County of Bernalillo

State of New Mexico

2400 BROADWAY, S.E.
ALBUQUERQUE, NEW MEXICO 87102
PUBLIC WORKS (505) 848-1500

May 17, 1996

Philip W. Clark, P.E.
Clark Consulting Engineers
19 Ryan Road
Edgewood, New Mexico 87015

RE: ENGINEER'S CERTIFICATION FOR LOT 1517 SANDIA HEIGHTS SOUTH (D23/D43) (PWD 95-134) SUBMITTED FOR CERTIFICATE OF OCCUPANCY APPROVAL, ENGINEER'S STAMP DATED 5/16/96.

Dear Mr. Clark:

Based on the information provided in the submittal of May 17, 1996, the Engineer's Certification for the above referenced Lot is acceptable for Certificate of Occupancy release.

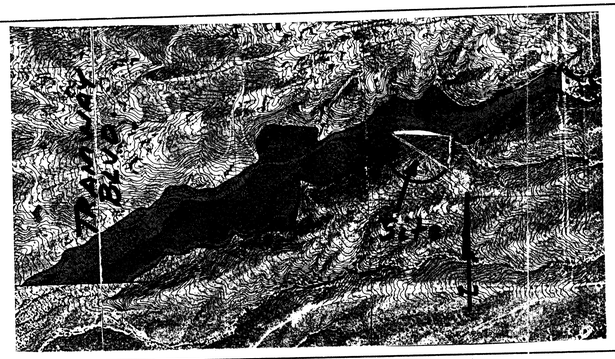
If you should have any questions, or if I may be of further assistance to you, please call me at 768-2666.

Sincerely,

Susan Calongne

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Roger Paul, Bernalillo County Public Works Division
Kurt Browning, Albuquerque Metropolitan Arroyo Flood Control Authority
File



FEMA MAP, PANEL 11 @ 1"=500'

LEGEND

EXIST. SPOT ELEV. + 99.6
EXIST. CONTOUR 08
NEW SPOT ELEV. 10.10
NEW CONTOUR 10
NEW STRUCTURE
NEW CONCRETE

TOP OF GARDEN WALL TGW21.8
BOTTOM OF WALL @ GRADE BW07.5
BOTTOM OF FOOTING BOF05.5

PROJECT INFORMATION

LEGAL DESCRIPTION:

LOT 1517, UNIT 15, SANDIA HEIGHTS SOUTH
BERNALILLO COUNTY, NEW MEXICO

PROJECT BENCHMARK

TOP OF REBAR AT THE SOUTHEAST PROPERTY CORNER, ELEVATION = 6223.40, AS TIED FROM ALBUQUERQUE CONTROL SURVEY

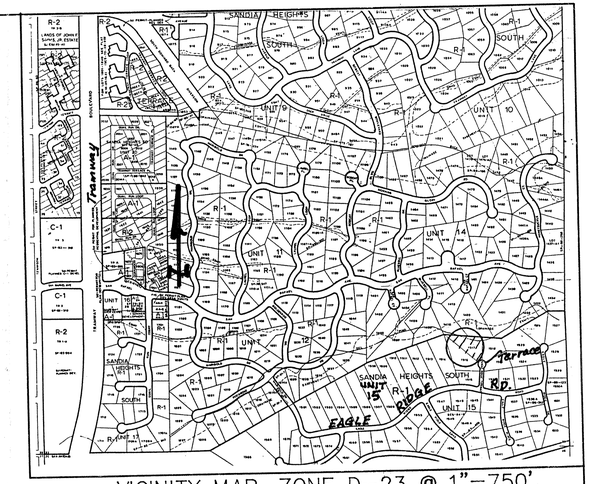
PROPERTY ADDRESS:

