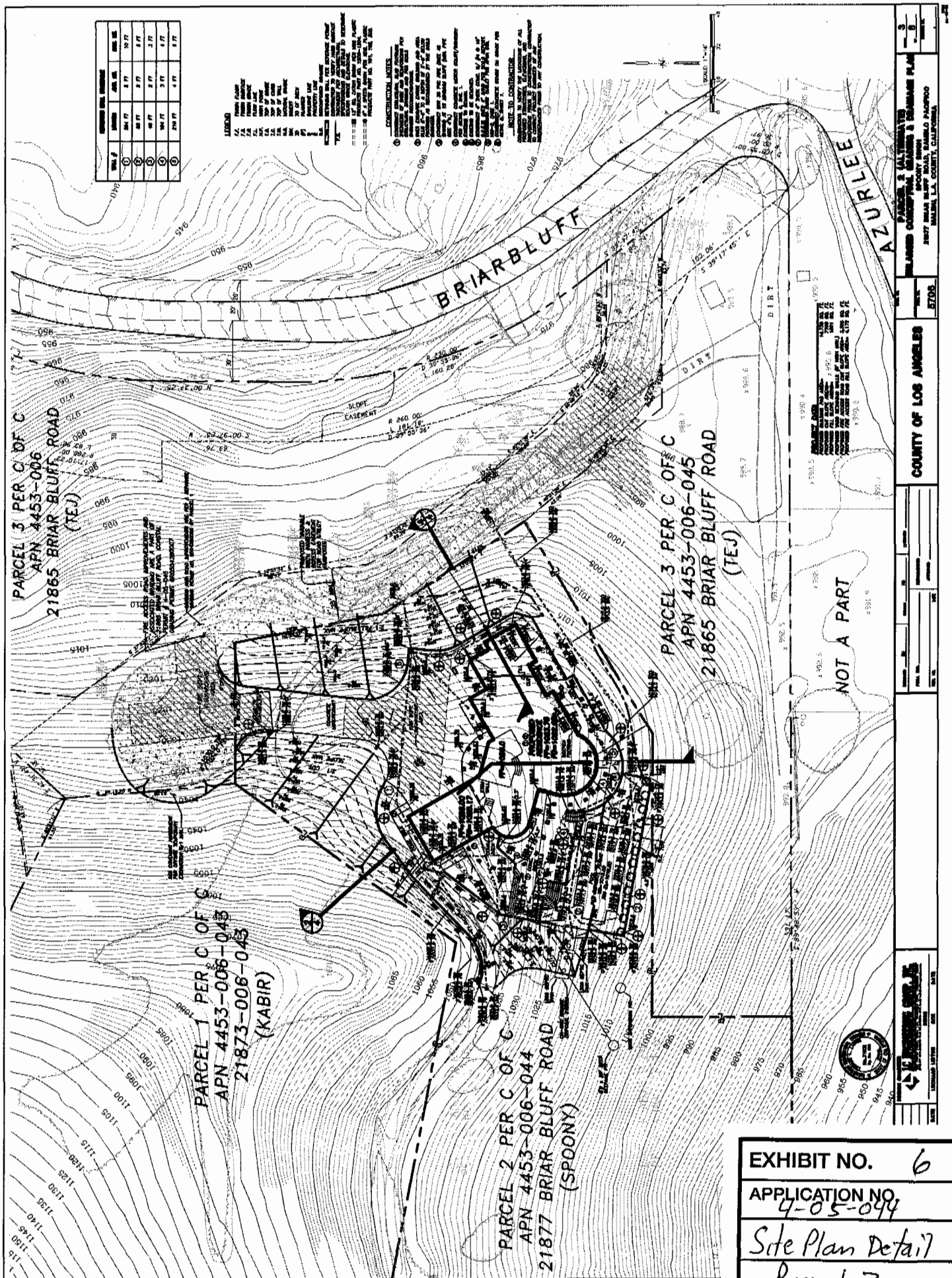
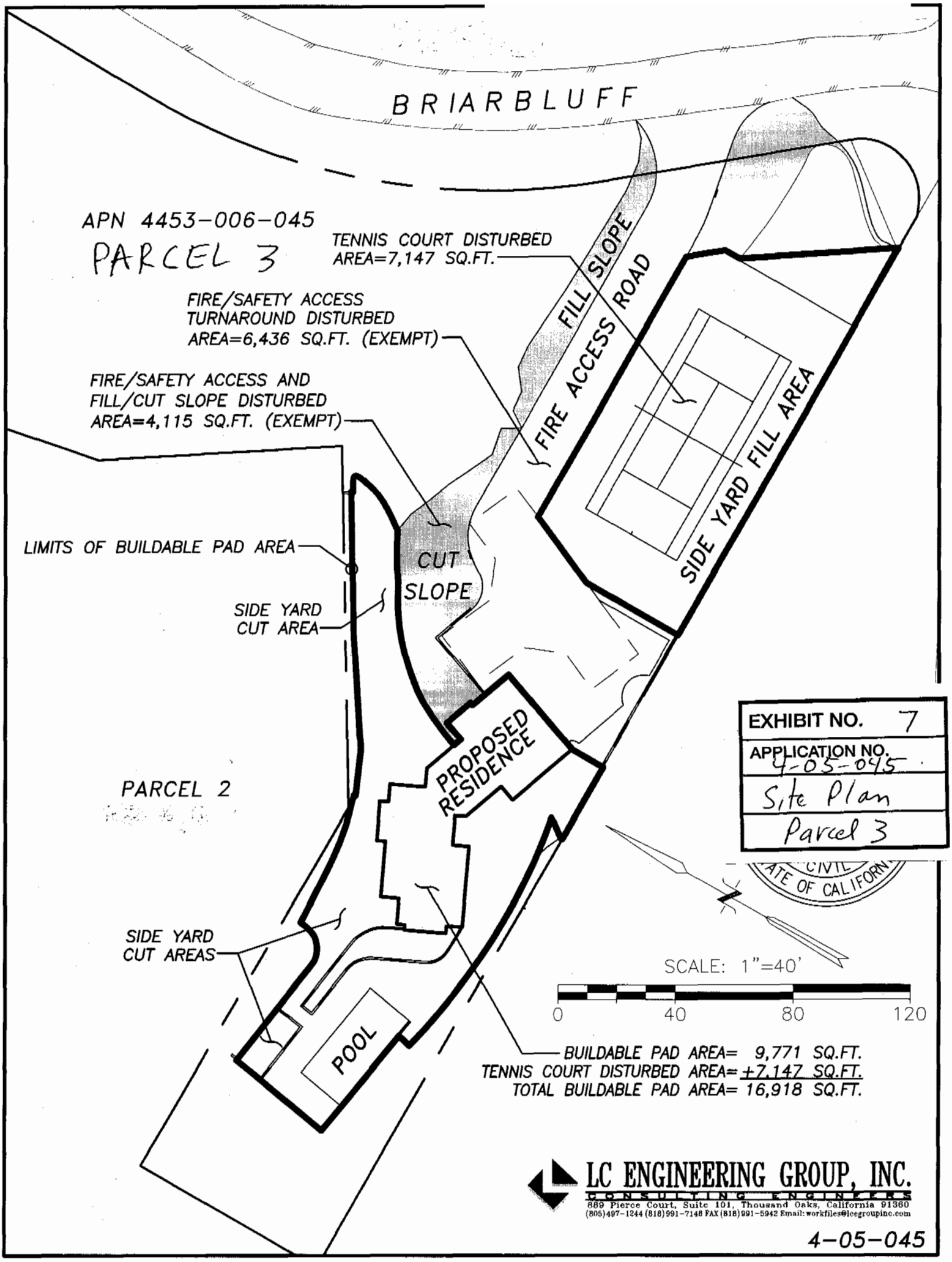


EXHIBIT NO. 6

APPLICATION NO. 4-05-044

Site Plan Detail

Parcel 2


BRIARBLUFF
APN 4453-006-045
PARCEL 3
TENNIS COURT DISTURBED AREA=7,147 SQ.FT.
FIRE/SAFETY ACCESS TURNAROUND DISTURBED AREA=6,436 SQ.FT. (EXEMPT)
FIRE/SAFETY ACCESS AND FILL/CUT SLOPE DISTURBED AREA=4,115 SQ.FT. (EXEMPT)
FILL SLOPE
FIRE ACCESS ROAD
SIDE YARD FILL AREA
LIMITS OF BUILDABLE PAD AREA
CUT SLOPE
SIDE YARD CUT AREA
PROPOSED RESIDENCE
PARCEL 2
SIDE YARD CUT AREAS
POOL
SCALE: 1"=40'
0
40
80
120
BUILDABLE PAD AREA= 9,771 SQ.FT.
TENNIS COURT DISTURBED AREA= +7,147 SQ.FT.
TOTAL BUILDABLE PAD AREA= 16,918 SQ.FT.
EXHIBIT NO. 7
APPLICATION NO. 4-05-045
Site Plan
Parcel 3
LC ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
889 Pierce Court, Suite 101, Thousand Oaks, California 91360
(805)497-1244 (818)991-7148 FAX (818)991-5942 Email: workfiles@lcegroupinc.com
4-05-045

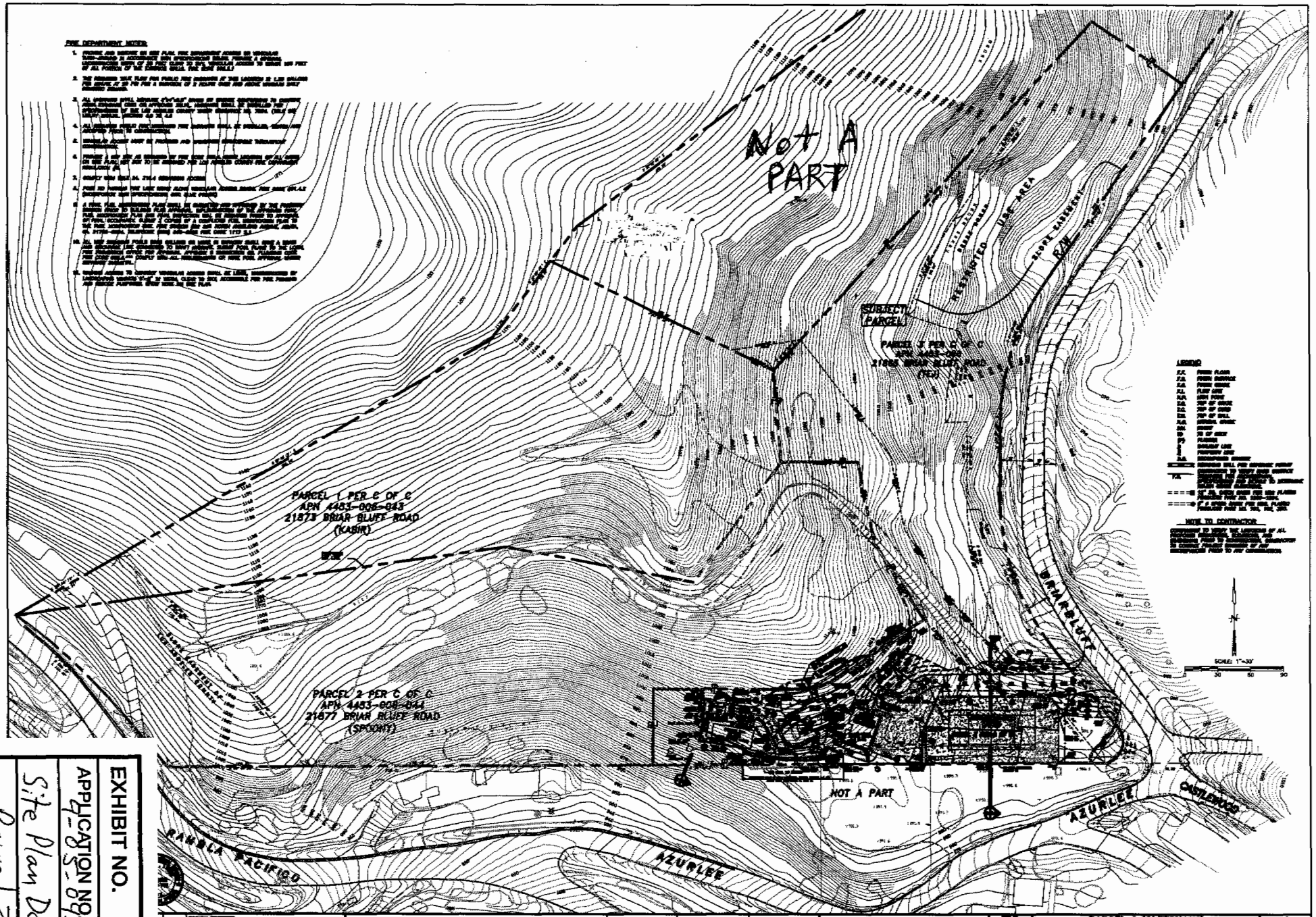
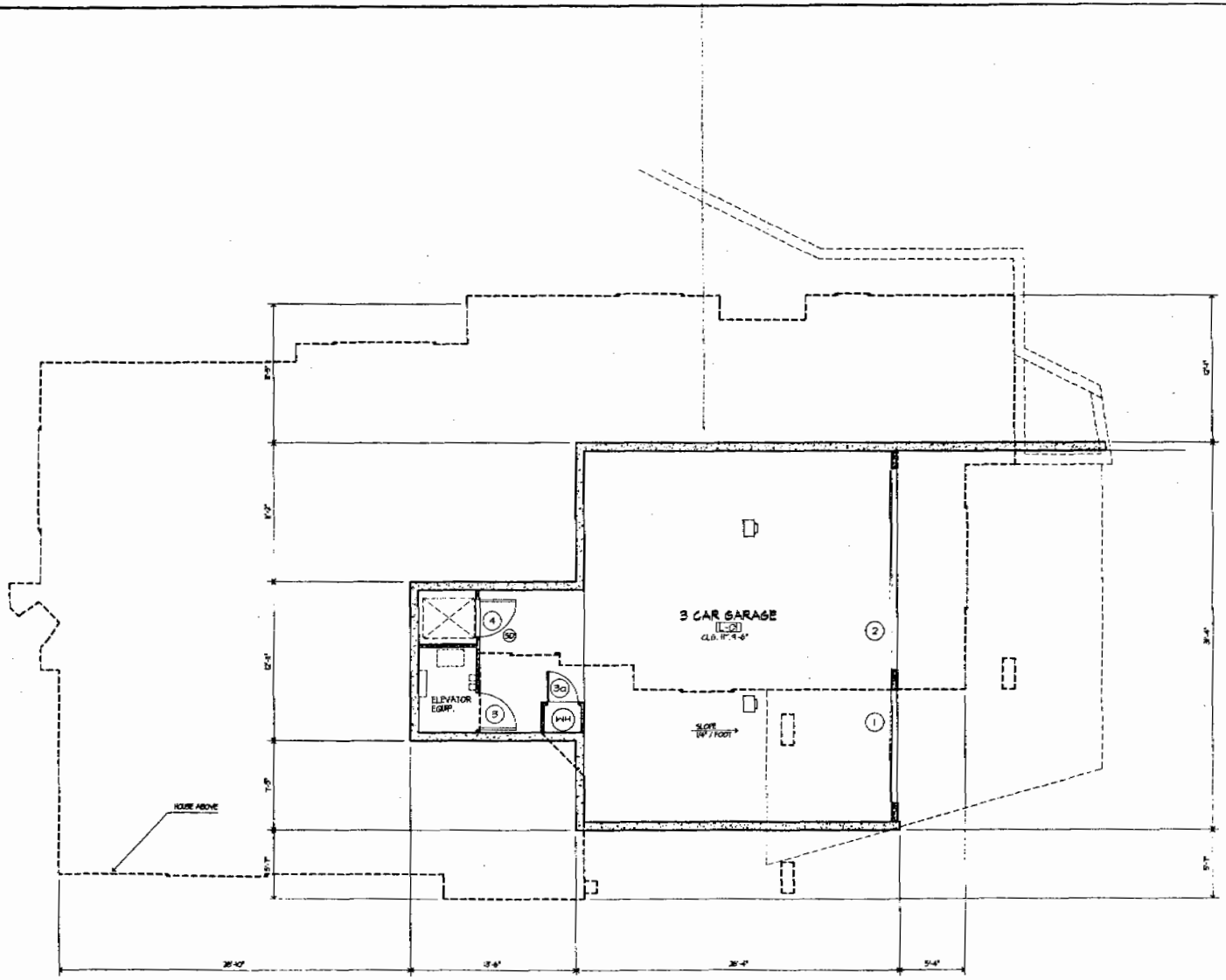


EXHIBIT NO. 8

APPLICATION NO. 4-89-095

Site Plan Detail

Page 1 3



GARAGE FLOOR PLAN
SCALE: 1/4" = 1'-0"
GARAGE: 1/8038 s.f.

NOTE
SEE A-1.4 FOR KEY NOTES
SEE A-2.1 and A-2.2 FOR WINDOW and DOOR SCHEDULES.

LTA
LAWRENCE A. THOMPSON - ARCHITECT
ARCHITECTURE
4450 MARKET STREET, SUITE 409
VENTURA, CALIFORNIA 93003
(805) 653-1004
FAX (805) 658-8885

PROJECT TITLE
K. SUNDHER RESIDENCE
21619 BRUMBLIFF DRIVE
MALIBU, CALIFORNIA
(PARCEL 1)

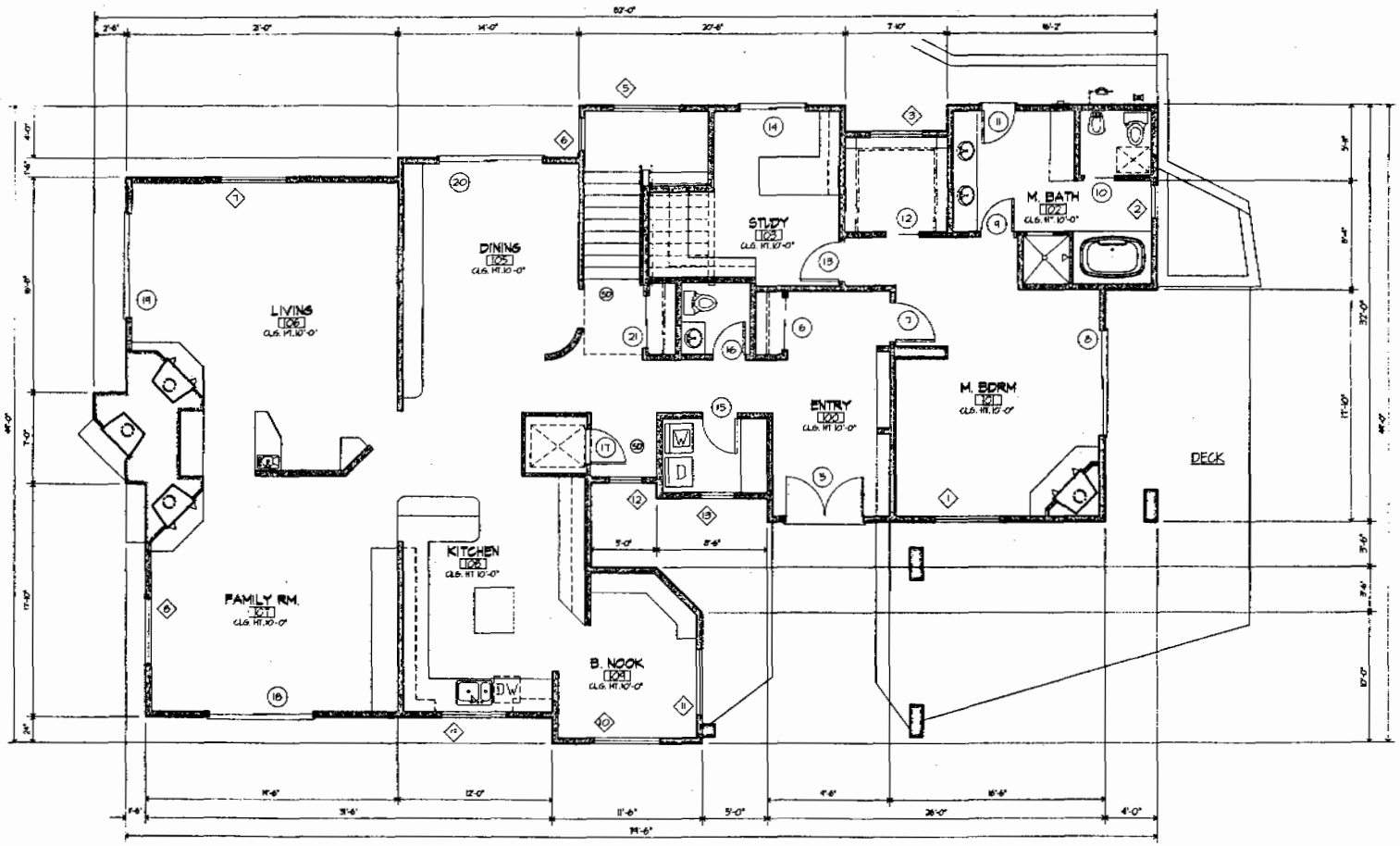
SHEET TITLE
BASEMENT FLOOR PLAN

REVISION

PROJECT INFORMATION
OWNER:
KABIR SUNDHER
6767 HOLLYWOOD BLVD.
HOLLYWOOD, CALIFORNIA
90028
(310) 496-1622

DATE 8/17/05
JOB NO. 05-12
SHEET A-1.1

EXHIBIT NO. 9
APPLICATION NO. 4-03-093
Garage Floor Plan



1st FLOOR PLAN

SCALE: 1/4" = 1'-0"

LIVING:	2,246.69 s.f.
TOTAL LIVING:	2,165.29 s.f.
TOTAL:	4,158.78 s.f.

