



County of Bernalillo

State of New Mexico

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

BOARD OF COUNTY COMMISSIONERS

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JOE BOWDICH, SHERIFF

H. R. FINE, TREASURER

October 8, 1996

Chris Weiss, P.E.
C.L. Weiss Engineering
P. O. Box 97
Sandia Park, NM 87047

RE: ENGINEER'S CERTIFICATION FOR HARMON RESIDENCE, LOT 136-A, UNIT 2,
SANDIA HTS. SOUTH, (C23/D35) (PWD 93-55) SUBMITTED FOR CERTIFICATE
OF OCCUPANCY APPROVAL, ENGINEER'S STAMP DATED 5/29/96.

Dear Mr. Weiss:

Based on a recent site visit by the County, the above referenced Engineer's
Certification for the Harmon Residence is adequate for Permanent 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 M. Calongne, P.E.

City/County Floodplain Administrator

c: Roger Paul, Bernalillo County Public Works Division
Kurt Browning, Albuquerque Metropolitan Arroyo Flood Control Authority
Mr. and Mrs. Ed Harmon, Owners
File

**GRANT OF EASEMENT
FLOODWAY AND STORM DRAINAGE WORKS**

Scott W. & Susan S. Throckmorton, Grantors,
for good and valuable consideration, the receipt of which is hereby acknowledged, does grant, bargain, sell and convey unto the ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY, a political subdivision of the State of New Mexico, Grantee, and its successors and assigns, the permanent right and easement for drainage, flood control and conveyance of storm water and the construction, reconstruction, operation and maintenance of, and access to such facilities on, in, under, over and across the following described real estate:

The land in which the foregoing rights and easements are granted is located in the County of Bernalillo and State of New Mexico and is more particularly described in Exhibit "A" attached hereto and incorporated herein by reference.

Except by the written approval of Grantee, no fence, wall, building, or other obstruction may be placed or maintained in said easement and there shall be no alteration of the grades or contours in said easement. The granting of this easement shall not obligate the Grantee to maintain natural arroyos, drainage channels, or facilities that do not meet the standards of the Grantee for design and construction, nor shall this granting require the protection of property lying outside of the easement granted. Grantee shall only maintain property and/or improvements that it specifically agrees, by written agreement filed for public record, to maintain. Unless Grantee specifically agrees, by such written agreement, to maintain property and/or improvements, such maintenance responsibility shall remain with the Grantor, its successors or assigns. Grantor shall not perform any maintenance without the prior approval of the Grantee, except in an emergency. In the event of an emergency, Grantor shall notify the Grantee as soon as practical. Safe locations for structures built on lands adjacent to the real property described herein may be substantially outside of the area described herein.

TO HAVE AND TO HOLD the said right and easement for the uses and purposes aforesaid, unto the Grantee, its successors and assigns, forever, except that any portion of the easement granted herein shall revert to the Grantor, its successors or assigns, as and to the extent said portion is declared unnecessary for flood control or drainage by the Board of Directors of the Albuquerque Metropolitan Arroyo Flood Control Authority. Any reversion shall be conveyed by quitclaim deed.

THERE IS RESERVED to the Grantor, its successors and assigns, the right to use said lands for open space landscaping and other purposes which will not interfere with the rights and easements hereby granted, provided that Grantor obtains Grantee's written approval for such use, not to be unreasonably withheld.

[Handwritten signature]

WITNESS its hand and seal this 29th day of October, 1992

[Signature]

ACKNOWLEDGMENT FOR NATURAL PERSONS

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO)



OFFICIAL SEAL
BECCA J. PETERSON
NOTARY PUBLIC - STATE OF NEW MEXICO
Notary Bond Filed With Secretary of State
My Commission Expires 3/23/96

The foregoing instrument was acknowledged before me this 29th day of October, 1992 by Scott Throckmorton
(name)

married
(marital status)

My commission expires:

3/23/96 Becca J. Peterson
Notary Public

(SEAL)

ACKNOWLEDGMENT FOR CORPORATION

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this _____ day of _____, 199__ by _____
(name)

(title) (corporation)

a _____ corporation on behalf of said corporation.