1517 EAGLE RIDGE TERRACE, NE, ALBUQUERQUE, NM 87122

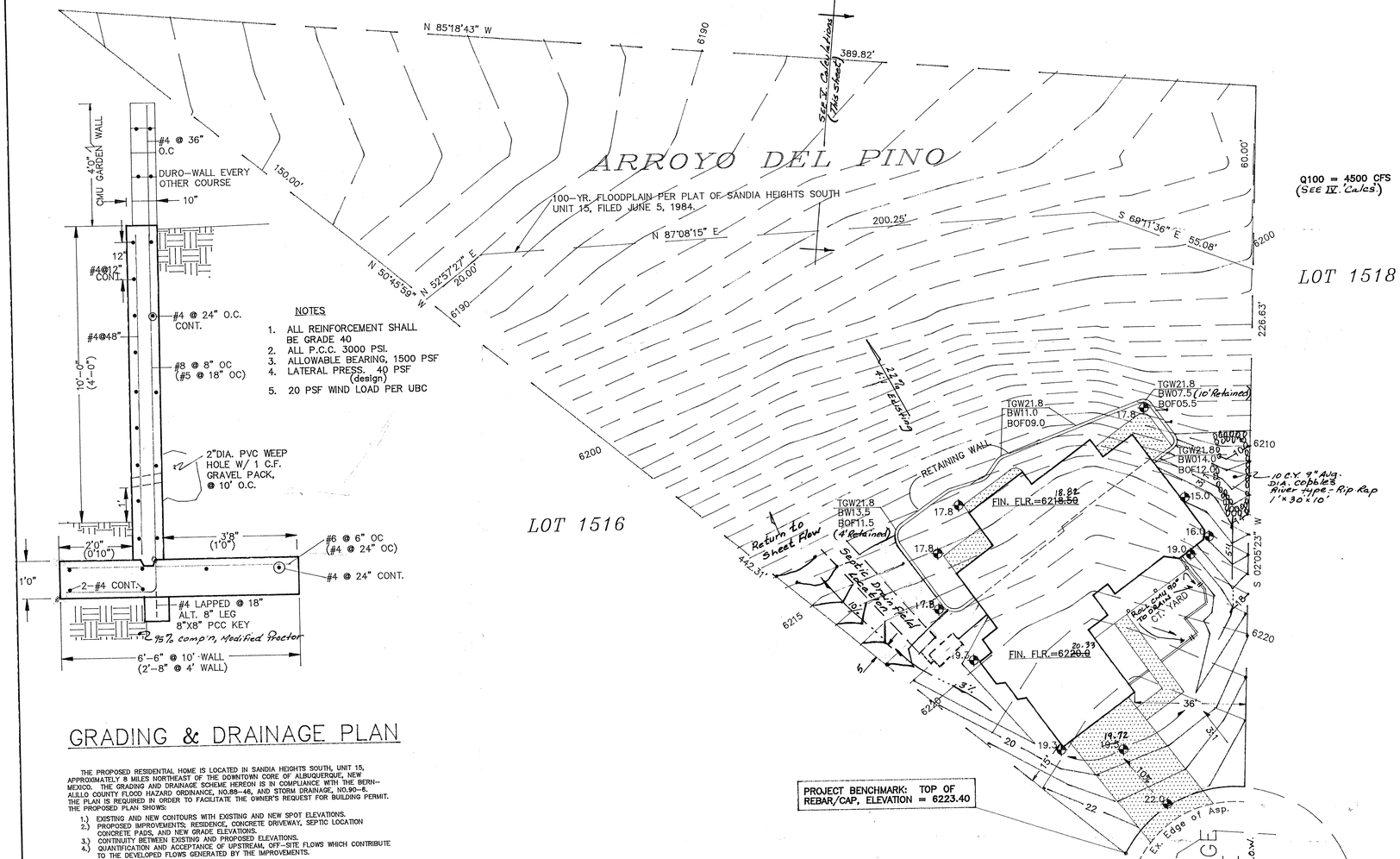
TOPOGRAPHIC SURVEY:

PERFORMED UNDER THE DIRECT SUPERVISION OF PHILIP W. TURNER, P.S. LICENSE # 10204, IN JULY, 1995.

SCALE: 1" = 20'



VICINITY MAP, ZONE D-23 @ 1"=750'



PROJECT BENCHMARK: TOP OF REBAR/CAP, ELEVATION = 6223.40

NOTES

1. ALL REINFORCEMENT SHALL BE GRADE 40
2. ALL P.C.C. 3000 PSI.
3. ALLOWABLE BEARING, 1500 PSF
4. LATERAL PRESS. 40 PSF (design)
5. 20 PSF WIND LOAD PER UBC

GRADING & DRAINAGE PLAN

THE PROPOSED RESIDENTIAL HOME IS LOCATED IN SANDIA HEIGHTS SOUTH, UNIT 15, APPROXIMATELY 8 MILES NORTHEAST OF THE DOWNTOWN CORE OF ALBUQUERQUE, NEW MEXICO. THE GRADING AND DRAINAGE SCHEME HEREON IS IN COMPLIANCE WITH THE BERNALILLO COUNTY FLOOD HAZARD ORDINANCE, NO.88-46, AND STORM DRAINAGE, NO.90-6. THE PLAN IS REQUIRED IN ORDER TO FACILITATE THE OWNER'S REQUEST FOR BUILDING PERMIT. THE PROPOSED PLAN SHOWS:

1.) EXISTING AND NEW CONTOURS WITH EXISTING AND NEW SPOT ELEVATIONS.
2.) PROPOSED IMPROVEMENTS; RESIDENCE, CONCRETE DRIVEWAY, SEPTIC LOCATION CONCRETE PADS, AND NEW GRADE ELEVATIONS.
3.) CONTINUITY BETWEEN EXISTING AND PROPOSED ELEVATIONS.
4.) QUANTIFICATION AND ACCEPTANCE OF UPSTREAM, OFF-SITE FLOWS WHICH CONTRIBUTE TO THE DEVELOPED FLOWS GENERATED BY THE IMPROVEMENTS.