NOTE

SEE A-1.4 FOR KEY NOTES.
SEE A-2.1 and A-2.2 FOR WINDOW and DOOR SCHEDULES.

LTA

LAWRENCE A. THOMPSON - AIA 3474-21
ARCHITECTURE
4400 MARKET STREET, SUITE 400
VENTURA (N. KENTURA COUNTY)
(805) 658-1424
FAX (805) 658-8646

PROJECT TITLE: K. SUNDHER RESIDENCE
21875 BRUNSLIFF DRIVE
MALIBU, CALIFORNIA
(PARCEL 1)

SHEET TITLE: 1st FLOOR PLAN

REVISION

PROJECT INFORMATION
OWNER:
KABIR SUNDHER
6767 HOLLYWOOD BLVD.
HOLLYWOOD, CALIFORNIA
90028
(310) 456-1622

DATE: 8/17/05
JOB No.: 05-12
SHEET: A-1.2

EXHIBIT NO. 10
APPLICATION NO. 4-05-043
1st Floor Plan

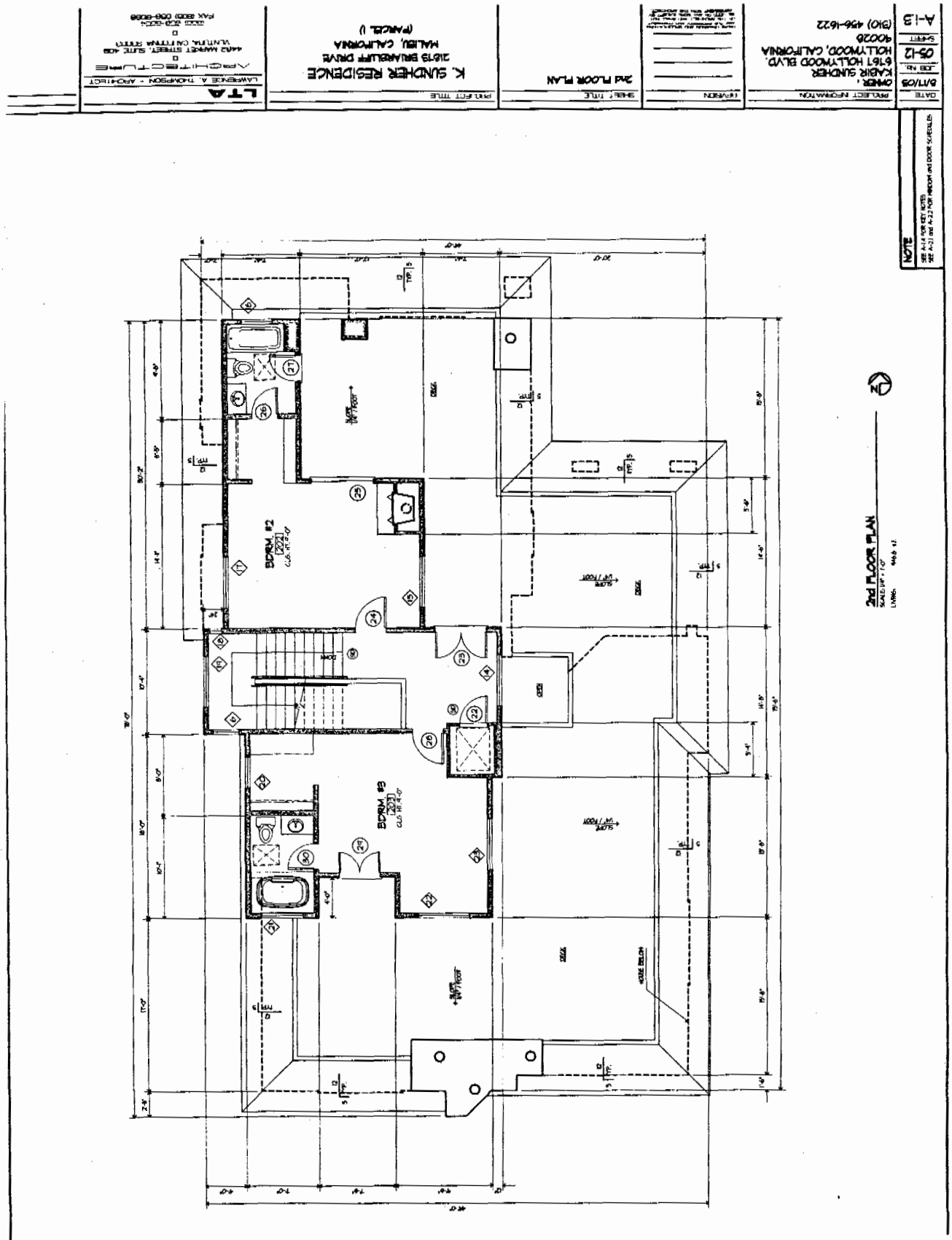
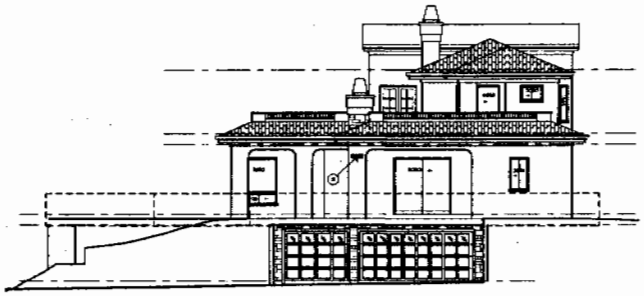


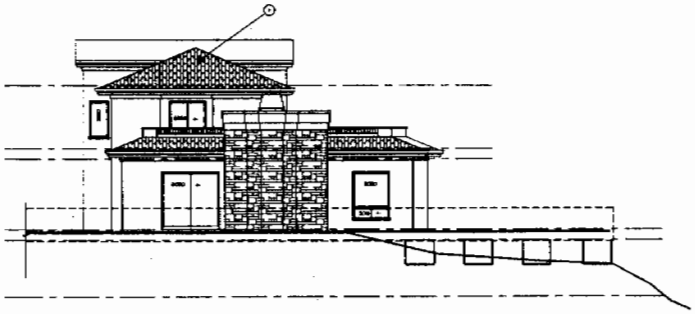
EXHIBIT NO.	11
APPLICATION NO.	4-05-043
2nd Floor	
Plan	



NORTH EAST ELEVATION
SCALE: 1/8" = 1'-0"

NORTH WEST ELEVATION
SCALE: 1/8" = 1'-0"

SOUTH EAST ELEVATION
SCALE: 1/8" = 1'-0"



SOUTH WEST ELEVATION
SCALE: 1/8" = 1'-0"

EXTERIOR COLORS

- (A) ROOF: "SEALE", CAPISTRANO 9511, CONCRETE ROOF TILES. COLOR: DARK TERRACOTTA, 69520 (C.B.O. # 4860 ILL. CLASS A RATING)
- (B) 1/8" STUCCO: COLOR: (P) ATTENTION TO DETAIL, 753
- (C) FASCIA: COLOR: (P) SHOWCASE, 752
- (D) TRIM: COLOR: (P) ACCOMPLISHMENT, 754

MANUFACTURER:
STUCCO, PAINTED
PAINT, (P) FRAZEE PAINTS "DURATEC 9"

STUCCO NOTE

1/8" CEMENT PLASTER OVER #5 LB. BUILDING PAPER. NO. 9 BARBE WALLS 1-1/2" LONG, 1/8" HEAD @ 6" O.C. MAX. OR #6 GAUGE STAPLES 1/8" LONG @ 6" O.C. MAX. STUDS @ 16" O.C. MAX. BLOCK ALL WALL PANELS 9'-6" OR LESS IN LENGTH. END JOINTS OF ADJACENT COURSES OF STUCCO LATH NOT ALLOWED ON SAME STUD. CONFORM TO U.B.C. TABLE 25A-C.
(2 LAYERS GRADE D PAPER AT ALL EXTERIOR SHEAR WALLS)

GENERAL NOTES

1. ANY ITEM THAT PENETRATES EXTERIOR PLASTER TO HAVE MOISTURE STOPS, SO MIN. MOISTURE PROOF
2. ELECTRICAL OUTLET BOXES (INCLUDING LIGHT FIXTURES) IN EXTERIOR WALLS ARE HAVE ALL OPENINGS SEALED AND WALL PENETRATIONS SEALED WITH INSULATION AND NON-HARDENING CAULKING
3. FIREPLACE HEARTH TO BE CERAMIC TILE, @ FLOOR LEVEL OR 18" A.F.F.
4. VERIFY SIZE AND CORRECTIONS FOR FAU UNITS WITH PRIME CONTRACTOR AND PLUMBING / ELECTRICAL CONTRACTORS FOR DOOR SIZE/CLEARANCES FROM WALLS, AND THERMOSTAT CONNECTIONS
5. ALL GLAZING WITHIN 12" OF ANY DOOR TO BE FULLY TEMPERED GLASS.
6. STREET NUMBER TO BE PLACED AT DRIVEWAY ENTRANCE SO THAT IT IS LEGIBLE AND VISIBLE FROM THE STREET MIN. 4" LETTERS
7. ALL ROOF MATERIALS SHALL BE OF NON-COMBUSTIBLE OR APPROVED FIRE RETARDENT MATERIALS.
8. PARTITIONS AND EXTERIOR WALLS SURFACES SHALL EXTEND FULL HEIGHT, I.E., FROM FLOOR TO CEILING. IN BATHROOM AREAS, WALLS ARE TO BE COMPLETELY SURFACED WITH GYPSUM BOARD OR PLASTER AND JOINTS CAULKED BEFORE TUBS OR SHOWERS ARE INSTALLED
9. ALL HOLES, GRADES AND PENETRATIONS IN EXTERIOR WALLS TO BE SEALED TO ENSURE AN AIRTIGHT SOUND TIGHT INSTALLATION USE NON-HARDENING RESILIENT SEALANT.
10. ALL PLUMBING VENTS, DUCTS, AND OTHER APPURTENANCES PROJECTING FROM ROOF SHALL BE INTEGRATED IN SUCH A MANNER THAT THEY WILL NOT BE VISIBLE FROM THE FRONT OF THE PROPERTY, OR OTHER MAJOR VISIBLE VANTAGE POINTS. ROOF PROTRUDING ELEMENTS SHALL BE GROUPED AND LOCATED IN THE ABOVE DESCRIBED MANNER. ROOF VENTS SHALL BE SHOWN ON ALL APPLICABLE CONSTRUCTION DRAWINGS AND PAINTED TO MATCH ROOF COLOR.
11. AUTOMATIC GARAGE DOOR OPENER & SECTIONAL GARAGE DOOR SHALL BE INSTALLED PER PLANS, KEYED NOTES, & DOOR SCHEDULE.
12. PLUMBING PENETRATIONS IN EXTERIOR WALLS TO BE SEALED. THE PERIMETERS AND JOINTS OF ALL ACOUSTICAL RATED ASSEMBLIES ARE TO BE SEALED WITH NON-HARDENING RESILIENT CAULKING BEFORE INSTALLATION OF CABINETS, CARPETS, ETC.
13. SEE SITE PLANS FOR ADDITIONAL NOTES.
14. SEPARATE PERMIT IS REQUIRED FOR RETAINING WALLS AND FENCES AND SHALL BE OBTAINED FROM THE INSPECTION SERVICES DIVISION PRIOR TO INSTALLATION.
15. SEPARATE PERMITS WILL BE REQUIRED FOR PLUMBING, MECHANICAL, AND ELECTRICAL WORK AS APPLICABLE.

KEYED NOTES ELEVATIONS

1. ROOF: "SEALE", CAPISTRANO 9511, CONCRETE ROOF TILES. OVER 40# FELT (C.B.O. #4860 ILL. CLASS "A" RATING) (TILE ROOFS SHALL BE PRE-STOPPED AT EAVE ENDS TO PREVENT PREDATOR ENTRY OF PLANT OR OTHERS UNDER THE TILE BUILDING CODE 1404.3.3)
2. 1/8" STUCCO OVER "K-LATH" DOUBLE PAPER "STUCCO RITE" (C.B.O. # 1294) WITH LACE FINISH. (SMOOTHING at ALL SLOPING STUCCO)
3. 2x8 FASCIA OVER 2x10 FASCIA, SEE DET. 18 / A-6.1
4. SEAMLESS GUTTER & DOWNSPOUT TO UNDERGROUND DRAINS.
5. 2x10 FASCIA OVER 2x12 FASCIA, BARGE RAFTER. SEE DET. 11 / A-6.1. (WHERE APPLICABLE)
6. 1/8" STUCCO OVER 2x6 FLAT and 2x2 SEE DET. 5 / A-6.1
7. SILL SEE DET. 4 / A-6.1
8. SECTIONAL DOOR
9. PAINTED METAL CAP, (C.B.O. #2519) CHIMNEY CAP AND DUCT.
10. PAINTED METAL FLASHING, TYP.
11. PLANT-ON DECORATIVE
12. STREET ADDRESS NUMBERS MUST BE A MIN. OF 3" HIGH ON A CONTRASTING BACKGROUND. ADDRESS MUST BE READILY VISIBLE FROM THE STREET.
13. APPROVED SPARK ARRESTER, THE NET AREA OF THE SPARK ARRESTER SHALL BE NOT LESS THAN (4) TIMES THE NET AREA OF THE OUTLET OF THE CHIMNEY. THE SPARK ARRESTER SCREEN SHALL HAVE HEAT AND CORROSION RESISTANCE EQUIVALENT TO 12-GAUGE WIRE, 19-GAUGE GALVANIZED WIRE OR 24-GAUGE STAINLESS STEEL. OPENINGS SHALL NOT PERMIT THE PASSAGE OF SPHERES HAVING A DIAMETER LARGER THAN 1/2 INCH AND SHALL NOT BLOCK THE PASSAGE OF SPHERES HAVING A DIAMETER OF .1355 INCH 3/8 INCH. CBC SECTION 3102.5.8

LTA
LAWRENCE A. THOMPSON - ARCHITECT
ARCHITECTURE, INC.
4402 MARKET STREET, SUITE 400
VENTURA, CALIFORNIA 93003
(805) 650-8004
FAX (805) 289-1840

PROJECT TITLE
K. SUNDHER RESIDENCE
21679 BRIARCLIFF DRIVE
MALIBU, CALIFORNIA
(PARCEL 1)

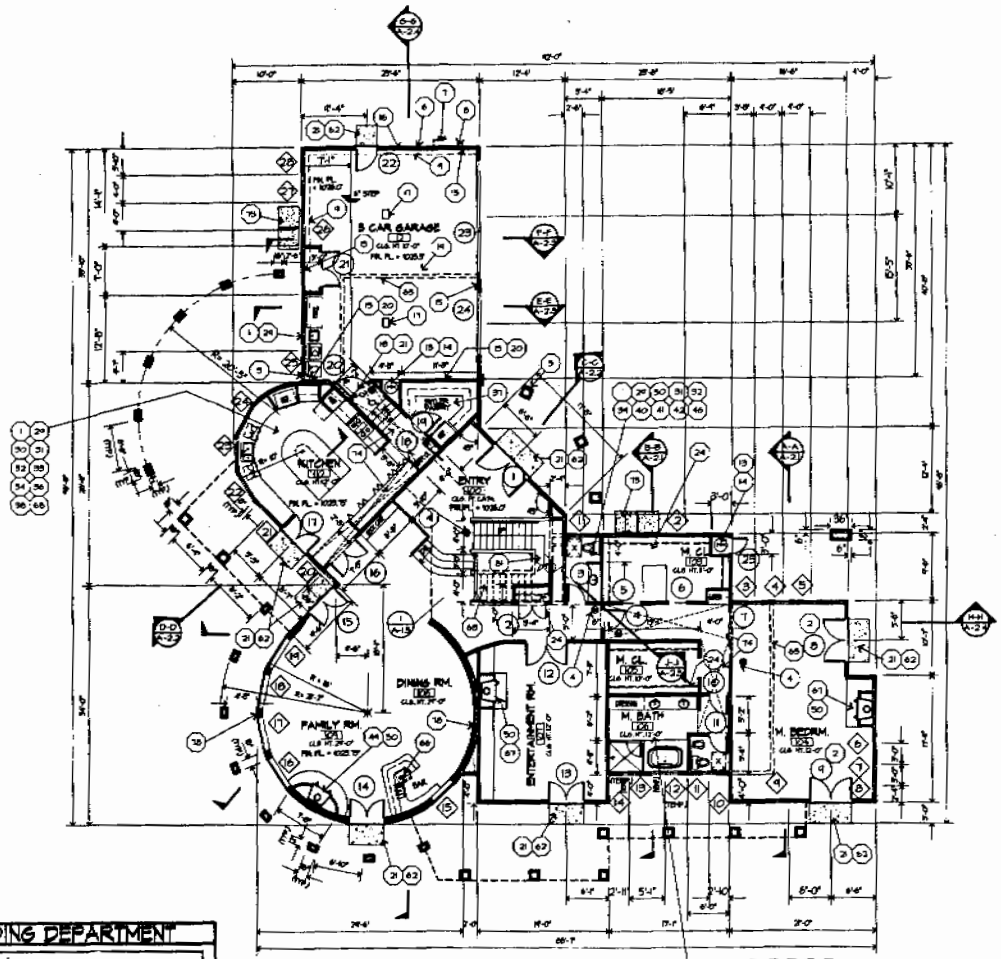
SHEET TITLE
ELEVATIONS
NOTES

REVISION

PROJECT INFORMATION
OWNER: K.&BR. SUNDHER
6767 HOLLYWOOD BLVD.
HOLLYWOOD, CALIFORNIA 90028
(310) 456-1622

DATE: 8/11/05
JOB NO.: 05-12
SHEET: A-3.1

EXHIBIT NO. 12
APPLICATION NO. 4-05-043
Elevations



1st FLOOR PLAN

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

LIVING, 1st FLOOR	3,388.0 sf.
LIVING, 2nd FLOOR	2,284.31 sf.
TOTAL LIVING	6,071.50 sf.
TOTAL GARAGE	864.6 sf
TOTAL	6,936.6 sf.

FLOOR PLAN KEYED NOTES

1. ULTRA LOW FLOW PLUMBING FIXTURES. (TITLE 24, 17.6.)
   SHOWERHEADS : 2.5 GALLONS PER MINUTE MAX. FLOW
   TOILETS : 1.6 GALLONS PER FLUSH MAX.
   LAVATORY FAUCETS : 2.2 GPM MAX. FLOW
   SINK FAUCETS : 2.2 GPM MAX FLOW
2. PROVIDE EMERGENCY EXIT DOOR OR WINDOW FROM SLEEPING ROOMS. (EXIT OPENING AREA SHALL NOT BE LESS THAN 5.7 SQ. FT. (5.0 SQ. M.) EXIT WINDOW OPENING HEIGHT SHALL BE 24" CLEAR, EXIT OPENING WIDTH SHALL BE 20" CLEAR, FINISH SILL HEIGHT ABOVE FINISH FLOOR SHALL BE 44" MAX. HEIGHT ABOVE THE FLOOR. (U.B.C.)
3. LOCATION OF LIMITED ADDRESS NUMBERS TO BE MOUNTED @ 48" A.F.G. TO BE READ FROM EAST ALL NUMBERS TO BE 3" MIN. TO BE EASILY READ FROM STREET. ON CONTRASTING BACKGROUND. ON SEP. TRANS.
4. APPROVED SMOKE DETECTORS ON SEPERATE ELEC. CIRCUIT. INSTALL PER CODE / PROVIDE BATTERY BACKUP
5. 5" DRYER - VENT TO EXTERIOR WITH DAMPER, WALL & EXTERIOR WALL. VENT MUST BE RODENT PROOF & OPTIONAL. EQUIPPED DRYER MOISTURE EXHAUST DUCTS SHALL TERMINATE OUTSIDE THE BUILDING AND HAVE A BACK-DRAFT DAMPER. (ALL INSTALLATION PER MFG INSTRUCTIONS OF U.B.C. & U.P.C.) (MAX. 14' LENGTH FOR DRYER VENT.)
6. 4-400 AMP ELECTRICAL SERVICE PROVIDE 2" CONDUIT EACH FOR UNDERGROUND SUPPLY. (LOCATED @ STREET, SEE CIVIL)
7. GAS METER & SHUT-OFF TO HOUSE
8. WATER SUPPLY TO HOUSE AND LANDSCAPING (METER LOCATED @ STREET, SEE CIVIL)
9. FURRED UTILITY CHASE, 8" WIDE x 8" HIGH
10. F.A.U. GAS FIRED ATTIC MOUNT UNIT, SEE TITLE 24 DOCS. FOR MFT SPECIFICATIONS & INSTALLATION DETAILS. (ALL INSTALLATION PER MFT EDITIONS OF U.B.C. & 2001 N.E.C. & U.P.C.)
11. F.A.U. RETURN AIR GRILL LOCATION, VERIFY w/ MECHANICAL CONTRACTOR. (RETURN AIR GRILL CEILING MOUNTED, FIRE RATED SHAFT ABOVE. SEE MECHANICAL PLANS FOR LOCATIONS)
12. 30" x 30" ATTIC ACCESS DOOR, PROVIDE LIGHT & SWITCH IN ATTIC FOR PM MAINTENANCE. INSTALL A 3/4" PLYWOOD PLATFORM & CATWALK FOR ACCESS TO F.A.U. MIN. 30" IN ANY DIRECTION FROM FROM ACCESS DOOR OR F.A.U. UNIT w/ FURNACE DOOR OPEN. (FRAME CONTRACTOR TO VERIFY.)
13. 75 GAL. GAS WATER HEATER ON 1 1/2" PLATFORM, PROVIDE T & P VALVE ON WATER HEATER AND DISCHARGE TO EXT. OF BUILDING. PROVIDE 6 L. SHITTY PAN WITH 3/4" DIA. DRAIN LINE TO EXT. OF BLDG. SEISMICALLY STRAP WATER HEATER TO WALL. SHEETS (STRAP WATER HEATER AT UPPER AND LOWER 1/3 OF VERTICAL HEIGHT) (ALL INSTALLATION PER MFT EDITION OF U.B.C. & 2001 N.E.C. & U.P.C.) (WATER HEATER SPACE SHALL BE MIN. 30" x 30" CLR. WIDE COMPARTMENT.)
14. WATER HEATER VENT THRU ROOF, PER U.B.C., U.M.C., & U.P.C. DOOR WITH COMBUSTION AIR VENTING, ETC., (SEE DOOR SCHEDULE)

GARAGE

15. PROVIDE 5/8" TYPE "X" FIRE-RATED G.B. SEPARATION BETWEEN GARAGE AND HABITABLE SPACE. APPLY @ WALLS & CEILING, & EXTEND TO ROOF SHEATHING WHERE APPLICABLE. (U.B.C.) SEE KEY NOTE. (5)
16. PROVIDE (2) NO. 24 GA. SL. MIN. SCREENED VENTS MIN. 6" OF FLOOR FOR CAR, 24" RODENT PROOF MESH & OPENING.
17. HOT GARAGE DOOR OPENER, VERIFY LOCATION WITH INSTALLER. PROVIDE (2) REMOTE CONTROLS FOR GARAGE DOOR.
18. 20 MIN. RATED DOOR & FRAME WITH 3 HINGE FITTING BASKET & SELF CLOSURE.
19. CLG. @ GARAGE 2 LAYERS 5/8" "X" GYP. BD. SEE KEY NOTE. (5)
20. ALL PENETRATIONS THRU GARAGE FIREWALL SHALL BE METALLIC. NON-COMBUSTIBLE PENETRATING PIPING SHALL NOT BE CONNECTED TO COMBUSTIBLE MATERIALS ON OTHER SIDE. (LAUNDRY AND VACUUM PIPING, IF PENETRATING FIREWALL SHALL BE INSTALLED FOR THE ENTIRE LENGTH. (U.B.C. 709.7) (YOU MAY SEE A PERSPECTIVE VIEWED FOR PENETRATIONS PER MFRS. SPECS. & HELD OF SH. ALL)

MISC. NOTES

21. METAL THRESHOLD @ ALL EXTERIOR DOORS & GARAGE DOOR.
22. 4" OFFSET @ DOOR FRAME TYP. (U.N.O.)
23. LINEN CABINETS TO BE FACE FRAME.
24. 1 CLOSET HAND 1, PRE-FAB HARDWARE SHELF & DBL. ROLE.
25. ART, RECESSED NICHE BOT. @ + 36", TOP @ + 1'-0"
26. FLAT ARCH LOCATION.
27. BOX USESS
28. ALL CABINET DOORS ABOVE BUILER PANTRY & WET BAR SHALL SHALL BE WOOD FRAME W/ SMOKED GLASS.

PLUMBING

29. PLUMBING WALL-2x6 STUDS @ 16" O.C. / SEE NON-SLIP JOINTS
30. PLUMBING FITTINGS ONLY.
31. PROVIDE A PERMANENTLY ACCESSIBLE 12-INCH SQUARE BATHTUB TRAP ACCESS or PROVIDE A NON-SLIP JOINT TRAP
32. VENTILATING DUCTS @ KITCHEN & BATHS TO BE SMOOTH, NON-COMBUSTIBLE AND NON-ABSORBENT SURFACES
33. KITCHEN & BATH FIXTURES SHALL BE 40 LUMENS PER WATT.

KITCHEN

34. GRANITE TOP, OVER STAIN GRADE FINISHED CABINETS. GRANITE CTR. 90" @ +36", WITH FULL BACKSPLASH.
35. VENTED HOOD, SEE APPLIANCE LIST VENT THRU EXTERIOR WALL
36. POST WALL BELOW (CENTER TOP) VERIFY VENTS WITH CABINET MAKER
37. RECESSED ILLUMINATED FLUORESCENT BELOW CABINETS.
38. PANTRY W/ ADJUSTABLE SHELVES
39. REFRIGERATOR WATER HOOK-UP

BATHS

40. GRANITE COUNTER TOP @ + 32" X WITH 6" BACKSPLASH & BUILD STYLE CABINETS
41. RECESSED MEDICINE CABINET, CUSTOM TO MATCH HEIGHT & FINISH OF CABINETS & MIRROR.
42. MIRROR ABOVE SINK, MIRROR 42" HIGH BY CTR. LENGTH. TOP OF MIRROR @ + 6'-0"
43. COMPLETELY SURFACE BATHROOM WALLS TO BE SCRATCH CKC PLASTER, CASE ALL JOINTS BEFORE INSTALLING TILES OR SHOWERS. (& FUTURE WALL ONLY.)
44. WINDOW GLAZING +36" ABV. SHOWER DRAIN/FLOOR SURFACE
45. GRANITE SHOWER SEAT W/ SHOWER SURROUND @ + 18" ABOVE SHOWER FLOOR W/ TEMPERED GLASS & ENCLOSURE.
46. PROVIDE A RECESSED COMBINATION FAN & LIGHT UNIT. FAN TO PROVIDE 5 AIR CHANGES PER HOUR. LIGHT: FLUORESCENT LIGHT -22 WATTS, 40 LUMENS PER WATT. PER TITLE - 24 REQUIREMENTS
47. PROVIDE A WINDOW WATER CLOSET SPACE. 30 INCHES WIDE w/ 24 INCHES CLEAR IN FRONT OF WATER CLOSET.
48. SHOWERS SHALL BE FINISHED TO A HEIGHT OF 72 INCHES ABOVE THE DRAIN INLET AND HAVE A SMOOTH, HARD, NONABSORBENT SURFACE. USE CERAMIC TILE.
49. PROVIDE TEMPERED or LAMINATED SAFETY GLASS or PLASTIC ENCLOSURE @ SHOWERS and TUBS. ENCLOSING IN ANY PORTION OF A BUILDING WALL ENCLOSING WINDOWS or TUBS WHERE THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE A STANDING SURFACE or DRAIN INLET SHALL COMPLY.

ADDITIONAL NOTES

50. FACTORY FABRICATED FIREPLACE, U.L.C.O. F250, MINIM., SUPERIOR, MOD. 9 (DIA.) (2) 42" SET, RE 45,000 DOORS. (ALL COMPONENTS SHALL BE U.L.C.O. or U.L. LISTED INCLUDING THE SHROUD AND LISTED TERMINATION
51. TILE HEARTH, @ FLOOR LEVEL. HEARTH-DIM. : 30" H. x 60" L)
52. INSTALL 30"x30" COND. EQUIPMENT PAD
53. SKYLIGHT
54. INSTALL GAS OUTLET @ EXTERIOR.
55. INSTALL SOFT WATER LOOP, DRAIN TO WASTE. LOCATION TO BE AT EXTERIOR OF GARAGE.
56. INSTALL SPLIT HV.A.C. SYSTEM (ON SEP. CIRCUIT)
57. INSTALL RECIRCULATION SYSTEM
58. INSTALL SECURITY SYSTEM. (ON SEP. CIRCUIT.)
59. INSTALL VACUUM SYSTEM, LOCATE IN GARAGE w/ OUTLET. (OPTIONAL)
60. INSTALL INTERCOM SYSTEM, WITH DOORBELL. (ON SEP. CIRCUIT.)
61. PROVIDE FIRE BLOCK STUD WALLS @ 10' INTERVALS (HORIZONTAL and VERTICAL) ENCLOSED and CONCEALED SPACES, and @ OPENINGS AROUND VENTILATE TRUSS, CABINETS, BETWEEN ATTIC and CABINET ABOVE, STAIR STRINGERS, and SIMILAR PLACES @ CEILINGS and FLOOR LEVELS.
62. PROVIDE EXTERIOR ACCESS DOOR FOR MASTER TUB.
63. PROVIDE A LANDING EQUAL TO THE WIDTH OF THE DOOR AND A LENGTH IN THE DIRECTION OF TRAVEL EQUAL TO 36 INCHES.
64. REFLECTIVE POOL.
65. CASE ALL WINDOWS AND DOORS.
66. WALL ABOVE.
67. PROVIDE WINE COOLER.
68. FACTORY FABRICATED FIREPLACE, U.B.C. F280, MINIM., SUPERIOR, MOD. 6 (DIA.) (2) 42" SET, RE 45,000 DOORS. (ALL COMPONENTS SHALL BE U.L.C.O. or U.L. LISTED INCLUDING THE SHROUD AND LISTED TERMINATION
69. CABINET BELOW KITCHEN ISLAND.
70. GRANITE TOP, OVER STAIN GRADE FINISHED CABINETS. GRANITE CTR. TOP @ +36", WITH 6" BACKSPLASH.
71. GRANITE TOP, OVER STAIN GRADE FINISHED CABINETS w/ KNEE SPACE CAPS ABOVE TO BE WOOD FRAME w/ SMOKED GLASS. GRANITE CTR. TOP @ +36", WITH 6" BACKSPLASH.
72. POT SHELF ABOVE.
73. WALL BELOW
74. ROOF LINE BELOW
75. SOFFIT, BOT. @ +10'-0"
76. 36" sq. COND. HEIGHT PAD. (2 ea.)
77. VERT. HEIGHT SHAFT.
78. 2x4 STUDS
79. 2x10 STUDS (1 3/4" x 9 1/4" TIMBERSTRAND LSL / 250 @ 12" o.c.
80. FIRE RESISTIVE ASSEMBLIES FOR PROTECTION OF OPENINGS TO COMPLY WITH TITLE 24, 70.
81. PROVIDE A 1-HR. FIRE RESISTIVE AREA / OCCUPANCY SEPARATION BETWEEN THE R-3 AND U-1 (TITLE 24, TABLE 9-B) SEE KEY NOTES. (5) & (16)
82. WALLS AND SOFFITS OF ENCLOSED USABLE SPACE UNDER INTERIOR STAIRWAYS THAT ARE NOT REQUIRED TO BE ENCLOSED BY BUILDING CODE 1003.2.2 SHALL BE PROTECTED ON THE ENCLOSED SIDE AS REQUIRED FOR ONE-HOUR FIRE RESISTIVE CONSTRUCTION. (TITLE 24, 1003.3.3.4)
83. ACCESSORY STRUCTURES SUCH AS CARPORTS, GAZEBOS, OR PATIO COVERS WHICH ARE ATTACHED TO OR WITHIN 30 FEET OF A RESIDENTIAL BUILDING MUST BE ONE-HOUR FIRE RESISTIVE CONSTRUCTION, HEAVY TIMBER CONSTRUCTION, OR NON-COMBUSTIBLE CONSTRUCTION. (BUILDING CODE 4406.1 & 3406.4)

PLUMBING SPEC'S

P1	1GPF ELTS, KOHLER, K-4276 SANTA ROSA WATER CLOSETS
P2	LAV SINKS, KOHLER, K-2889-0
P3	KITCHEN SINK, KOHLER, K-5852-4
P4	BAR SINK, KOHLER, K-6175
P5	LAV FAUCETS, GROHE, 20 808 AVO
P6	TUB VALVE (MASTER), GROHE, 20 054 AVO ROHAN F/B VALVE
P7	TUB VALVES (2nd), GROHE, 19 258
P8	SINK, GROHE, 19 722
P9	SHOWER HEAD, GROHE, 27 010
P10	SPOUT, GROHE, 19 842
P11	SHOWER VALVE, GROHE, 19 256
P12	THERMOSTATIC CONTROL, GROHE, 34 908
P13	TRIM, GROHE, 19 848
P14	CONTROL VALVES, GROHE, 2 24 268
P15	TRIM, GROHE, 27 012
P16	SHOWER HEAD and SPRAYS, GROHE, 9 28 281
P17	KITCHEN FAUCET, GROHE, 33 325
P18	BAR FAUCET, GROHE, 31 054
P19	LAUNDRY SINK, FLORSTONE FIBERGLASS
P20	WASTER TUB, LASCO 6780/2120 LAVAMAR SONAURA TUB. 60" x 42" x 20 1/2" ACRYLIC
P21	TUBS / SHOWERS 2nd BATH, CAST IRON TUB, 36" x 72" TUB.

APPLIANCES

STANDARD APPLIANCES

A1	REFRIGERATOR,	NOT INCLUDED, BY OWNER
A2	DISHWASHER,	6.5, MOD. 4 (FONTSBOOMER), 6 E. PROFILE
A3	COOK TOP,	6.5, MOD. 1 (WHIRLPOOL, 36" GAS COOKTOP, 6 E. PROFILE
A4	30" OVEN, DBL,	6.5, MOD. 1, (WHIRLPOOL, 30" SELF-CLEAN, ELECT. 220V) 6 E. PROFILE
A5	GARBAGE DISPOSER,	RE BADGER 5
A6	36" MICROWAVE,	6.5, MOD. 6 (WMH 1089, HOOD / HOOD, 36" 6 E. PROFILE
A7	WATER HEATER,	A.O. SMITH, 75 GAL., w/ GRUNDFOS PUMP and TIMER.
A8	TRASH COMPACTOR,	6.5, MOD. 1 (KOMOSTER) 6 E. PROFILE
A9	WINE COOLER,	6.5, MOD. 1 (WINPORAN 6 E. PROFILE

CABINET MAKER TO SECURE EXACT MODELS & ROUGH CONSTRUCTION SIZES FROM FRAME CONTRACTOR PRIOR TO FABRICATING CABINETS.

BUILDING DEPARTMENT

ADDRESS: 21677 DRIAREILIFF DRIVE

AREA: TOTAL BUILDING AREA: 6,921.50 SQ. FT.

AREA: RESIDENCE BUILDING AREA: 6,071.50 SQ. FT.

6 SQ. FT.

HOWN

SPRINKLERED

1. FT. @ 1/300 = 20.M PERSONS
1. FT. @ 1/200 = 4.52 PERSONS

SPRINKLER SYSTEM WILL BE
ATMENT, CITY OF MALIBU.

EXHIBIT NO. 13
APPLICATION NO. 4-03-044
1st Floor Plan

LTA
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(805) 289-5334
FAX (805) 289-5608

PROJECT TITLE: SINGH RESIDENCE, 21677 DRIARLIFF DRIVE, MALIBU, CALIFORNIA (PM 7474) (LOT #2)

SHEET TITLE: 1st FLOOR PLAN, KEY NOTES

REVISION

PROJECT INFORMATION: OWNER: SROONY SINGH, 21801 CASTLEWOOD DRIVE, MALIBU, CALIFORNIA, (310) 456-1622

DATE: 1/26/05
J.T.M. No.: 05-04
SHEET: A-1.1

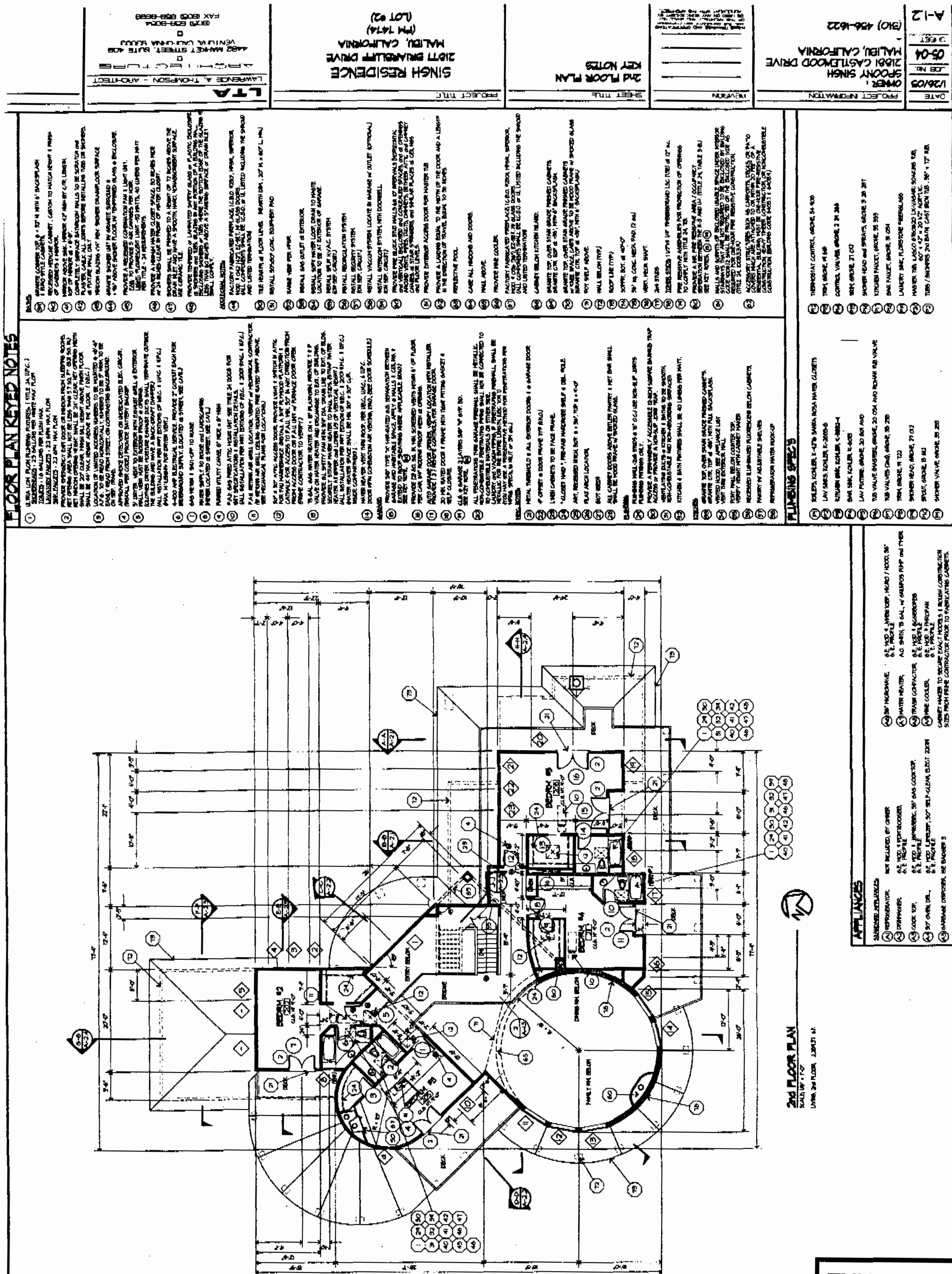


EXHIBIT NO. 14

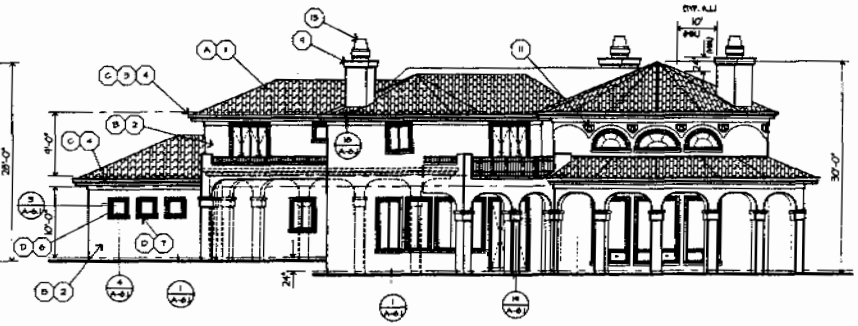
APPLICATION NO. 4-05-044

2nd Floor Plan

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

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

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



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

EXTERIOR COLORS

(A) ROOF, "BALLET" CAPISTRANO #1111, CONCRETE ROOF TILES. COLOR, DARK TERRACOTTA #1623 U.B.C. # 4180 BIL. CLASS A RATING
(B) 3/8" STUCCO COLOR, #1 ATTENTION TO DETAIL, 159
(C) FASCIA, COLOR, #1 SHOWCASE, 750
(D) TRIM, COLOR, #1 ACCOMPLISHMENT, 754

MANUFACTURER:
STUCCO, PAINTED
PAINT, #1 PRAIRIE PAINTS "DURA-TEC II"

STUCCO NOTE

3/8" CEMENT PLASTER OVER (1) LIL BUILDING PAPER, NO. 15 GAUGE WIRE 1-1/2" LONG, 7/8" HEAD 6 8" O.C. HAX, OR (1) GAUGE STAPLE-7/8" LEGS @ 8" O.C. HAX. STUDS @ 16" O.C. HAX. BLOCK ALL WALL PANELS 5'-4" OR LESS IN LENGTH (NO JOINTS OF ADJACENT COURSES OF STUCCO LATH NOT ALLOWED ON SAME STUD. CONFORM TO U.B.C. TABLE 25A-C.
(2 LAYERS GRADE 'D' PAPER AT ALL EXTERIOR SHEAR WALLS.)