THE PURPOSE OF THE PLAN IS TO ESTABLISH CRITERIA FOR CONTROLLING STORM RUN-OFF GENERATED BY THE PROPOSED IMPROVEMENTS, ESSENTIALLY ALLOWING HISTORIC OFF-SITE AREAS TO DRAIN THROUGH THE PROPERTY AFTER DEVELOPMENT. THE PLAN DETERMINES THE RUN-OFF RESULTING FROM THE 100-YEAR/6-HOUR DURATION STORMS FOR BOTH THE EXISTING AND DEVELOPED CONDITIONS.

PRESENTLY, THE SITE IS BOUNDED ON THE EAST AND WEST BY DEVELOPED LOTS. PROPERTY IMMEDIATELY TO THE NORTH IS CURRENTLY DEVELOPED. EAGLE RIDGE TERRACE ON THE PROPERTY SOUTH FRONTAGE IS PRESENTLY A MAINTAINED AND IMPROVED COUNTY ROADWAY SITUATED WITHIN A 40 RADIUS CUL-DE-SAC. THE SITE GENERALLY FALLS FROM THE SE TO NW AT AN AVERAGE OF 9 PERCENT. OFF-SITE DRAINAGE FLOWS ASSOCIATED WITH THE ARROYO DEL PINO ENTER THE SITE AT THE NORTHEAST PORTION OF THE PROPERTY. THESE OFF-SITE FLOWS ARE QUANTIFIED ON THE PLAN. THE LOT IS ENCUMBERED BY A DESIGNATED FEMA FLOOD PLAIN, SEE MAP, THIS SHEET.

HISTORICAL SITE RUN-OFF OUTFALL LOCATIONS WILL REMAIN UNCHANGED AND ALLOWED TO SHEET FLOW INTO THE PINO ARROYO AND CONVEYED OFFSITE TO THE WEST. SINCE EAGLE RIDGE TERRACE IS IMPROVED NO GRADING IMPROVEMENTS ARE PROPOSED WITHIN THE RIGHT-OF-WAY. FREE DISCHARGE OF STORM RUN-OFF FROM THE SITE IS ACCEPTABLE SINCE THE PROJECT LAND USE INTENSITY IS APPROXIMATELY ONE (1) DWELLING UNIT PER ACRE, AND LOCATED WITHIN SANDIA HEIGHTS. HYDROLOGIC PROCEDURES AND CALCULATIONS ARE IN ACCORDANCE WITH SECTION 22.2, HYDROLOGY, OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, REVISED JANUARY 1993, FOR THE CITY OF ALBUQUERQUE, NEW MEXICO, AND ADOPTED BY BERNALILLO COUNTY.

I, PHILIP W. CLARK, A PROFESSIONAL ENGINEER LICENSED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW MEXICO, DO HEREBY CERTIFY THAT I HAVE VISITED THE SITE SHOWN HEREON, AND THAT THE CONTOURS SHOWN REPRESENT THE EXISTING GROUND CONDITIONS, AND DO FURTHER CERTIFY THAT NO EARTHWORK OF ANY KIND, NOR ANY DISTURBANCE OF THE EXISTING GROUND HAS OCCURRED ON THIS SITE SINCE THE CONTOURS WERE DETERMINED.

PHILIP W. CLARK NMPE #10285

PHILIP W. CLARK 7-23-96 10285 NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

CALCULATIONS

Q100 = 4500 CFS (See IV. Calcs)

I. DESIGN CRITERIA

HYDROLOGIC METHODS PER SECTION 22.2, HYDROLOGY, OF THE DEVELOPMENT PROCESS MANUAL (DPM), REVISED JANUARY 1993, FOR THE CITY OF ALBUQUERQUE.
CITY OF ALBUQUERQUE AND ADOPTED BY THE COUNTY OF BERNALILLO.
DISCHARGE RATE: Q = Qpeak x AREA.."PEAK DISCHARGE RATES FOR SMALL WATERSHEDS"
VOLUMETRIC DISCHARGE: VOLUME = Eweighted x AREA
SOIL TYPE: 'B', EmB SERIES, EMBUDO, A GRAVELLY FINE SANDY LOAM AS CLASSIFIED BY THE SOIL CONS. SERVICE
P100 = 2.9 INCHES, ZONE 4 TIME OF CONCENTRATION, TC = 10 MINUTES
DESIGN STORM: 100-year/6-hour, 10-year/6-hour WHERE [ ] = 10 year VALUES

II. EXISTING CONDITIONS

LOT AREA = 1.21 ACRES, WHERE EXCESS PRECIPITATION 'A' = 0.8 IN. [0.28]
PEAK DISCHARGE, Q100 = 2.66 CFS [1.05], WHERE UNIT PEAK DISCHARGE 'A' = 2.2 CFS/ACRE [0.87]
THEREFORE: VOLUME100 = 3485 C.F. [1230 C.F.]