GENERAL NOTES

1. ANY ITEM THAT PENETRATES EXTERIOR PLASTER TO HAVE HOWSTAR STOPS, (O HIL HOSTARE PROOF
2. ELECTRICAL OUTLET BOXES INCLUDING LIGHT FIXTURES IN EXTERIOR WALLS ARE HAVE ALL OPENINGS SEALED AND WALL PENETRATIONS SEALED WITH INSULATION AND NON-HARDENING CAULKING
3. FIREPLACE HEARTH TO BE CERAMIC TILE @ FLOOR LEVEL OR 18" A.F.F.
4. VERIFY SIZE AND CONNECTIONS FOR F.A.U. UNITS WITH HVAC CONTRACTOR AND PLUMBING / ELECTRICAL CONTRACTORS FOR DOOR SIZE/CLEARANCES FROM WALLS, AND THERMOSTAT CONNECTIONS
5. ALL GLAZING WITHIN 12" OF ANY DOOR, (O BE FULLY TEMPERED GLASS.
6. STREET NUMBER TO BE PLACED AT DRIVEWAY ENTRANCE SO THAT IT IS LEGIBLE AND VISIBLE FROM THE STREET. MIN. 4" LETTERS
7. ALL ROOF MATERIALS SHALL BE OF NON-COMBUSTIBLE OR APPROVED FIRE RETARDENT MATERIALS.
8. PARTITIONS AND EXTERIOR WALLS SURFACES SHOULD EXTEND FULL HEIGHT, I.E. FROM FLOOR TO CEILING. IN BATHROOM AREAS, WALLS ARE TO BE COMPLETELY SURFACED WITH GYPSUM BOARD OR PLASTER AND JOINTS CAULKED BEFORE TUBS OR SHOWERS ARE INSTALLED
9. ALL HOLES, CRACKS AND PENETRATIONS IN EXTERIOR WALLS (O BE SEALED TO INSURE AN AIRTIGHT (SOUND TIGHT) INSTALLATION USE NON-HARDENING RESILIENT SEALANT.
10. ALL PLUMBING VENTS, DUCTS, AND OTHER APPURTENANCES PROTRUDING FROM ROOF SHALL BE INTEGRATED IN SUCH A MANNER THAT THEY WILL NOT BE VIEWED FROM THE FRONT OF THE PROPERTY OR OTHER MAINLY VISIBLE VANTAGE POINTS. ROOF PROTRUDING ELEMENTS SHALL BE GROUPED AND LOCATED IN THE ABOVE DESCRIBED MANNER. ROOF VENTS SHALL BE SHOWN ON ALL APPLICABLE CONSTRUCTION DRAWINGS AND PAINTED TO MATCH ROOF COLOR.
11. AUTOMATIC GARAGE DOOR OPENER & SECTIONAL GARAGE DOOR SHALL BE INSTALLED PER PLANS, KEYED NOTES, & DOOR SCHEDULE.
12. PLUMBING PENETRATIONS IN EXTERIOR WALLS TO BE SEALED. THE PERIMETERS AND JOINTS OF ALL ACOUSTICAL RATED ASSEMBLIES ARE TO BE SEALED WITH NON-HARDENING RESILIENT CAULKING BEFORE INSTALLATION OF CABINETS, CARPETS, ECT.
13. SEE SITE PLANS FOR ADDITIONAL NOTES.
14. SEPARATE PERMIT IS REQUIRED FOR RETAINING WALLS AND FENCES AND SHALL BE OBTAINED FROM THE INSPECTION SERVICES DIVISION PRIOR TO INSTALLATION.
15. SEPARATE PERMITS WILL BE REQUIRED FOR PLUMBING, MECHANICAL, AND ELECTRICAL WORK, AS APPLICABLE.

KEYED NOTES ELEVATIONS

1. ROOF, "BALLET" CAPISTRANO #1111, CONCRETE ROOF TILES. OVER 40# FELT (U.B.C. #4180 BIL. CLASS "A" RATING) (TILE ROOFS SHALL BE PRE-STOPPED AT EAVE ENDS TO PRECLUDE PREDATOR ENTRY OR FLAME OR EMBERS UNDER THE TILE. BUILDING CODE 1505.2.2)
2. 3/8" STUCCO OVER "K-LATH" DOUBLE PAPER "STUCCO WITE" (U.B.C. # 2514) WITH 1 ACE PAINT (#1111/TRIPLE 4) ALL SLOPING STUCCO)
3. 2x8 FASCIA OVER 2x10 FASCIA, SEE DET. 13 / A-6.1
4. SEAMLESS GUTTER & DOWNSPOUT TO UNDERGROUND DRAINS.
5. 2x10 FASCIA OVER 2x12 FASCIA, BARGE RAFTER. SEE DET. 11 / A-6.1. (WHERE APPLICABLE.)
6. TRIM, STUCCO OVER 2x6 FLAT (OR) 2x12, SEE DET. 5 / A-6.1
7. SILL SEE DET. 4 / A-6.1
8. SECTIONAL DOOR.
9. PAINTED METAL CAP, U.B.C. #2516 CHIMNEY CAP AND DISC.
10. PAINTED METAL FLASHING, TYP.
11. PLANT-ON, DECORATIVE
12. STREET ADDRESS NUMBERS MUST BE A MIN. OF 5" HIGH ON A CONTRASTING BACKGROUND. ADDRESS MUST BE READILY VISIBLE FROM THE STREET.
13. APPROVED SPARK ARRESTER, THE NET AREA OF THE SPARK ARRESTER SHALL BE NOT LESS THAN (4) TIMES THE NET AREA OF THE OUTLET OF THE CHIMNEY. THE SPARK ARRESTER SCREEN SHALL HAVE HEAT AND CORROSION RESISTANCE EQUIVALENT TO 12-GAUGE WIRE. 19-GAUGE GALVANIZED WIRE OR 24 GAUGE STAINLESS STEEL. OPENINGS SHALL NOT PERMIT THE PASSAGE OF SPHERES HAVING A DIAMETER LARGER THAN 1/2 INCH AND SHALL NOT BLOCK THE PASSAGE OF SPHERES HAVING A DIAMETER OF LESS THAN 3/8 INCH. (2B- SECTION 3603.2.9

EXHIBIT NO. 15
APPLICATION NO. 4-05-094
Elevations

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PROJECT TITLE
SINGH RESIDENCE
21677 BRIARCLIFF DRIVE
MALIBU, CALIFORNIA
(TM 7474)
(LOT #2)

SHEET TITLE
ELEVATIONS
NOTES

REVISION

PROJECT INFORMATION
OWNER: SPOONY SINGH
21681 CASTLEWOOD DRIVE
MALIBU, CALIFORNIA
(310) 456-1622

DATE 1/26/05
JOB NO. 05-04
SHEET A-3.1

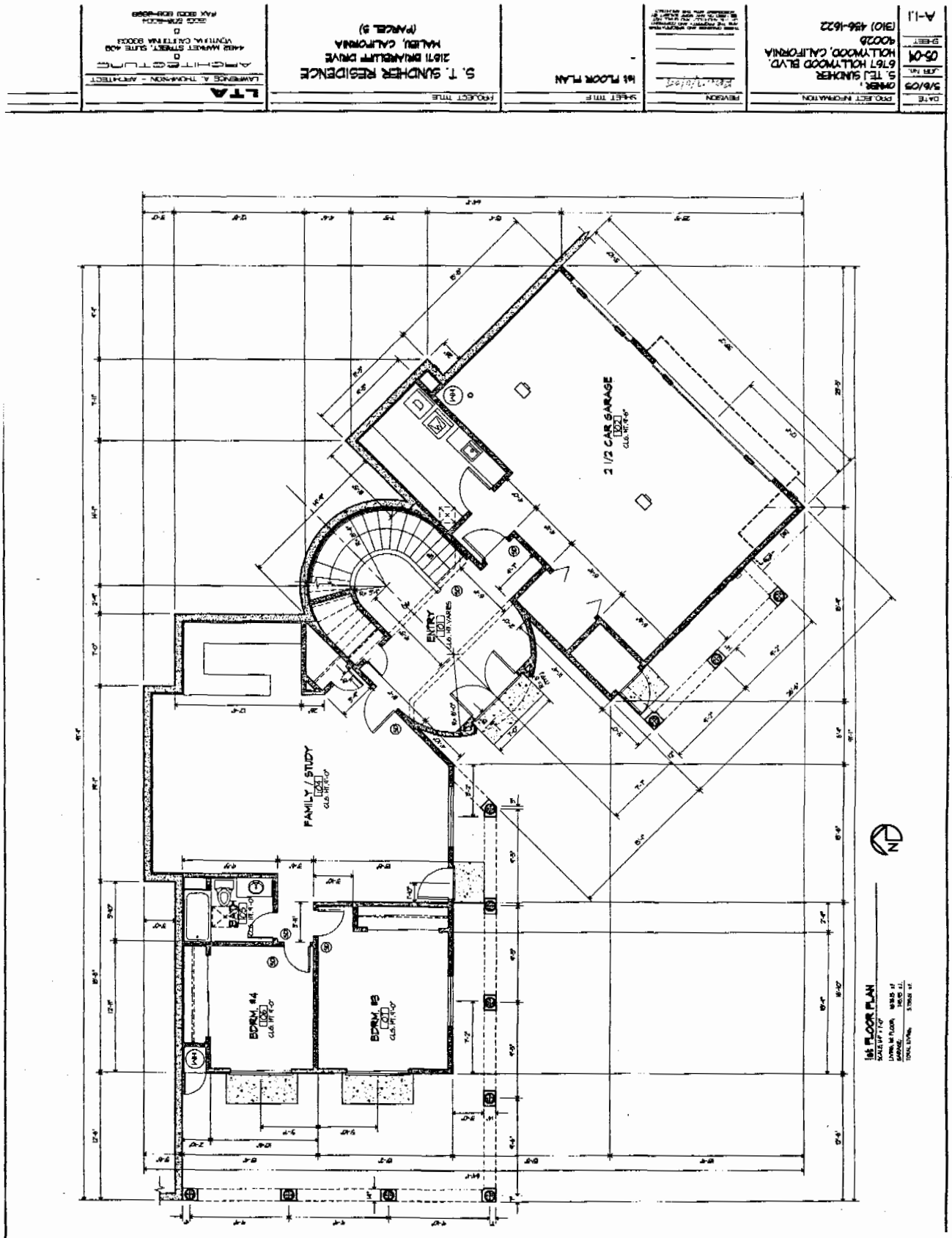


EXHIBIT NO.	16
APPLICATION NO.	4-05-045
1ST Floor	
Plan	

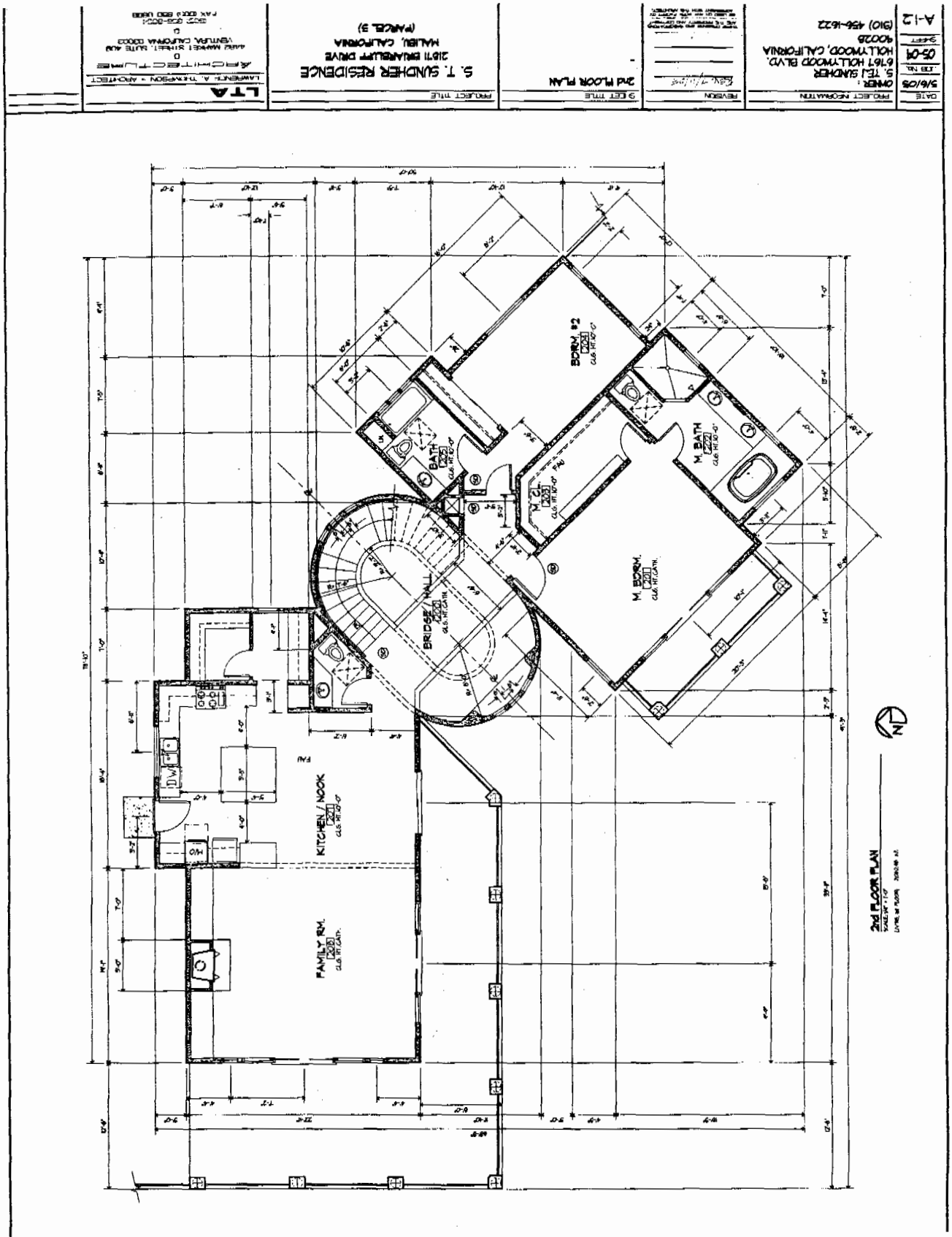
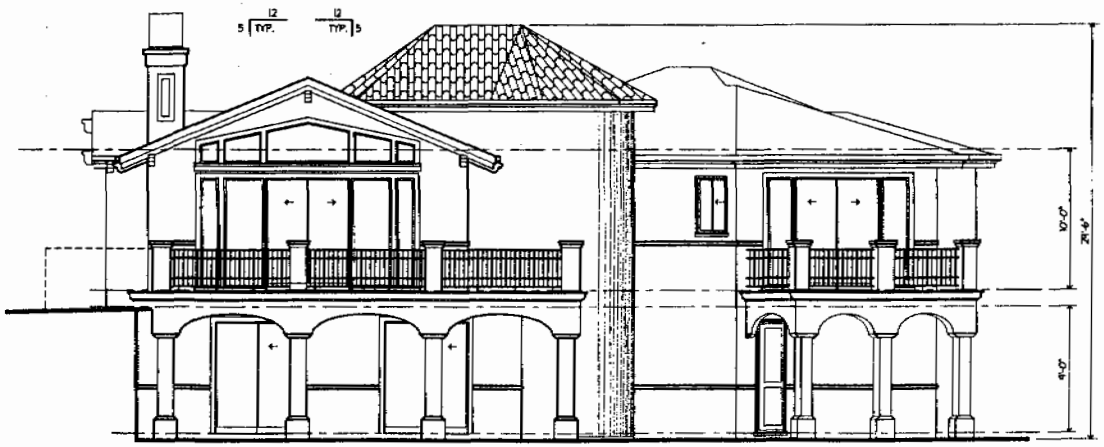


EXHIBIT NO. 17

APPLICATION NO. 4-05-045

2nd Floor Plan

SOUTHWEST ELEVATION
SCALE; 1/4" = 1'-0"



WEST ELEVATION
SCALE; 1/4" = 1'-0"

DATE	5/6/05
JOB NO.	05-04
SHEET	A-3.1

PROJECT INFORMATION
OWNER:
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REVISION

SHEET TITLE
ELEVATIONS
WEST and SOUTHWEST ELEVATIONS

PROJECT TITLE
S. T. SUNDHER RESIDENCE
21871 BRIARBLUFF DRIVE
MALIBU, CALIFORNIA
(PARCEL 5)

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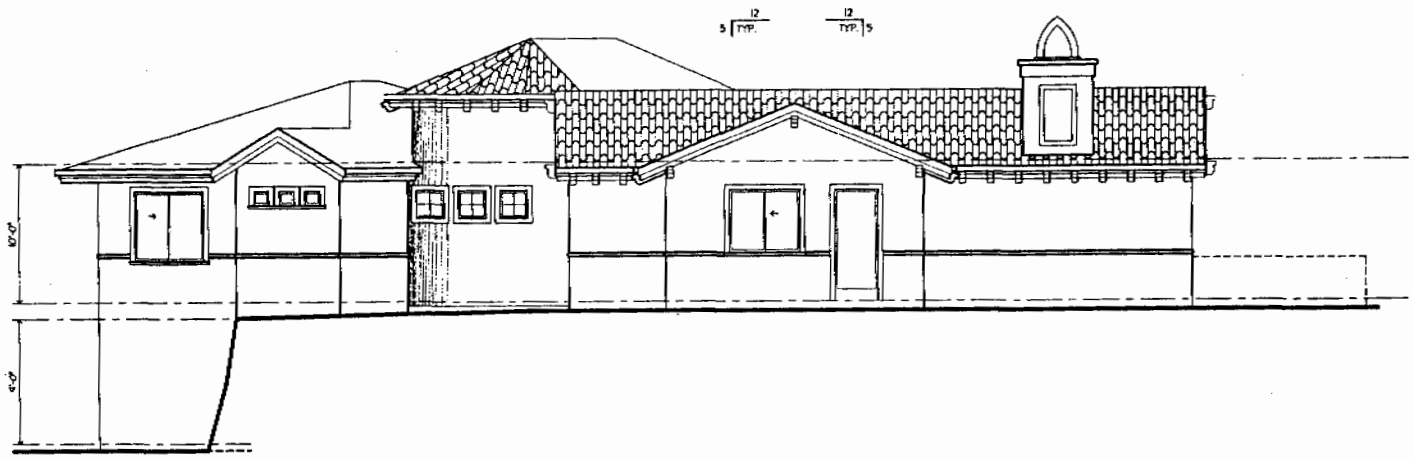
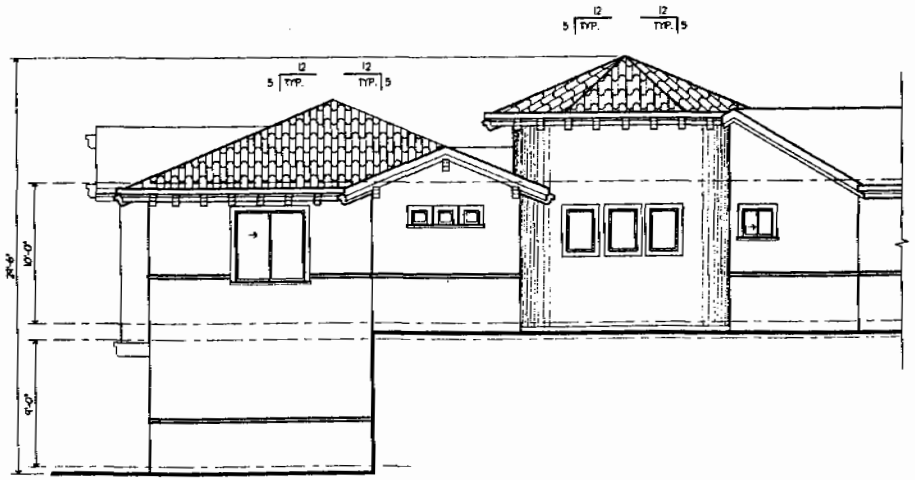
EXHIBIT NO. 18
APPLICATION NO. 4-05-045
SW & West
Elevations



NORTH ELEVATION
SCALE; 1/4" = 1'-0"



NORTHEAST ELEVATION
SCALE; 1/4" = 1'-0"

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PROJECT TITLE
S. T. SUNDHER RESIDENCE
21871 BRIARBLUFF DRIVE
MALIBU, CALIFORNIA
(PARCEL 9)

SHEET TITLE
ELEVATIONS
NORTH and NORTHEAST ELEVATIONS

REVISION

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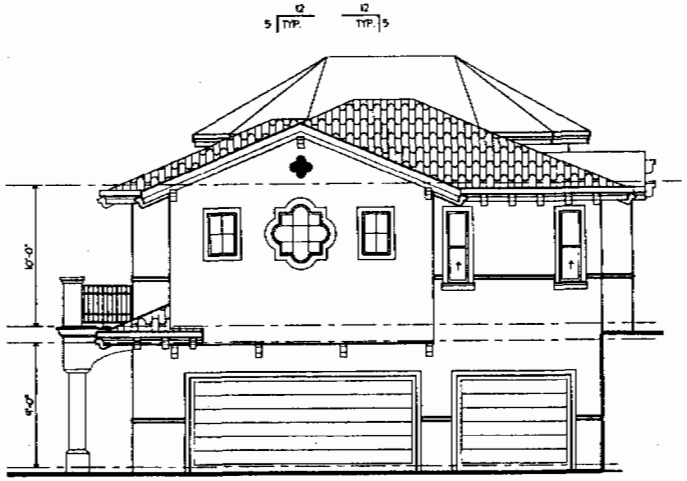
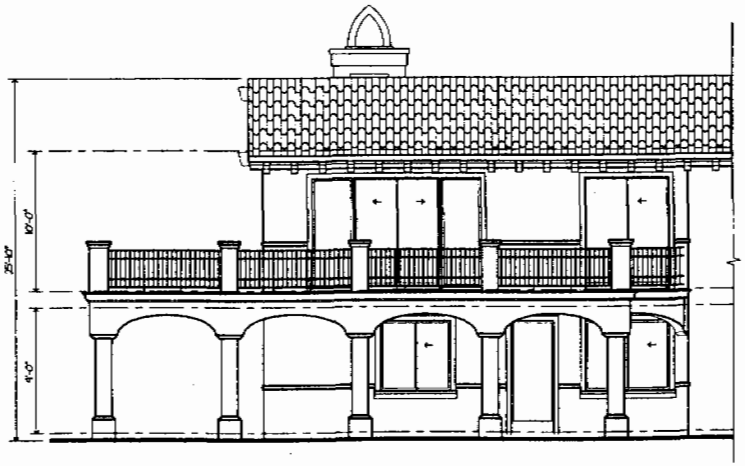
DATE 5/6/05
JOB No. 05-01
SHEET A-3.2

EXHIBIT NO. 19
APPLICATION NO. 4-05-045
North & NE Elevations



EAST ELEVATION
SCALE: 1/4" = 1'-0"



SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

LTA
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PROJECT TITLE
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21871 BRIARBLUFF DRIVE
MALIBU, CALIFORNIA
(PARCEL 3)

SHEET TITLE
ELEVATIONS
SOUTH and EAST ELEVATIONS

REVISION

PROJECT INFORMATION
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DATE 5/6/05
JOB No. 05-01
SHEET A-3.3

EXHIBIT NO. 20
APPLICATION NO. 4-05-045
East & South Elevations

STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, GOVERNOR

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
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MEMORANDUM

FROM: John Dixon, Ph.D.
Ecologist / Wetland Coordinator

TO: Ventura Staff

SUBJECT: Designation of ESHA in the Santa Monica Mountains

DATE: March 25, 2003

In the context of the Malibu LCP, the Commission found that the Mediterranean Ecosystem in the Santa Mountains is rare, and especially valuable because of its relatively pristine character, physical complexity, and resultant biological diversity. Therefore, areas of undeveloped native habitat in the Santa Monica Mountains that are large and relatively unfragmented may meet the definition of ESHA by virtue of their valuable roles in that ecosystem, regardless of their relative rarity throughout the state. This is the only place in the coastal zone where the Commission has recognized chaparral as meeting the definition of ESHA. The scientific background presented herein for ESHA analysis in the Santa Monica Mountains is adapted from the Revised Findings for the Malibu LCP that the Commission adopted on February 6, 2003.

For habitats in the Santa Monica Mountains, particularly coastal sage scrub and chaparral, there are three site-specific tests to determine whether an area is ESHA because of its especially valuable role in the ecosystem. First, is the habitat properly identified, for example as coastal sage scrub or chaparral? The requisite information for this test generally should be provided by a site-specific biological assessment. Second, is the habitat largely undeveloped and otherwise relatively pristine? Third, is the habitat part of a large, contiguous block of relatively pristine native vegetation? This should be documented with an aerial photograph from our mapping unit (with the site delineated) and should be attached as an exhibit to the staff report. For those habitats that are absolutely rare or that support individual rare species, it is not necessary to find that they are relatively pristine, and are neither isolated nor fragmented.

Designation of Environmentally Sensitive Habitat in the Santa Monica Mountains

The Coastal Act provides a definition of "environmentally sensitive area" as: "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Section 30107.5).

EXHIBIT 21
APP Nos. 4-05-043, 045
ESHA Memo

There are three important elements to the definition of ESHA. First, a geographic area can be designated ESHA either because of the presence of individual species of plants or animals or because of the presence of a particular habitat. Second, in order for an area to be designated as ESHA, the species or habitat must be either rare or it must be especially valuable. Finally, the area must be easily disturbed or degraded by human activities.

The first test of ESHA is whether a habitat or species is rare. Rarity can take several forms, each of which is important. Within the Santa Monica Mountains, rare species and habitats often fall within one of two common categories. Many rare species or habitats are globally rare, but locally abundant. They have suffered severe historical declines in overall abundance and currently are reduced to a small fraction of their original range, but where present may occur in relatively large numbers or cover large local areas. This is probably the most common form of rarity for both species and habitats in California and is characteristic of coastal sage scrub, for example. Some other habitats are geographically widespread, but occur everywhere in low abundance. California's native perennial grasslands fall within this category.

A second test for ESHA is whether a habitat or species is especially valuable. Areas may be valuable because of their "special nature," such as being an unusually pristine example of a habitat type, containing an unusual mix of species, supporting species at the edge of their range, or containing species with extreme variation. For example, reproducing populations of valley oaks are not only increasingly rare, but their southernmost occurrence is in the Santa Monica Mountains. Generally, however, habitats or species are considered valuable because of their special "role in the ecosystem." For example, many areas within the Santa Monica Mountains may meet this test because they provide habitat for endangered species, protect water quality, provide essential corridors linking one sensitive habitat to another, or provide critical ecological linkages such as the provision of pollinators or crucial trophic connections. Of course, all species play a role in their ecosystem that is arguably "special." However, the Coastal Act requires that this role be "especially valuable." This test is met for relatively pristine areas that are integral parts of the Santa Monica Mountains Mediterranean ecosystem because of the demonstrably rare and extraordinarily special nature of that ecosystem as detailed below.

Finally, ESHAs are those areas that could be easily disturbed or degraded by human activities and developments. Within the Santa Monica Mountains, as in most areas of southern California affected by urbanization, all natural habitats are in grave danger of direct loss or significant degradation as a result of many factors related to anthropogenic changes.

Ecosystem Context of the Habitats of the Santa Monica Mountains

The Santa Monica Mountains comprise the largest, most pristine, and ecologically complex example of a Mediterranean ecosystem in coastal southern California.

California's coastal sage scrub, chaparral, oak woodlands, and associated riparian areas have analogues in just a few areas of the world with similar climate. Mediterranean ecosystems with their wet winters and warm dry summers are only found in five localities (the Mediterranean coast, California, Chile, South Africa, and south and southwest Australia). Throughout the world, this ecosystem with its specially adapted vegetation and wildlife has suffered severe loss and degradation from human development. Worldwide, only 18 percent of the Mediterranean community type remains undisturbed[1]. However, within the Santa Monica Mountains, this ecosystem is remarkably intact despite the fact that it is closely surrounded by some 17 million people. For example, the 150,000 acres of the Santa Monica Mountains National Recreation Area, which encompasses most of the Santa Monica Mountains, was estimated to be 90 percent free of development in 2000[2]. Therefore, this relatively pristine area is both large and mostly unfragmented, which fulfills a fundamental tenet of conservation biology[3]. The need for large contiguous areas of natural habitat in order to maintain critical ecological processes has been emphasized by many conservation biologists[4].

In addition to being a large single expanse of land, the Santa Monica Mountains ecosystem is still connected, albeit somewhat tenuously, to adjacent, more inland ecosystems[5]. Connectivity among habitats within an ecosystem and connectivity among ecosystems is very important for the preservation of species and ecosystem integrity. In a recent statewide report, the California Resources Agency[6] identified wildlife corridors and habitat connectivity as the top conservation priority. In a letter to governor Gray Davis, sixty leading environmental scientists have endorsed the

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[1] National Park Service. 2000. Draft general management plan & environmental impact statement. Santa Monica Mountains National Recreation Area – California.

[2] Ibid.

[3] Harris, L. D. 1988. Edge effects and conservation of biotic diversity. Conserv. Biol. 330-332. Soule, M. E, D. T. Bolger, A. C. Alberts, J. Wright, M. Sorice and S. Hill. 1988. Reconstructed dynamics of rapid extinctions of chaparral-requiring birds in urban habitat islands. Conserv. Biol. 2: 75-92. Yahner, R. H. 1988. Changes in wildlife communities near edges. Conserv. Biol. 2:333-339. Murphy, D. D. 1989. Conservation and confusion: Wrong species, wrong scale, wrong conclusions. Conservation Biol. 3:82-84.

[4] Crooks, K. 2000. Mammalian carnivores as target species for conservation in Southern California. p. 105-112 *in*: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2nd Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62. Sauvajot, R. M., E. C. York, T. K. Fuller, H. Sharon Kim, D. A. Kamradt and R. K. Wayne. 2000. Distribution and status of carnivores in the Santa Monica Mountains, California: Preliminary results from radio telemetry and remote camera surveys. p 113-123 *in*: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2nd Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62. Beier, P. and R. F. Noss. 1998. Do habitat corridors provide connectivity? Conserv. Biol. 12:1241-1252. Beier, P. 1996. Metapopulation models, tenacious tracking and cougar conservation. *In*: Metapopulations and Wildlife Conservation, ed. D. R. McCullough. Island Press, Covelo, California, 429p.

[5] The SMM area is linked to larger natural inland areas to the north through two narrow corridors: 1) the Conejo Grade connection at the west end of the Mountains and 2) the Simi Hills connection in the central region of the SMM (from Malibu Creek State Park to the Santa Susanna Mountains).

[6] California Resources Agency. 2001. Missing Linkages: Restoring Connectivity to the California Landscape. California Wilderness Coalition, Calif. Dept of Parks & Recreation, USGS, San Diego Zoo and The Nature Conservancy. Available at: http://www.calwild.org/pubs/reports/linkages/index.htm

conclusions of that report[7]. The chief of natural resources at the California Department of Parks and Recreation has identified the Santa Monica Mountains as an area where maintaining connectivity is particularly important[8].

The species most directly affected by large scale connectivity are those that require large areas or a variety of habitats, e.g., gray fox, cougar, bobcat, badger, steelhead trout, and mule deer[9]. Large terrestrial predators are particularly good indicators of habitat connectivity and of the general health of the ecosystem[10]. Recent studies show that the mountain lion, or cougar, is the most sensitive indicator species of habitat fragmentation, followed by the spotted skunk and the bobcat[11]. Sightings of cougars in both inland and coastal areas of the Santa Monica Mountains[12] demonstrate their continued presence. Like the "canary in the mineshaft," an indicator species like this is good evidence that habitat connectivity and large scale ecological function remains in the Santa Monica Mountains ecosystem.

The habitat integrity and connectivity that is still evident within the Santa Monica Mountains is extremely important to maintain, because both theory and experiments over 75 years in ecology confirm that large spatially connected habitats tend to be more stable and have less frequent extinctions than habitats without extended spatial structure[13]. Beyond simply destabilizing the ecosystem, fragmentation and disturbance

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[7] Letters received and included in the September 2002 staff report for the Malibu LCP.

[8] Schoch, D. 2001. Survey lists 300 pathways as vital to state wildlife. Los Angeles Times. August 7, 2001.

[9] Martin, G. 2001. Linking habitat areas called vital for survival of state's wildlife Scientists map main migration corridors. San Francisco Chronicle, August 7, 2001.

[10] Noss, R. F., H. B. Quigley, M. G. Hornocker, T. Merrill and P. C. Paquet. 1996. Conservation biology and carnivore conservation in the Rocky Mountains. Conerv. Biol. 10: 949-963. Noss, R. F. 1995. Maintaining ecological integrity in representative reserve networks. World Wildlife Fund Canada.

[11] Sauvajot, R. M., E. C. York, T. K. Fuller, H. Sharon Kim, D. A. Kamradt and R. K. Wayne. 2000. Distribution and status of carnivores in the Santa Monica Mountains, California: Preliminary results from radio telemetry and remote camera surveys. p 113-123 in: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2nd Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62. Beier, P. 1996. Metapopulation models, tenacious tracking and cougar conservation. In: Metapopulations and Wildlife Conservation, ed. D. R. McCullough. Island Press, Covelo, California, 429p.

[12] Recent sightings of mountain lions include: Temescal Canyon (pers. com., Peter Brown, Facilities Manager, Calvary Church), Topanga Canyon (pers. com., Marti Witter, NPS), Encinal and Trancas Canyons (pers. com., Pat Healy), Stump Ranch Research Center (pers. com., Dr. Robert Wayne, Dept. of Biology, UCLA). In May of 2002, the NPS *photographed* a mountain lion at a trip camera on the Back Bone Trail near Castro Crest – Seth Riley, Eric York and Dr. Ray Sauvajot, National Park Service, SMMNRA.

[13] Gause, G. F. 1934. The struggle for existence. Balitmore, William and Wilkins 163 p. (also reprinted by Hafner, N.Y. 1964). Gause, G. F., N. P. Smaragdova and A. A. Witt. 1936. Further studies of interaction between predators and their prey. J. Anim. Ecol. 5:1-18. Huffaker, C. B. 1958. Experimental studies on predation: dispersion factors and predator-prey oscillations. Hilgardia 27:343-383. Luckinbill, L. S. 1973. Coexistence in laboratory populations of *Paramecium aurelia* and its predator *Didinium nasutum*. Ecology 54:1320-1327. Allen, J. C., C. C. Brewster and D. H. Slone. 2001. Spatially explicit ecological models: A spatial convolution approach. Chaos, Solitons and Fractals. 12:333-347.

can even cause unexpected and irreversible changes to new and completely different kinds of ecosystems (habitat conversion)[14].

As a result of the pristine nature of large areas of the Santa Monica Mountains and the existence of large, unfragmented and interconnected blocks of habitat, this ecosystem continues to support an extremely diverse flora and fauna. The observed diversity is probably a function of the diversity of physical habitats. The Santa Monica Mountains have the greatest geological diversity of all major mountain ranges within the transverse range province. According to the National Park Service, the Santa Monica Mountains contain 40 separate watersheds and over 170 major streams with 49 coastal outlets[15]. These streams are somewhat unique along the California coast because of their topographic setting. As a "transverse" range, the Santa Monica Mountains are oriented in an east-west direction. As a result, the south-facing riparian habitats have more variable sun exposure than the east-west riparian corridors of other sections of the coast. This creates a more diverse moisture environment and contributes to the higher biodiversity of the region. The many different physical habitats of the Santa Monica Mountains support at least 17 native vegetation types[16] including the following habitats considered sensitive by the California Department of Fish and Game: native perennial grassland, coastal sage scrub, red-shank chaparral, valley oak woodland, walnut woodland, southern willow scrub, southern cottonwood-willow riparian forest, sycamore-alder woodland, oak riparian forest, coastal salt marsh, and freshwater marsh. Over 400 species of birds, 35 species of reptiles and amphibians, and more than 40 species of mammals have been documented in this diverse ecosystem. More than 80 sensitive species of plants and animals (listed, proposed for listing, or species of concern) are known to occur or have the potential to occur within the Santa Monica Mountains Mediterranean ecosystem.

The Santa Monica Mountains are also important in a larger regional context. Several recent studies have concluded that the area of southern California that includes the Santa Monica Mountains is among the most sensitive in the world in terms of the number of rare endemic species, endangered species and habitat loss. These studies have designated the area to be a local hot-spot of endangerment in need of special protection[17].

Therefore, the Commission finds that the Santa Monica Mountains ecosystem is itself rare and especially valuable because of its special nature as the largest, most pristine,

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[14] Scheffer, M., S. Carpenter, J. A. Foley, C. Folke and B. Walker. 2001. Catastrophic shifts in ecosystems. Nature 413:591-596.

[15] NPS. 2000. op.cit.

[16] From the NPS report (2000 op. cit.) that is based on the older Holland system of subjective classification. The data-driven system of Sawyer and Keeler-Wolf results in a much larger number of distinct "alliances" or vegetation types.

[17] Myers, N. 1990. The biodiversity challenge: Expanded hot-spots analysis. Environmentalist 10:243-256. Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca and J. A. Kent. 2000. Biodiversity hot-spots for conservation priorities. Nature 403:853-858. Dobson, A. P., J. P. Rodriguez, W. M. Roberts and D. S. Wilcove. 1997. Geographic distribution of endangered species in the United States. Science 275:550-553.

physically complex, and biologically diverse example of a Mediterranean ecosystem in coastal southern California. The Commission further finds that because of the rare and special nature of the Santa Monica Mountains ecosystem, the ecosystem roles of substantially intact areas of the constituent plant communities discussed below are "especially valuable" under the Coastal Act.

Major Habitats within the Santa Monica Mountains

The most recent vegetation map that is available for the Santa Monica Mountains is the map that was produced for the National Park Service in the mid-1990s using 1993 satellite imagery supplemented with color and color infrared aerial imagery from 1984, 1988, and 1994 and field review[18]. The minimum mapping unit was 5 acres. For that map, the vegetation was mapped in very broad categories, generally following a vegetation classification scheme developed by Holland[19]. Because of the mapping methods used the degree of plant community complexity in the landscape is not represented. For example, the various types of "ceanothus chaparral" that have been documented were lumped under one vegetation type referred to as "northern mixed chaparral." Dr. Todd Keeler-Wolf of the California Department of Fish and Game is currently conducting a more detailed, quantitative vegetation survey of the Santa Monica Mountains.