III. DEVELOPED CONDITIONS

DETERMINE LAND TREATMENTS, PEAK DISCHARGE & WEIGHTED EXCESS PRECIPITATION

	AREA	LAND TREATMENT	UNIT PEAK DISCHARGE	'E'
UNDEVELOPED,	0.92 AC.	A	2.20[0.87]	0.8[0.28]
LANDSCAPING,	0.04 AC.	B	2.92[1.45]	1.08[0.46]
GRAVEL & COMPACTED SOIL	0.12 AC.	C	3.73[2.26]	1.46[0.73]
ROOF/PAVEMENT,	0.13 AC.	D	5.25[3.57]	2.64[1.69]
	1.21 ACRES			

Eweighted = 1.07 IN. [0.46]
Q100 = 3.27 CUBIC FEET PER SECOND (CFS) Q10 = 1.6 CFS; VOL.100 = 4700 CUBIC FEET (CF), VOL10 = 2021 CF

IV. QUANTIFY UP-STREAM RUNOFF IMPACTING THE PROPERTY

@ NORTH PORTION OF THE SUBJECT PROPERTY - ARROYO DE PINO
PURSUANT TO DISCUSSION WITH KURT BROWNING, DRAINAGE ENGINEER. ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY: AS PER THE ON-GOING STUDY TO REVISE FEMA MAPPING BY RESOUCE TECHNOLGIES, INC. THE PINO ARROYO DESIGN DISCHARGE IS APPROXIMATELY 4500 CFS AT THIS LOCATION. THEREFORE USE 4500 CFS. ≃

V. DETERMINE HYDRAULIC PROPERTIES OF ARROYO IMPACTING THE PROJECT EAST BOUNDARY @ MIDDLE OF SITE

WHERE: N = 0.035, WIDTH(BOTTOM) = 120' SLOPE = 4% SIDESLOPES 15:1, THEREFORE:
NORMAL DEPTH = 2.25 FEET PER MANNINGS EQUATION, VEL100 = 12.8 FEET PER SECOND, AREA = 350 S.F.
W_{TOP} =188'

$F_R = Q/A(Ag/W)^{1/2} = 1.66$, THEREFORE SUPERCRITICAL, USE SEQUENT DEPTH ANALYSIS PER SEDIMENTATION EROSION DESIGN GUIDE, REF. EQ. 3.23 AND 3.24 PP. 3-20

$CWSEL_{SEQ.} = CWSEL + 0.5(A/W)\{(1+8F^2)^{1/2} - 3\}$
$= 2.25 + 1.67 = 3.93$ FEET

THEREFORE COMPARING THE ABOVE COMPUTED DEPTH AND TOP WIDTH WITH EXISTING FEMA MAPPING THE DEDICATED EASEMENT APPEARS REASONABLE. NOTE THAT FEMA INDICATES A FLOODPLAIN WIDTH OF 210 FEET, WHICH WOULD REDUCE ACTUAL DEPTH OF FLOW SLIGHTLY.

RECEIVED MAY 17 1996

PHILIP W. CLARK 7-16-96 10285 NEW MEXICO REGISTERED PROFESSIONAL ENGINEER Rev. 3/26/96

BP. 95.990

As-Constructed
Ref. PWO# 95-134, D23/D18/BP95-990 5/16/96
Grading & Fin. Flr. Elev. in Substantial Compliance w/ Approved plan dated 7/16/95.

PHILIP W. CLARK 10285 NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

Clark Consulting Engineers
19 Ryan Road Edgewood, New Mexico 87015
(505) 281-2444 FAX (505) 281-2444

DATE	REVISION
3/26/96	Updated Septic Easement
5/16/96	As-Built Info

LOT 1517 UNIT 15
SANDIA HEIGHTS SOUTH
HUMPHREY RESIDENCE
GRADING & DRAINAGE PLAN

DESIGNED BY: PWC DRAWN BY: CCE JOB No: GREEN SHEET No. 1 of 1
CHECKED BY: PWC DATE: 7/14/95 FILE No: G&D