The National Park Service map can be used to characterize broadly the types of plant communities present. The main generic plant communities present in the Santa Monica Mountains[20] are: coastal sage scrub, chaparral, riparian woodland, coast live oak woodland, and grasslands.

Riparian Woodland

Some 49 streams connect inland areas with the coast, and there are many smaller drainages as well, many of which are "blue line." Riparian woodlands occur along both perennial and intermittent streams in nutrient-rich soils. Partly because of its multi-layered vegetation, the riparian community contains the greatest overall biodiversity of all the plant communities in the area[21]. At least four types of riparian communities are discernable in the Santa Monica Mountains: walnut riparian areas, mulefat-dominated riparian areas, willow riparian areas and sycamore riparian woodlands. Of these, the

[18] Franklin, J. 1997. Forest Service Southern California Mapping Project, Santa Monica Mountains National Recreation Area, Task 11 Description and Results, Final Report. June 13, 1997, Dept. of Geography, San Diego State University, USFS Contract No. 53-91S8-3-TM45.
[19] Holland R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, Dept. of Fish and Game, Natural Heritage Division, Sacramento, CA. 95814.
[20] National Park Service. 2000. Draft: General Management Plan & Environmental Impact Statement, Santa Monica Mountains National Recreation Area, US Dept. of Interior, National Park Service, December 2000. (Fig. 11 in this document.)
[21] Ibid.

sycamore riparian woodland is the most diverse riparian community in the area. In these habitats, the dominant plant species include arroyo willow, California black walnut, sycamore, coast live oak, Mexican elderberry, California bay laurel, and mule fat. Wildlife species that have been observed in this community include least Bell's vireo (a State and federally listed species), American goldfinches, black phoebes, warbling vireos, bank swallows (State listed threatened species), song sparrows, belted kingfishers, raccoons, and California and Pacific tree frogs.

Riparian communities are the most species-rich to be found in the Santa Monica Mountains. Because of their multi-layered vegetation, available water supply, vegetative cover and adjacency to shrubland habitats, they are attractive to many native wildlife species, and provide essential functions in their lifecycles[22]. During the long dry summers in this Mediterranean climate, these communities are an essential refuge and oasis for much of the areas' wildlife.

Riparian habitats and their associated streams form important connecting links in the Santa Monica Mountains. These habitats connect all of the biological communities from the highest elevation chaparral to the sea with a unidirectional flowing water system, one function of which is to carry nutrients through the ecosystem to the benefit of many different species along the way.

The streams themselves provide refuge for sensitive species including: the coast range newt, the Pacific pond turtle, and the steelhead trout. The coast range newt and the Pacific pond turtle are California Species of Special Concern and are proposed for federal listing[23], and the steelhead trout is federally endangered. The health of the streams is dependent on the ecological functions provided by the associated riparian woodlands. These functions include the provision of large woody debris for habitat, shading that controls water temperature, and input of leaves that provide the foundation of the stream-based trophic structure.

The importance of the connectivity between riparian areas and adjacent habitats is illustrated by the Pacific pond turtle and the coast range newt, both of which are sensitive and both of which require this connectivity for their survival. The life history of the Pacific pond turtle demonstrates the importance of riparian areas and their associated watersheds for this species. These turtles require the stream habitat during the wet season. However, recent radio tracking work[24] has found that although the Pacific pond turtle spends the wet season in streams, it also requires upland habitat for refuge during the dry season. Thus, in coastal southern California, the Pacific pond turtle requires both streams and intact adjacent upland habitats such as coastal sage

[22] Walter, Hartmut. Bird use of Mediterranean habitats in the Santa Monica Mountains, Coastal Commission Workshop on the Significance of Native Habitats in the Santa Monica Mountains. CCC Hearing, June 13, 2002, Queen Mary Hotel.

[23] USFWS. 1989. Endangered and threatened wildlife and plants; animal notice of review. Fed. Reg. 54:554-579. USFWS. 1993. Endangered and threatened wildlife and plants; notice of 1-year petition finding on the western pond turtle. Fed. Reg. 58:42717-42718.

[24] Rathbun, G.B., N.J. Scott and T.G. Murphy. 2002. Terrestrial habitat use by Pacific pond turtle in a Mediterranean climate. Southwestern Naturalist. (*in Press*).

scrub, woodlands or chaparral as part of their normal life cycle. The turtles spend about four months of the year in upland refuge sites located an average distance of 50 m (but up to 280 m) from the edge of the creek bed. Similarly, nesting sites where the females lay eggs are also located in upland habitats an average of 30 m (but up to 170 m) from the creek. Occasionally, these turtles move up to 2 miles across upland habitat[25]. Like many species, the pond turtle requires both stream habitats and the upland habitats of the watershed to complete its normal annual cycle of behavior. Similarly, the coast range newt has been observed to travel hundreds of meters into upland habitat and spend about ten months of the year far from the riparian streambed[26]. They return to the stream to breed in the wet season, and they are therefore another species that requires both riparian habitat and adjacent uplands for their survival.

Riparian habitats in California have suffered serious losses and such habitats in southern California are currently very rare and seriously threatened. In 1989, Faber estimated that 95-97% of riparian habitat in southern California was already lost[27]. Writing at the same time as Faber, Bowler asserted that, *"[t]here is no question that riparian habitat in southern California is endangered."*[28] In the intervening 13 years, there have been continuing losses of the small amount of riparian woodlands that remain. Today these habitats are, along with native grasslands and wetlands, among the most threatened in California.

In addition to direct habitat loss, streams and riparian areas have been degraded by the effects of development. For example, the coast range newt, a California Species of Special Concern has suffered a variety of impacts from human-related disturbances[29]. Human-caused increased fire frequency has resulted in increased sedimentation rates, which exacerbates the cannibalistic predation of adult newts on the larval stages.[30] In addition impacts from non-native species of crayfish and mosquito fish have also been documented. When these non-native predators are introduced, native prey organisms are exposed to new mortality pressures for which they are not adapted. Coast range newts that breed in the Santa Monica Mountain streams do not appear to have adaptations that permit co-occurrence with introduced mosquito fish and crayfish[31]. These introduced predators have eliminated the newts from streams where they previously occurred by both direct predation and suppression of breeding.

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[25] Testimony by R. Dagit, Resource Conservation District of the Santa Monica Mountains at the CCC Habitat Workshop on June 13, 2002.

[26] Dr, Lee Kats, Pepperdine University, personal communication to Dr J. Allen, CCC.

[27] Faber, P.A., E, Keller, A. Sands and B.M. Massey. 1989. The ecology of riparian habitats of the southern California coastal region: a community profile. U.S. Fish and Wildlife Service Biological Report 85(7.27) 152pp.

[28] Bowler, P.A. 1989. Riparian woodland: An endangered habitat in southern California. Pp 80-97 *in* Schoenherr, A.A. (ed.) Endangered plant communities of southern California. Botanists Special Publication No. 3.

[29] Gamradt, S.C., L.B. Kats and C.B. Anzalone. 1997. Aggression by non-native crayfish deters breeding in California newts. Conservation Biology 11(3):793-796.

[30] Kerby, L.J., and L.B. Kats. 1998. Modified interactions between salamander life stages caused by wildfire-induced sedimentation. Ecology 79(2):740-745.

[31] Gamradt, S.C. and L.B. Kats. 1996. Effect of introduced crayfish and mosquitofish on California newts. Conservation Biology 10(4):1155-1162.

Therefore, because of the essential role that riparian plant communities play in maintaining the biodiversity of the Santa Monica Mountains, because of the historical losses and current rarity of these habitats in southern California, and because of their extreme sensitivity to disturbance, the native riparian habitats in the Santa Monica Mountains meet the definition of ESHA under the Coastal Act.

Coastal Sage Scrub and Chaparral

Coastal sage scrub and chaparral are often lumped together as "shrublands" because of their roughly similar appearance and occurrence in similar and often adjacent physical habitats. In earlier literature, these vegetation associations were often called soft chaparral and hard chaparral, respectively. "Soft" and "hard" refers to differences in their foliage associated with different adaptations to summer drought. Coastal sage scrub is dominated by soft-leaved, generally low-growing aromatic shrubs that die back and drop their leaves in response to drought. Chaparral is dominated by taller, deeper-rooted evergreen shrubs with hard, waxy leaves that minimize water loss during drought.

The two vegetation types are often found interspersed with each other. Under some circumstances, coastal sage scrub may even be successional to chaparral, meaning that after disturbance, a site may first be covered by coastal sage scrub, which is then replaced with chaparral over long periods of time.[32] The existing mosaic of coastal sage scrub and chaparral is the result of a dynamic process that is a function of fire history, recent climatic conditions, soil differences, slope, aspect and moisture regime, and the two habitats should not be thought of as completely separate and unrelated entities but as different phases of the same process[33]. The spatial pattern of these vegetation stands at any given time thus depends on both local site conditions and on history (e.g., fire), and is influenced by both natural and human factors.

In lower elevation areas with high fire frequency, chaparral and coastal sage scrub may be in a state of flux, leading one researcher to describe the mix as a "coastal sage-chaparral subclimax."[34] Several other researchers have noted the replacement of chaparral by coastal sage scrub, or coastal sage scrub by chaparral depending on fire history.[35] In transitional and other settings, the mosaic of chaparral and coastal sage

[32] Cooper, W.S. 1922. The broad-sclerophyll vegetation of California. Carnegie Institution of Washington Publication 319. 124 pp.
[33] Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024. (See attached comment document in Appendix).
[34] Hanes, T.L. 1965. Ecological studies on two closely related chaparral shrubs in southern California. Ecological Monographs 41:27-52.
[35] Gray, K.L. 1983. Competition for light and dynamic boundary between chaparral and coastal sage scrub. Madrono 30(1):43-49. Zedler, P.H., C.R. Gautier and G.S. McMaster. 1983. Vegetation change in response to extreme events: The effect of a short interval between fires in California chaparral and coastal sage scrub. Ecology 64(4): 809-818.

scrub enriches the seasonal plant resource base and provides additional habitat variability and seasonality for the many species that inhabit the area.

Relationships Among Coastal Sage Scrub, Chaparral and Riparian Communities

Although the constituent communities of the Santa Monica Mountains Mediterranean ecosystem can be defined and distinguished based on species composition, growth habits, and the physical habitats they characteristically occupy, they are not independent entities ecologically. Many species of plants, such as black sage, and laurel sumac, occur in more than one plant community and many animals rely on the predictable mix of communities found in undisturbed Mediterranean ecosystems to sustain them through the seasons and during different portions of their life histories.

Strong evidence for the interconnectedness between chaparral, coastal scrub and other habitats is provided by "opportunistic foragers" (animals that follow the growth and flowering cycles across these habitats). Coastal scrub and chaparral flowering and growth cycles differ in a complimentary and sequential way that many animals have evolved to exploit. Whereas coastal sage scrub is shallow-rooted and responds quickly to seasonal rains, chaparral plants are typically deep-rooted having most of their flowering and growth later in the rainy season after the deeper soil layers have been saturated[36]. New growth of chaparral evergreen shrubs takes place about four months later than coastal sage scrub plants and it continues later into the summer[37]. For example, in coastal sage scrub, California sagebrush flowers and grows from August to February and coyote bush flowers from August to November[38]. In contrast, chamise chaparral and bigpod ceanothus flower from April to June, buck brush ceanothus flowers from February to April, and hoaryleaf ceanothus flowers from March to April.

Many groups of animals exploit these seasonal differences in growth and blooming period. The opportunistic foraging insect community (e.g., honeybees, butterflies and moths) tends to follow these cycles of flowering and new growth, moving from coastal sage scrub in the early rainy season to chaparral in the spring[39]. The insects in turn are followed by insectivorous birds such as the blue-gray gnatcatcher[40], bushtit, cactus wren, Bewick's wren and California towhee. At night bats take over the role of daytime insectivores. At least 12 species of bats (all of which are considered sensitive) occur in

[36] DeSimone, S. 2000. California's coastal sage scrub. Fremontia 23(4):3-8. Mooney, H.A. 1988. Southern coastal scrub. Chap. 13 *in* Barbour, M.G. and J. Majors; Eds. 1988. Terrestrial vegetation of California, 2nd Edition. Calif. Native Plant Soc. Spec. Publ. #9.
[37] Schoenherr, A. A. 1992. A natural history of California. University of California Press, Berkeley. 772p.
[38] Dale, N. 2000. Flowering plants of the Santa Monica Mountains. California Native Plant Society, 1722 J Street, Suite 17, Sacramento, CA 95814.
[39] Ballmer, G. R. 1995. What's bugging coastal sage scrub. Fremontia 23(4):17-26.
[40] Root, R. B. 1967. The niche exploitation pattern of the blue-gray gnatcatcher. Ecol. Monog.37:317-350.

the Santa Monica Mountains[41]. Five species of hummingbirds also follow the flowering cycle[42].

Many species of 'opportunistic foragers', which utilize several different community types, perform important ecological roles during their seasonal movements. The scrub jay is a good example of such a species. The scrub jay is an omnivore and forages in coastal sage scrub, chaparral, and oak woodlands for insects, berries and notably acorns. Its foraging behavior includes the habit of burying acorns, usually at sites away from the parent tree canopy. Buried acorns have a much better chance of successful germination (about two-fold) than exposed acorns because they are protected from desiccation and predators. One scrub jay will bury approximately 5000 acorns in a year. The scrub jay therefore performs the function of greatly increasing recruitment and regeneration of oak woodland, a valuable and sensitive habitat type[43].

Like the scrub jay, most of the species of birds that inhabit the Mediterranean ecosystem in the Santa Monica Mountains require more than one community type in order to flourish. Many species include several community types in their daily activities. Other species tend to move from one community to another seasonally. The importance of maintaining the integrity of the multi-community ecosystem is clear in the following observations of Dr. Hartmut Walter of the University of California at Los Angeles:

> "Bird diversity is directly related to the habitat mosaic and topographic diversity of the Santa Monicas. Most bird species in this bio-landscape require more than one habitat for survival and reproduction." "A significant proportion of the avifauna breeds in the wooded canyons of the Santa Monicas. Most of the canyon breeders forage every day in the brush- and grass-covered slopes, ridges and mesas. They would not breed in the canyons in the absence of the surrounding shrublands. Hawks, owls, falcons, orioles, flycatchers, woodpeckers, warblers, hummingbirds, etc. belong to this group. Conversely, some of the characteristic chaparral birds such as thrashers, quails, and wrentits need the canyons for access to shelter, protection from fire, and water. The regular and massive movement of birds between riparian corridors and adjacent shrublands has been demonstrated by qualitative and quantitative observations by several UCLA students[44]."

Thus, the Mediterranean ecosystem of the Santa Monica Mountains is a mosaic of vegetation types linked together ecologically. The high biodiversity of the area results

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[41] Letter from Dr. Marti Witter, NPS, dated Sept. 13, 2001, in letters received and included in the September 2002 staff report for the Malibu LCP.

[42] National Park Service. 1993. A checklist of the birds of the Santa Monica Mountains National Recreation Area. Southwest Parks and Monuments Assoc., 221 N. Court, Tucson, AZ. 85701

[43] Borchert, M. I., F. W. Davis, J. Michaelsen and L. D. Oyler. 1989. Interactions of factors affecting seedling recruitment of blue oak (*Quercus douglasii*) in California. Ecology 70:389-404. Bossema, I. 1979. Jays and oaks: An eco-ethological study of a symbiosis. Behavior 70:1-118. Schoenherr, A. A. 1992. A natural history of California. University of California Press, Berkeley. 772p.

[44] Walter, Hartmut. Bird use of Mediterranean habitats in the Santa Monica Mountains, Coastal Commission Workshop on the Significance of Native Habitats in the Santa Monica Mountains. CCC Hearing, June 13, 2002, Queen Mary Hotel.

from both the diversity and the interconnected nature of this mosaic. Most raptor species, for example, require large areas and will often require different habitats for perching, nesting and foraging. Fourteen species of raptors (13 of which are considered sensitive) are reported from the Santa Monica Mountains. These species utilize a variety of habitats including rock outcrops, oak woodlands, riparian areas, grasslands, chaparral, coastal sage scrub, estuaries and freshwater lakes[45].

When the community mosaic is disrupted and fragmented by development, many chaparral-associated native bird species are impacted. In a study of landscape-level fragmentation in the Santa Monica Mountains, Stralberg[46] found that the ash-throated flycatcher, Bewick's wren, wrentit, blue-gray gnatcatcher, California thrasher, orange-crowned warbler, rufous-crowned sparrow, spotted towhee, and California towhee all decreased in numbers as a result of urbanization. Soule[47] observed similar effects of fragmentation on chaparral and coastal sage scrub birds in the San Diego area.

In summary, all of the vegetation types in this ecosystem are strongly linked by animal movement and foraging. Whereas classification and mapping of vegetation types may suggest a snapshot view of the system, the seasonal movements and foraging of animals across these habitats illustrates the dynamic nature and vital connections that are crucial to the survival of this ecosystem.

Coastal Sage Scrub

"Coastal sage scrub" is a generic vegetation type that is inclusive of several subtypes[48]. In the Santa Monica Mountains, coastal sage scrub is mostly of the type termed "Venturan Coastal Sage Scrub." In general, coastal sage scrub is comprised of dominant species that are semi-woody and low-growing, with shallow, dense roots that enable them to respond quickly to rainfall. Under the moist conditions of winter and spring, they grow quickly, flower, and produce light, wind-dispersed seeds, making them good colonizers following disturbance. These species cope with summer drought by dying back, dropping their leaves or producing a smaller summer leaf in order to reduce water loss. Stands of coastal sage scrub are much more open than chaparral and contain a greater admixture of herbaceous species. Coastal sage scrub is generally restricted to drier sites, such as low foothills, south-facing slopes, and shallow soils at higher elevations.

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[45] National Park Service. 1993. A checklist of the birds of the Santa Monica Mountains National Recreation Area. Southwest Parks and Monuments Assoc., 221 N. Court, Tucson, AZ. 85701. *and* Letter from Dr. Marti Witter, NPS, Dated Sept. 13, 2001, in letters received and included in the September 2002 staff report for the Malibu LCP.

[46] Stralberg, D. 2000. Landscape-level urbanization effects on chaparral birds: A Santa Monica Mountains case study. p 125-136 *in*: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2nd Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62.

[47] Soule, M. E, D. T. Bolger, A. C. Alberts, J. Wright, M. Sorice and S. Hill. 1988. Reconstructed dynamics of rapid extinctions of chaparral-requiring birds in urban habitat islands. Conserv. Biol. 2: 75-92.

[48] Kirkpatrick, J.B. and C.F. Hutchinson. 1977. The community composition of Californian coastal sage scrub. Vegetatio 35:21-33; Holland, 1986. op.cit.; Sawyer and Keeler-Wolf, 1995, op.cit.

The species composition and structure of individual stands of coastal sage scrub depend on moisture conditions that derive from slope, aspect, elevation and soil type. Drier sites are dominated by more drought-resistant species (e.g., California sagebrush, coast buckwheat, and *Opuntia* cactus). Where more moisture is available (e.g., north-facing slopes), larger evergreen species such as toyon, laurel sumac, lemonade berry, and sugar bush are common. As a result, there is more cover for wildlife, and movement of large animals from chaparral into coastal sage scrub is facilitated in these areas. Characteristic wildlife in this community includes Anna's hummingbirds, rufous-sided towhees, California quail, greater roadrunners, Bewick's wrens, coyotes, and coast horned lizards[49], but most of these species move between coastal sage scrub and chaparral during their daily activities or on a seasonal basis.

Of the many important ecosystem roles performed by the coastal sage scrub community, five are particularly important in the Santa Monica Mountains. Coastal sage scrub provides critical linkages between riparian corridors, provides essential habitat for species that require several habitat types during the course of their life histories, provides essential habitat for local endemics, supports rare species that are in danger of extinction, and reduces erosion, thereby protecting the water quality of coastal streams.

Riparian woodlands are primary contributors to the high biodiversity of the Santa Monica Mountains. The ecological integrity of those riparian habitats not only requires wildlife dispersal along the streams, but also depends on the ability of animals to move from one riparian area to another. Such movement requires that the riparian corridors be connected by suitable habitat. In the Santa Monica Mountains, coastal sage scrub and chaparral provide that function. Significant development in coastal sage scrub would reduce the riparian corridors to linear islands of habitat with severe edge effects[50], reduced diversity, and lower productivity.

Most wildlife species and many species of plants utilize several types of habitat. Many species of animals endemic to Mediterranean habitats move among several plant communities during their daily activities and many are reliant on different communities either seasonally or during different stages of the their life cycle. Without an intact mosaic of coastal sage scrub, chaparral, and riparian community types, many species will not thrive. Specific examples of the importance of interconnected communities, or habitats, were provided in the discussion above. This is an essential ecosystem role of coastal sage scrub.

A characteristic of the coastal sage scrub vegetation type is a high degree of endemism. This is consonant with Westman's observation that 44 percent of the species he sampled in coastal sage scrub occurred at only one of his 67 sites, which were

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[49] National Park Service. 2000. Draft: General Management Plan & Environmental Impact Statement, Santa Monica Mountains National Recreation Area, US Dept. of Interior, National Park Service, December 2000.

[50] Environmental impacts are particularly severe at the interface between development and natural habitats. The greater the amount of this "edge" relative to the area of natural habitat, the worse the impact.

distributed from the San Francisco Bay area to Mexico[51]. Species with restricted distributions are by nature more susceptible to loss or degradation of their habitat. Westman said of this unique and local aspect of coastal sage scrub species in California:

> "While there are about 50 widespread sage scrub species, more than half of the 375 species encountered in the present study of the sage scrub flora are rare in occurrence within the habitat range. In view of the reduction of the area of coastal sage scrub in California to 10-15% of its former extent and the limited extent of preserves, measures to conserve the diversity of the flora are needed."[52]

Coastal sage scrub in southern California provides habitat for about 100 rare species[53], many of which are also endemic to limited geographic regions[54]. In the Santa Monica Mountains, rare animals that inhabit coastal sage scrub[55] include the Santa Monica shieldback katydid, silvery legless lizard, coastal cactus wren, Bell's sparrow, San Diego desert woodrat, southern California rufous-crowned sparrow, coastal western whiptail, and San Diego horned lizard. Some of these species are also found in chaparral[56]. Rare plants found in coastal sage scrub in the Santa Monica Mountains include Santa Susana tarplant, Coulter's saltbush, Blockman's dudleya, Braunton's milkvetch, Parry's spineflower, and Plummer's mariposa lily[57]. A total of 32 sensitive species of reptiles, birds and mammals have been identified in this community by the National Park Service.[58]

One of the most important ecological functions of coastal sage scrub in the Santa Monica Mountains is to protect water quality in coastal streams by reducing erosion in the watershed. Although shallow rooted, the shrubs that define coastal sage scrub have dense root masses that hold the surface soils much more effectively than the exotic annual grasses and forbs that tend to dominate in disturbed areas. The native shrubs of this community are resistant not only to drought, as discussed above, but well adapted to fire. Most of the semi-woody shrubs have some ability to crown sprout after

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[51] Westman, W.E. 1981. Diversity relations and succession in Californian coastal sage scrub. Ecology 62:170-184.
[52] Ibid.
[53] Atwood, J. L. 1993. California gnatcatchers and coastal sage scrub: The biological basis for endangered species listing. pp.149-166 *In*: Interface Between Ecology and Land Development in California. Ed. J. E. Keeley, So. Calif. Acad. of Sci., Los Angeles. California Department of Fish and Game (CDFG). 1993. The Southern California Coastal Sage Scrub (CSS) Natural Communities Conservation Plan (NCCP). CDFG and Calif. Resources Agency, 1416 9th St., Sacramento, CA 95814.
[54] Westman, W.E. 1981. op. cit.
[55] Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.
[56] O'Leary J.F., S.A. DeSimone, D.D. Murphy, P.F. Brussard, M.S. Gilpin, and R.F. Noss. 1994. Bibliographies on coastal sage scrub and related malacophyllous shrublands of other Mediterranean-type climates. *California Wildlife Conservation Bulletin* 10:1–51.
[57] Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.
[58] NPS, 2000, op cit.

fire. Several CSS species (e.g., *Eriogonum cinereum*) in the Santa Monica Mountains and adjacent areas resprout vigorously and other species growing near the coast demonstrate this characteristic more strongly than do individuals of the same species growing at inland sites in Riverside County.[59] These shrub species also tend to recolonize rapidly from seed following fire. As a result they provide persistent cover that reduces erosion.

In addition to performing extremely important roles in the Mediterranean ecosystem, the coastal sage scrub community type has been drastically reduced in area by habitat loss to development. In the early 1980's it was estimated that 85 to 90 percent of the original extent of coastal sage scrub in California had already been destroyed.[60] Losses since that time have been significant and particularly severe in the coastal zone.

Therefore, because of its increasing rarity, its important role in the functioning of the Santa Monica Mountains Mediterranean ecosystem, and its extreme vulnerability to development, coastal sage scrub within the Santa Monica Mountains meets the definition of ESHA under the Coastal Act.

Chaparral

Another shrub community in the Santa Monica Mountain Mediterranean ecosystem is chaparral. Like "coastal sage scrub," this is a generic category of vegetation. Chaparral species have deep roots (10s of ft) and hard waxy leaves, adaptations to drought that increase water supply and decrease water loss at the leaf surface. Some chaparral species cope more effectively with drought conditions than do desert plants[61]. Chaparral plants vary from about one to four meters tall and form dense, intertwining stands with nearly 100 percent ground cover. As a result, there are few herbaceous species present in mature stands. Chaparral is well adapted to fire. Many species regenerate mainly by crown sprouting; others rely on seeds which are stimulated to germinate by the heat and ash from fires. Over 100 evergreen shrubs may be found in chaparral[62]. On average, chaparral is found in wetter habitats than coastal sage scrub, being more common at higher elevations and on north facing slopes.

The broad category "northern mixed chaparral" is the major type of chaparral shown in the National Park Service map of the Santa Monica Mountains. However, northern mixed chaparral can be variously dominated by chamise, scrub oak or one of several species of manzanita or by ceanothus. In addition, it commonly contains woody vines and large shrubs such as mountain mahogany, toyon, hollyleaf redberry, and sugarbush[63]. The rare red shank chaparral plant community also occurs in the Santa Monica Mountains. Although included within the category "northern mixed chaparral" in

[59] Dr. John O'Leary, SDSU, personal communication to Dr. John Dixon, CCC, July 2, 2002
[60] Westman, W.E. 1981. op. cit.
[61] Dr. Stephen Davis, Pepperdine University. Presentation at the CCC workshop on the significance of native habitats in the Santa Monica Mountains. June 13, 2002.
[62] Keely, J.E. and S.C. Keeley. Chaparral. Pages 166-207 in M.G. Barbour and W.D. Billings, eds. North American Terrestrial Vegetation. New York, Cambridge University Press.
[63] Ibid.

the vegetation map, several types of ceanothus chaparral are reported in the Santa Monica Mountains. Ceanothus chaparral occurs on stable slopes and ridges, and may be dominated by bigpod ceanothus, buck brush ceanothus, hoaryleaf ceanothus, or greenbark ceanothus. In addition to ceanothus, other species that are usually present in varying amounts are chamise, black sage, holly-leaf redberry, sugarbush, and coast golden bush[64].

Several sensitive plant species that occur in the chaparral of the Santa Monica Mountains area are: Santa Susana tarplant, Lyon's pentachaeta, marcescent dudleya, Santa Monica Mountains dudleya, Braunton's milk vetch and salt spring checkerbloom[65]. Several occurring or potentially occurring sensitive animal species in chaparral from the area are: Santa Monica shieldback katydid, western spadefoot toad, silvery legless lizard, San Bernardino ring-neck snake, San Diego mountain kingsnake, coast patch-nosed snake, sharp-shinned hawk, southern California rufous-crowned sparrow, Bell's sparrow, yellow warbler, pallid bat, long-legged myotis bat, western mastiff bat, and San Diego desert woodrat.[66]

Coastal sage scrub and chaparral are the predominant generic community types of the Santa Monica Mountains and provide the living matrix within which rarer habitats like riparian woodlands exist. These two shrub communities share many important ecosystem roles. Like coastal sage scrub, chaparral within the Santa Monica Mountains provides critical linkages among riparian corridors, provides essential habitat for species that require several habitat types during the course of their life histories, provides essential habitat for sensitive species, and stabilizes steep slopes and reduces erosion, thereby protecting the water quality of coastal streams.

Many species of animals in Mediterranean habitats characteristically move among several plant communities during their daily activities, and many are reliant on different communities either seasonally or during different stages of their life cycle. The importance of an intact mosaic of coastal sage scrub, chaparral, and riparian community types is perhaps most critical for birds. However, the same principles apply to other taxonomic groups. For example, whereas coastal sage scrub supports a higher diversity of native ant species than chaparral, chaparral habitat is necessary for the coast horned lizard, an ant specialist[67]. Additional examples of the importance of an interconnected communities, or habitats, were provided in the discussion of coastal sage scrub above. This is an extremely important ecosystem role of chaparral in the Santa Monica Mountains.

Chaparral is also remarkably adapted to control erosion, especially on steep slopes. The root systems of chaparral plants are very deep, extending far below the surface and

[64] Ibid.
[65] Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.
[66] Ibid.
[67] A.V. Suarez. Ants and lizards in coastal sage scrub and chaparral. A presentation at the CCC workshop on the significance of native habitats in the Santa Monica Mountains. June 13, 2002.

penetrating the bedrock below[68], so chaparral literally holds the hillsides together and prevents slippage.[69] In addition, the direct soil erosion from precipitation is also greatly reduced by 1) water interception on the leaves and above ground foliage and plant structures, and 2) slowing the runoff of water across the soil surface and providing greater soil infiltration. Chaparral plants are extremely resistant to drought, which enables them to persist on steep slopes even during long periods of adverse conditions. Many other species die under such conditions, leaving the slopes unprotected when rains return. Since chaparral plants recover rapidly from fire, they quickly re-exert their ground stabilizing influence following burns. The effectiveness of chaparral for erosion control after fire increases rapidly with time[70]. Thus, the erosion from a 2-inch rain-day event drops from 5 yd^3/acre of soil one year after a fire to 1 yd^3/acre after 4 years.[71] The following table illustrates the strong protective effect of chaparral in preventing erosion.

Soil erosion as a function of 24-hour precipitation and chaparral age.

Years Since Fire	Erosion (yd^3/acre) at Maximum 24-hr Precipitation of:		
	2 inches	5 inches	11 inches
1	5	20	180
4	1	12	140
17	0	1	28
50+	0	0	3

Therefore, because of its important roles in the functioning of the Santa Monica Mountains Mediterranean ecosystem, and its extreme vulnerability to development, chaparral within the Santa Monica Mountains meets the definition of ESHA under the Coastal Act.

Oak Woodland and Savanna

Coast live oak woodland occurs mostly on north slopes, shaded ravines and canyon bottoms. Besides the coast live oak, this plant community includes hollyleaf cherry, California bay laurel, coffeeberry, and poison oak. Coast live oak woodland is more

[68] Helmers, H., J.S. Horton, G. Juhren and J. O'Keefe. 1955. Root systems of some chaparral plants in southern California. Ecology 36(4):667-678. Kummerow, J. and W. Jow. 1977. Root systems of chaparral shrubs. Oecologia 29:163-177.

[69] Radtke, K. 1983. *Living more safely in the chaparral-urban interface*. General Technical Report PSW-67. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Berkeley, California. 51 pp.

[70] Kittredge, J. 1973. Forest influences — the effects of woody vegetation on climate, water, and soil. Dover Publications, New York. 394 pp. Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. (Table 1). The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024. Vicars, M. (ed.) 1999. FireSmart: protecting your community from wildfire. Partners in Protection, Edmonton, Alberta.

[71] Ibid.

tolerant of salt-laden fog than other oaks and is generally found nearer the coast[72]. Coast live oak also occurs as a riparian corridor species within the Santa Monica Mountains.

Valley oaks are endemic to California and reach their southern most extent in the Santa Monica Mountains. Valley oaks were once widely distributed throughout California's perennial grasslands in central and coastal valleys. Individuals of this species may survive 400-600 years. Over the past 150 years, valley oak savanna habitat has been drastically reduced and altered due to agricultural and residential development. The understory is now dominated by annual grasses and recruitment of seedlings is generally poor. This is a very threatened habitat.

The important ecosystem functions of oak woodlands and savanna are widely recognized[73]. These habitats support a high diversity of birds[74], and provide refuge for many species of sensitive bats[75]. Typical wildlife in this habitat includes acorn woodpeckers, scrub jays, plain titmice, northern flickers, cooper's hawks, western screech owls, mule deer, gray foxes, ground squirrels, jackrabbits and several species of sensitive bats.

Therefore, because of their important ecosystem functions and vulnerability to development, oak woodlands and savanna within the Santa Monica Mountains met the definition of ESHA under the Coastal Act.

Grasslands

Grasslands consist of low herbaceous vegetation that is dominated by grass species but may also harbor native or non-native forbs.

California Perennial Grassland

Native grassland within the Santa Monica Mountains consists of perennial native needlegrasses: purple needlegrass, (Nassella pulchra), foothills needlegrass, (Nassella lepida) and nodding needlegrass (Nassella cernua). These grasses may occur in the same general area but they do not typically mix, tending to segregate based on slope

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[72] NPS 2000. op. cit.

[73] Block, W.M., M.L. Morrison, and J. Verner. 1990. Wildlife and oak-woodland interdependency. *Fremontia* 18(3):72–76. Pavlik, B.M., P.C. Muick, S. Johnson, and M. Popper. 1991. *Oaks of California*. Cachuma Press and California Oak Foundation, Los Olivos, California. 184 pp.

[74] Cody, M.L. 1977. Birds. Pp. 223–231 *in* Thrower, N.J.W., and D.E. Bradbury (eds.). *Chile-California Mediterranean scrub atlas*. US/IBP Synthesis Series 2. Dowden, Hutchinson & Ross, Stroudsburg, Pennsylvania. National Park Service. 1993. A checklist of the birds of the Santa Monica Mountains National Recreation Area. Southwest Parks and Monuments Assoc., 221 N. Court, Tucson, AZ. 85701

[75] Miner, K.L., and D.C. Stokes. 2000. Status, conservation issues, and research needs for bats in the south coast bioregion. Paper presented at *Planning for biodiversity: bringing research and management together*, February 29, California State University, Pomona, California.

and substrate factors[76]. Mixed with these native needlegrasses are many non-native annual species that are characteristic of California annual grassland[77]. Native perennial grasslands are now exceedingly rare[78]. In California, native grasslands once covered nearly 20 percent of the land area, but today are reduced to less than 0.1 percent[79]. The California Natural Diversity Database (CNDDB) lists purple needlegrass habitat as a community needing priority monitoring and restoration. The CNDDB considers grasslands with 10 percent or more cover by purple needlegrass to be significant, and recommends that these be protected as remnants of original California prairie. Patches of this sensitive habitat occur throughout the Santa Monica Mountains where they are intermingled with coastal sage scrub, chaparral and oak woodlands.

Many of the raptors that inhabit the Santa Monica Mountains make use of grasslands for foraging because they provide essential habitat for small mammals and other prey. Grasslands adjacent to woodlands are particularly attractive to these birds of prey since they simultaneously offer perching and foraging habitat. Particularly noteworthy in this regard are the white-tailed kite, northern harrier, sharp-shinned hawk, Cooper's hawk, red-shouldered hawk, red-tailed hawk, golden eagle, American kestrel, merlin, and prairie falcon[80].

Therefore, because of their extreme rarity, important ecosystem functions, and vulnerability to development, California native perennial grasslands within the Santa Monica Mountains meet the definition of ESHA under the Coastal Act.

California Annual Grassland

The term "California annual grassland" has been proposed to recognize the fact that non-native annual grasses should now be considered naturalized and a permanent feature of the California landscape and should be acknowledged as providing important ecological functions. These habitats support large populations of small mammals and provide essential foraging habitat for many species of birds of prey. California annual grassland generally consists of dominant invasive annual grasses that are primarily of Mediterranean origin. The dominant species in this community include common wild oats (Avena fatua), slender oat (Avena barbata), red brome (Bromus madritensis ssp. Rubens), ripgut brome, (Bromus diandrus), and herbs such as black mustard (Brassica nigra), wild radish (Raphanus sativus) and sweet fennel (Foeniculum vulgare). Annual grasslands are located in patches throughout the Santa Monica Mountains in previously disturbed areas, cattle pastures, valley bottoms and along roadsides. While many of

[76] Sawyer, J. O. and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, 1722 J St., Suite 17, Sacramento, CA 95814.
[77] Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.
[78] Noss, R.F., E.T. LaRoe III and J.M. Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degradation. Biological Report 28. National Biological Service, U.S. Dept. of Interior.
[79] NPS 2000. op. cit.
[80] NPS 2000. op. cit.

these patches are dominated by invasive non-native species, it would be premature to say that they are never sensitive or do not harbor valuable annual native species. A large number of native forbs also may be present in these habitats[81], and many native wildflowers occur primarily in annual grasslands. In addition, annual grasslands are primary foraging areas for many sensitive raptor species in the area.

Inspection of California annual grasslands should be done prior to any impacts to determine if any rare native species are present or if any rare wildlife rely on the habitat and to determine if the site meets the Coastal Act ESHA criteria.

Effects of Human Activities and Development on Habitats within the Santa Monica Mountains

The natural habitats of the Santa Monica Mountains are highly threatened by current development pressure, fragmentation and impacts from the surrounding megalopolis. The developed portions of the Santa Monica Mountains represents the extension of this urbanization into natural areas. About 54% of the undeveloped Santa Monica Mountains are in private ownership[82], and computer simulation studies of the development patterns over the next 25 years predict a serious increase in habitat fragmentation[83]. Development and associated human activities have many well-documented deleterious effects on natural communities. These environmental impacts may be both direct and indirect and include the effects of increased fire frequency, of fire clearance, of introduction of exotic species, and of night lighting.

Increased Fire Frequency

Since 1925, all the major fires in the Santa Monica Mountains have been caused by human activities[84]. Increased fire frequency alters plant communities by creating conditions that select for some species over others. Strong resprouting plant species such as laurel sumac, are favored while non-sprouters like bigpod ceanothus, are at a disadvantage. Frequent fire recurrence before the non-sprouters can develop and reestablish a seed bank is detrimental, so that with each fire their chances for propagation are further reduced. Resprouters can be sending up new shoots quickly, and so they are favored in an increased fire frequency regime. Also favored are weedy and invasive species. Dr. Steven Davis in his abstract for a Coastal Commission

[81] Holstein, G. 2001. Pre-agricultural grassland in Central California. Madrono 48(4):253-264. Stromberg, M.R., P. Kephart and V. Yadon. 2001. Composition, invasibility and diversity of coastal California grasslands. Madrono 48(4):236-252.
[82] National Park Service. 2000. Draft: General Management Plan & Environmental Impact Statement, Santa Monica Mountains National Recreation Area, US Dept. of Interior, National Park Service, December 2000.
[83] Swenson, J. J., and J. Franklin. 2000. The effects of future urban development on habitat fragmentation in the Santa Monica Mountains. Landscape Ecol. 15:713-730.
[84] NPS, 2000, *op. cit.*

Workshop stated[85] "*We have evidence that recent increases in fire frequency has eliminated drought-hardy non-sprouters from chaparral communities near Malibu, facilitating the invasion of exotic grasses and forbs that further exacerbate fire frequency.*" Thus, simply increasing fire frequency from about once every 22 years (the historical frequency) to about once every 12 years (the current frequency) can completely change the vegetation community. This has cascading effects throughout the ecosystem.

Fuel Clearance

The removal of vegetation for fire protection in the Santa Monica Mountains is required by law in "Very High Fire Hazard Severity Zones"[86]. Fuel removal is reinforced by insurance carriers[87]. Generally, the Santa Monica Mountains are considered to be a high fire hazard severity zone. In such high fire hazard areas, homeowners must often resort to the California FAIR Plan to obtain insurance. Because of the high risk, all homes in "brush areas" are assessed an insurance surcharge if they have less than the recommended 200-foot fuel modification zone[88] around the home. The combination of insurance incentives and regulation assures that the 200-foot clearance zone will be applied universally[89]. While it is not required that all of this zone be cleared of vegetation, the common practice is simply to disk this zone, essentially removing or highly modifying all native vegetation. For a new structure not adjacent to existing structures, this results in the removal or modification of a minimum of three acres of vegetation[90]. While the directly impacted area is large, the effects of fuel modification extend beyond the 200-foot clearance area.

Effects of Fuel Clearance on Bird Communities

The impacts of fuel clearance on bird communities was studied by Stralberg who identified three ecological categories of birds in the Santa Monica Mountains: 1) local and long distance migrators (ash-throated flycatcher, Pacific-slope flycatcher, phainopepla, black-headed grosbeak), 2) chaparral-associated species (Bewick's wren, wrentit, blue-gray gnatcatcher, California thrasher, orange-crowned warbler, rufous-crowned sparrow, spotted towhee, California towhee) and 3) urban-associated species

[85] Davis, Steven. Effects of fire and other factors on patterns of chaparral in the Santa Monica Mountains, Coastal Commission Workshop on the Significance of Native Habitats in the Santa Monica Mountains. CCC Hearing, June 13, 2002, Queen Mary Hotel.
[86] 1996 Los Angeles County Fire Code Section 1117.2.1
[87] Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024. Vicars, M. (ed.) 1999. FireSmart: protecting your community from wildfire. Partners in Protection, Edmonton, Alberta.
[88] Fuel Modification Plan Guidelines. Co. of Los Angeles Fire Department, Fuel Modification Unit, Prevention Bureau, Forestry Division, Brush Clearance Section, January 1998.
[89] Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024.
[90] Ibid.

(mourning dove, American crow, Western scrub-jay, Northern mockingbird)[91]. It was found in this study that the number of migrators and chaparral-associated species decreased due to habitat fragmentation while the abundance of urban-associated species increased. The impact of fuel clearance is to greatly increase this edge-effect of fragmentation by expanding the amount of cleared area and "edge" many-fold. Similar results of decreases in fragmentation-sensitive bird species are reported from the work of Bolger et al. in southern California chaparral[92].

Effects of Fuel Clearance on Arthropod Communities

Fuel clearance and habitat modification may also disrupt native arthropod communities, and this can have surprising effects far beyond the cleared area on species seemingly unrelated to the direct impacts. A particularly interesting and well-documented example with ants and lizards illustrates this point. When non-native landscaping with intensive irrigation is introduced, the area becomes favorable for the invasive and non-native Argentine ant. This ant forms "super colonies" that can forage more than 650 feet out into the surrounding native chaparral or coastal sage scrub around the landscaped area[93]. The Argentine ant competes with native harvester ants and carpenter ants displacing them from the habitat[94]. These native ants are the primary food resource for the native coast horned lizard, a California "Species of Special Concern." As a result of Argentine ant invasion, the coast horned lizard and its native ant food resources are diminished in areas near landscaped and irrigated developments[95]. In addition to specific effects on the coast horned lizard, there are other Mediterranean habitat ecosystem processes that are impacted by Argentine ant invasion through impacts on long-evolved native ant-plant mutualisms[96]. The composition of the whole arthropod community changes and biodiversity decreases when habitats are subjected to fuel modification. In coastal sage scrub disturbed by fuel modification, fewer arthropod

[91] Stralberg, D. 2000. Landscape-level urbanization effects on chaparral birds: a Santa Monica Mountains case study. Pp. 125–136 *in* Keeley, J.E., M. Baer-Keeley, and C.J. Fotheringham (eds.). *2nd interface between ecology and land development in California*. U.S. Geological Survey, Sacramento, California.
[92] Bolger, D. T., T. A. Scott and J. T. Rotenberry. 1997. Breeding bird abundance in an urbanizing landscape in coastal Southern California. Conserv. Biol. 11:406-421.
[93] Suarez, A.V., D.T. Bolger and T.J. Case. 1998. Effects of fragmentation and invasion on native ant communities in coastal southern California. Ecology 79(6):2041-2056.
[94] Holway, D.A. 1995. The distribution of the Argentine ant (*Linepithema humile*) in central California: a twenty-year record of invasion. Conservation Biology 9:1634-1637. Human, K.G. and D.M. Gordon. 1996. Exploitation and interference competition between the invasive Argentine ant, (*Linepithema humile*), and native ant species. Oecologia 105:405-412.
[95] Fisher, R.N., A.V. Suarez and T.J. Case. 2002. Spatial patterns in the abundance of the coastal horned lizard. Conservation Biology 16(1):205-215. Suarez, A.V. J.Q. Richmond and T.J. Case. 2000. Prey selection in horned lizards following the invasion of Argentine ants in southern California. Ecological Applications 10(3):711-725.
[96] Suarez, A.V., D.T. Bolger and T.J. Case. 1998. Effects of fragmentation and invasion on native ant communities in coastal southern California. Ecology 79(6):2041-2056. Bond, W. and P. Slingsby. Collapse of an Ant-Plant Mutualism: The Argentine Ant (*Iridomyrmex humilis*) and Myrmecochorous Proteaceae. Ecology 65(4):1031-1037.

predator species are seen and more exotic arthropod species are present than in undisturbed habitats[97].

Studies in the Mediterranean vegetation of South Africa (equivalent to California shrubland with similar plant species) have shown how the invasive Argentine ant can disrupt the whole ecosystem.[98] In South Africa the Argentine ant displaces native ants as they do in California. Because the native ants are no longer present to collect and bury seeds, the seeds of the native plants are exposed to predation, and consumed by seed eating insects, birds and mammals. When this habitat burns after Argentine ant invasion the large-seeded plants that were protected by the native ants all but disappear. So the invasion of a non-native ant species drives out native ants, and this can cause a dramatic change in the species composition of the plant community by disrupting long-established seed dispersal mutualisms. In California, some insect eggs are adapted to being buried by native ants in a manner similar to plant seeds[99].

Artificial Night Lighting

One of the more recently recognized human impacts on ecosystem function is that of artificial night lighting as it effects the behavior and function of many different types of organisms[100]. For literally billions of years the only nighttime sources of light were the moon and stars, and living things have adapted to this previously immutable standard and often depend upon it for their survival. A review of lighting impacts suggests that whereas some species are unaffected by artificial night lighting, many others are severely impacted. Overall, most impacts are negative ones or ones whose outcome is unknown. Research to date has found negative impacts to plants, aquatic and terrestrial invertebrates, amphibians, fish, birds and mammals, and a detailed literature review can be found in the report by Longcore and Rich[101].

Summary

In a past action, the Coastal Commission found[102] that the Santa Monica Mountains Mediterranean Ecosystem, which includes the undeveloped native habitats of the Santa Monica Mountains, is rare and especially valuable because of its relatively pristine

[97] Longcore, T.R. 1999. Terrestrial arthropods as indicators of restoration success in coastal sage scrub. Ph.D. Dissertation, University of California, Los Angeles.
[98] Christian, C. 2001. Consequences of a biological invasion reveal the importance of mutualism for plant communities. Nature 413:635-639.
[99] Hughes, L. and M. Westoby. 1992. Capitula on stick insect eggs and elaiosomes on seeds: convergent adaptations for burial by ants. Functional Ecology 6:642-648.
[100] . Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024.
[101] Ibid, and Ecological Consequences of Artificial Night Lighting, Conference, February 23-24, 2002, UCLA Los Angeles, California.
[102] Revised Findings for the City of Malibu Local Coastal Program (as adopted on September 13, 2002) adopted on February 6, 2003.

character, physical complexity, and resultant biological diversity. The undeveloped native habitats within the Santa Monica Mountains that are discussed above are ESHA because of their valuable roles in that ecosystem, including providing a critical mosaic of habitats required by many species of birds, mammals and other groups of wildlife, providing the opportunity for unrestricted wildlife movement among habitats, supporting populations of rare species, and preventing the erosion of steep slopes and thereby protecting riparian corridors, streams and, ultimately, shallow marine waters.

The importance the native habitats in the Santa Monica Mountains was emphasized nearly 20 years ago by the California Department of Fish and Game[103]. Commenting on a Draft Land Use Plan for the City of Malibu, the Regional Manager wrote that, "It is essential that large areas of land be reclassified to reflect their true status as ESHAs. One of the major needs of the Malibu LUP is that it should provide protection for entire drainages and not just stream bottoms." These conclusions were supported by the following observations:

> "It is a fact that many of the wildlife species of the Santa Monica Mountains, such as mountain lion, deer, and raccoon, have established access routes through the mountains. They often travel to and from riparian zones and development such as high density residential may adversely affect a wildlife corridor.
>
> Most animal species that exist in riparian areas will, as part of their life histories, also be found in other habitat types, including chapparal (sic) or grassland. For example, hawks nest and roost in riparian areas, but are dependent on large open areas for foraging. For the survival of many species, particularly those high on the food chain, survival will depend upon the presence of such areas. Such areas in the Santa Monica Mountains include grassland and coastal sage scrub communities, which have been documented in the SEA studies as supporting a wide diversity of plant and animal life."

This analysis by the Department of Fish and Game is consonant with the findings of the Commission in the case of the Malibu LCP, and with the conclusion that large contiguous areas of relatively pristine native habitat in the Santa Monica Mountains meet the definition of ESHA under the Coastal Act.

[103] Letter from F. A. Worthley, Jr. (CDFG) to N. Lucast (CCC) re Land Use Plan for Malibu dated March 22, 1983.

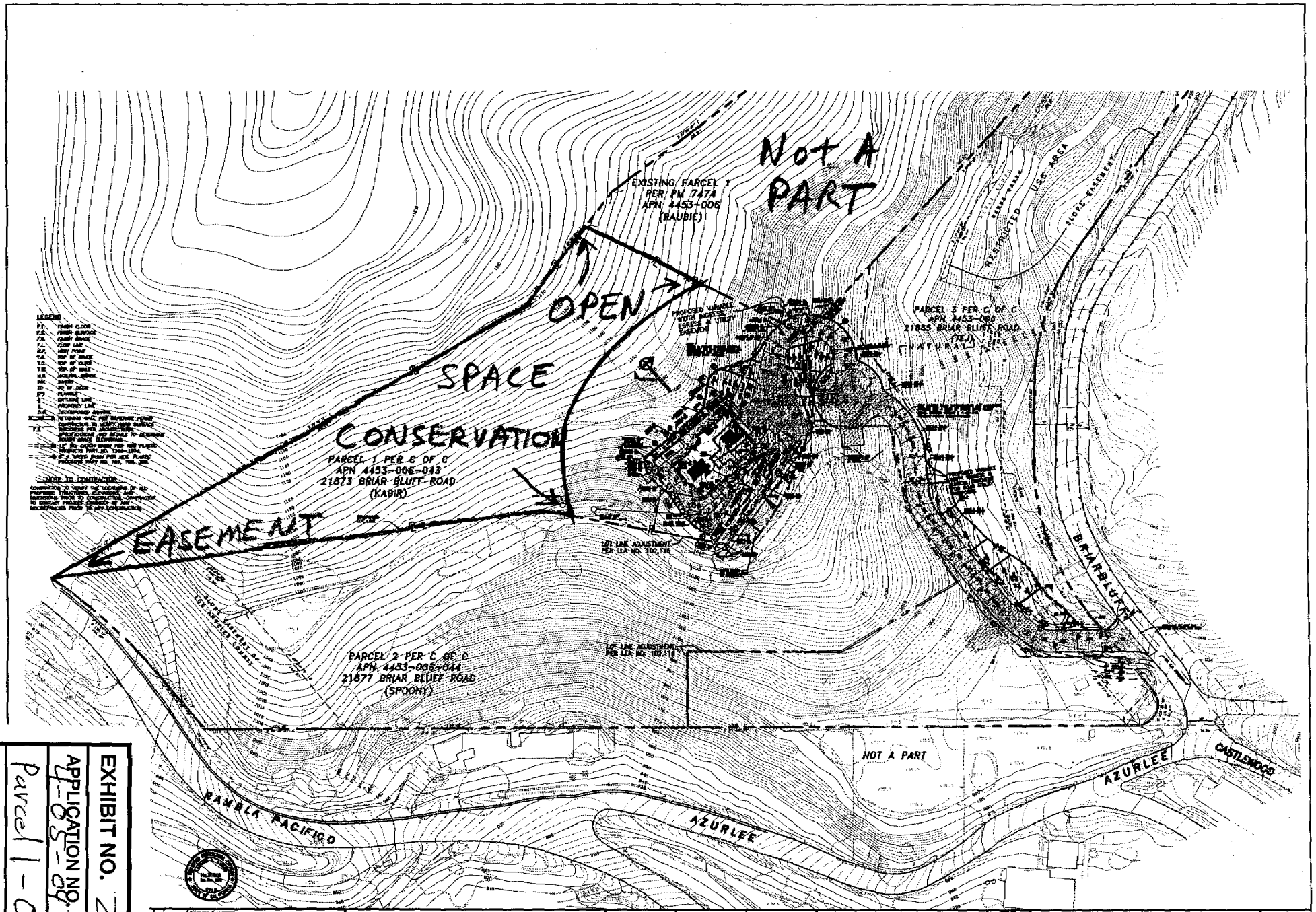

EXHIBIT NO. 22
APPLICATION NO. 4-85-683
Parcel 1 - Open Space Easement

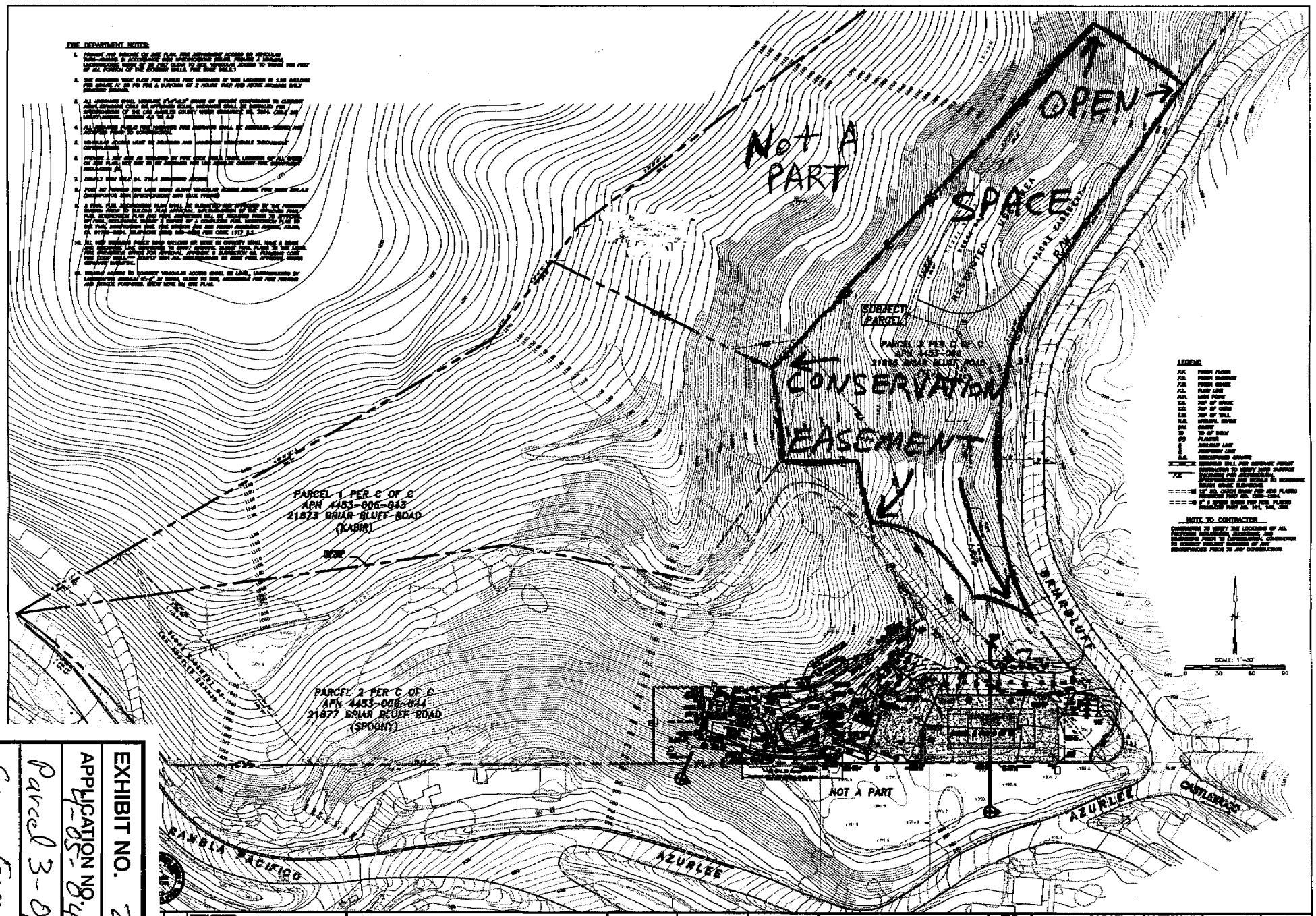

EXHIBIT NO. 23

APPLICATION NO. 4-85-845

Parcel 3 - Open Space Easement

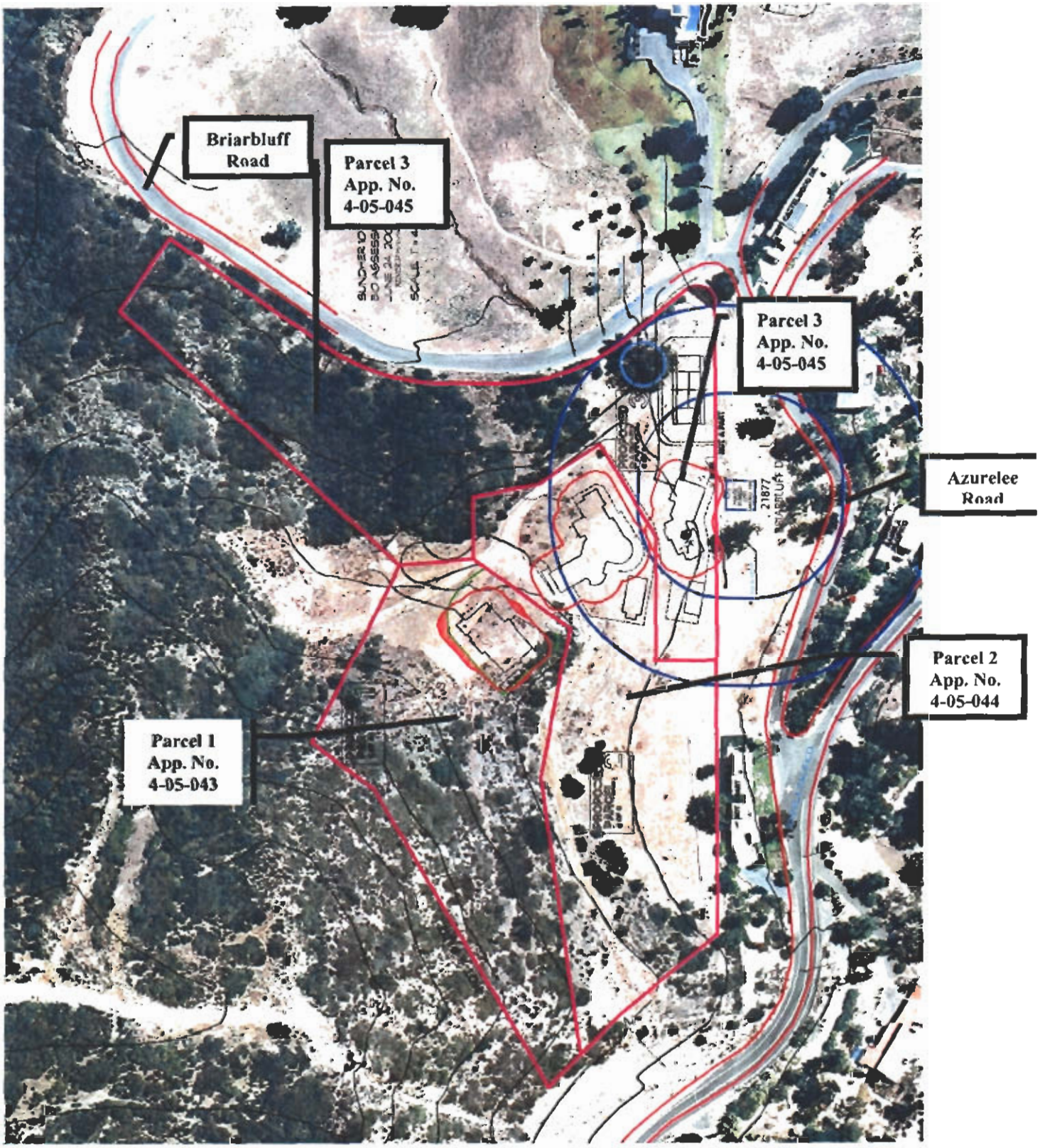

EXHIBIT 24
APP NOS. 4-05-043, 044, 045
AERIAL PHOTO
Three Parcels and Proposed Development