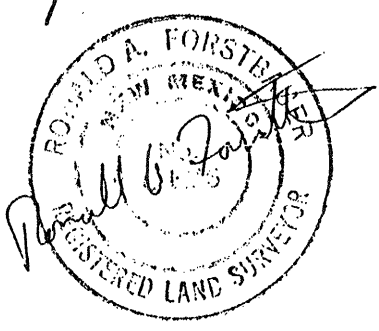
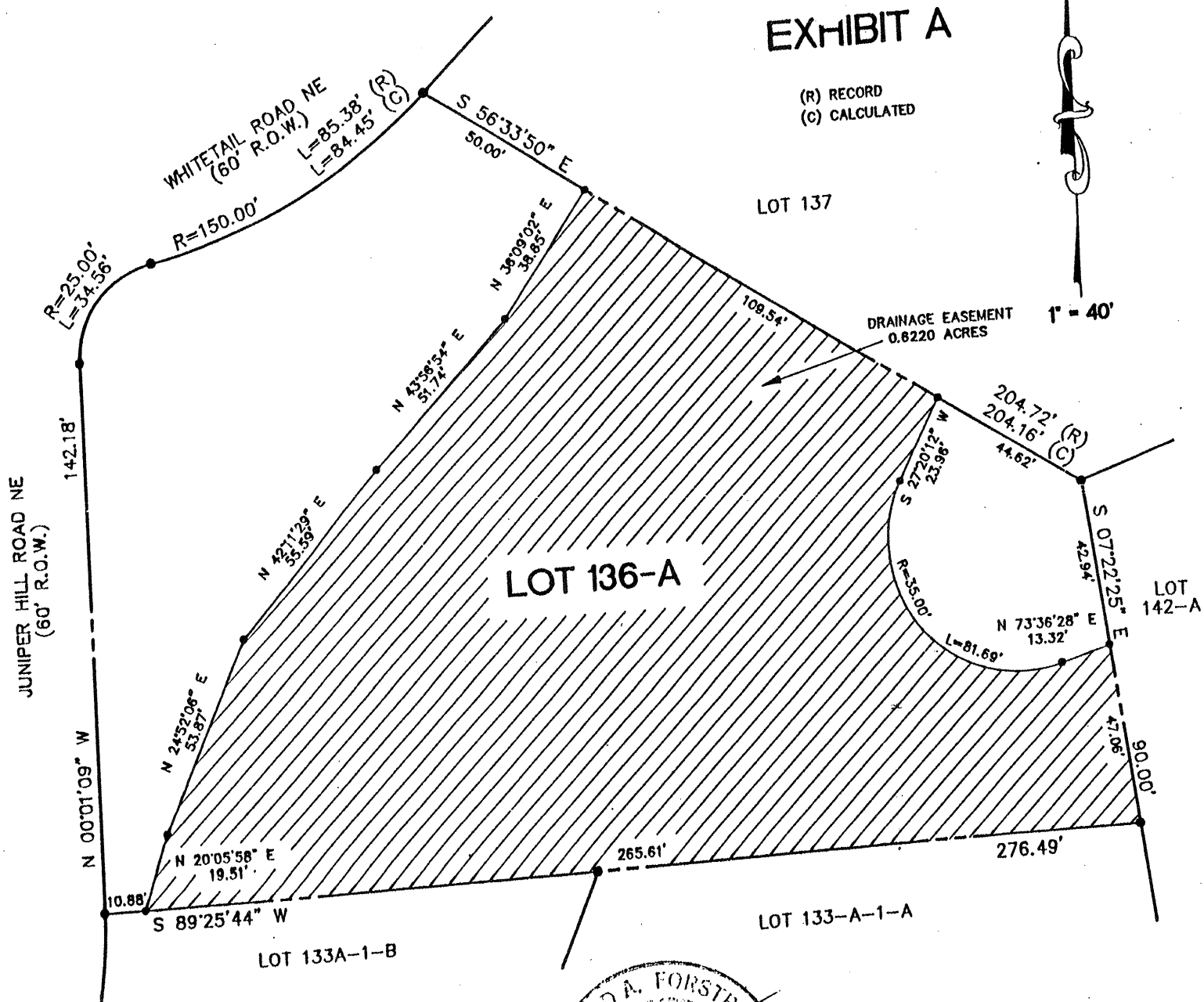
My commission expires:

Notary Public

(SEAL)

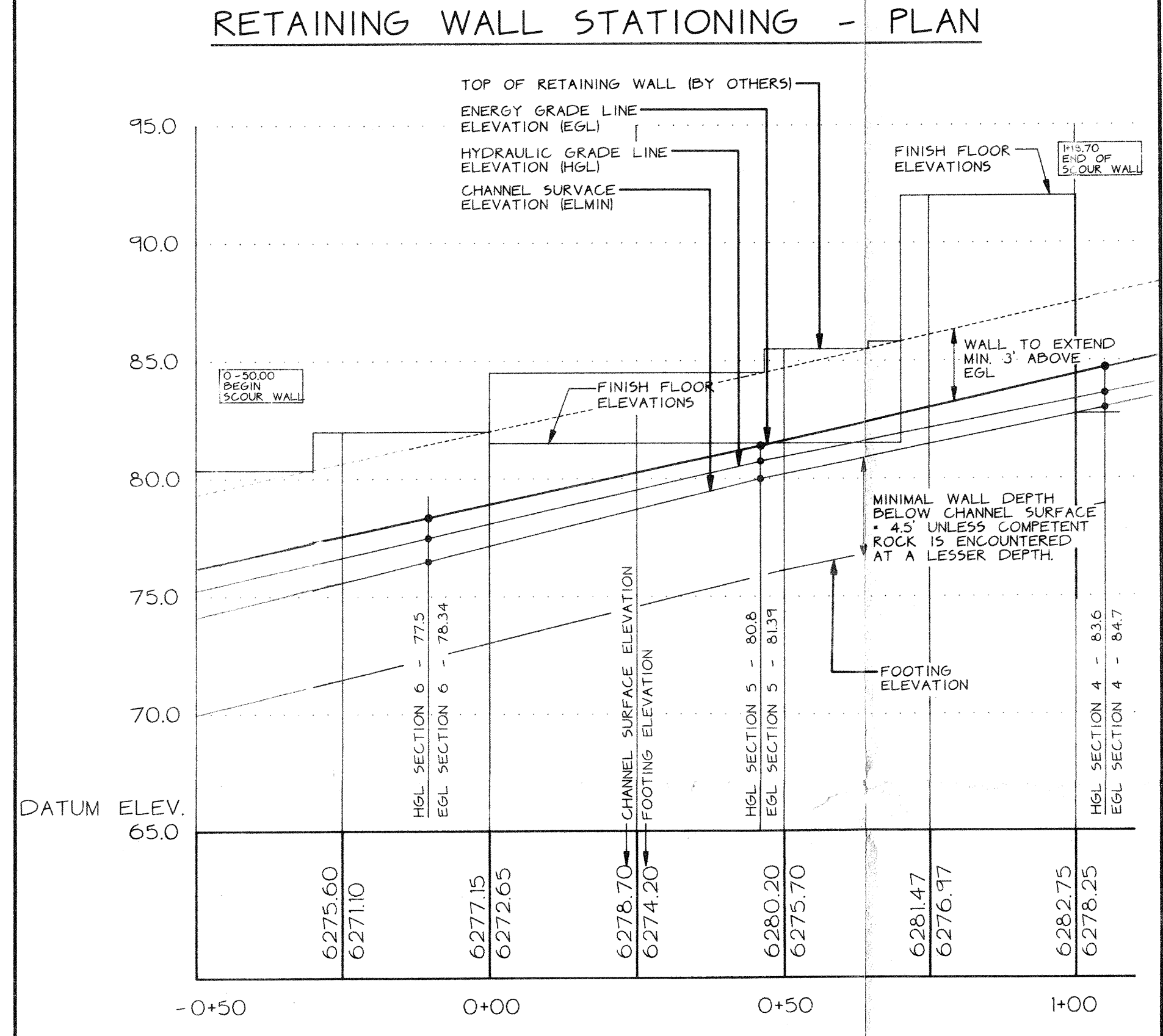
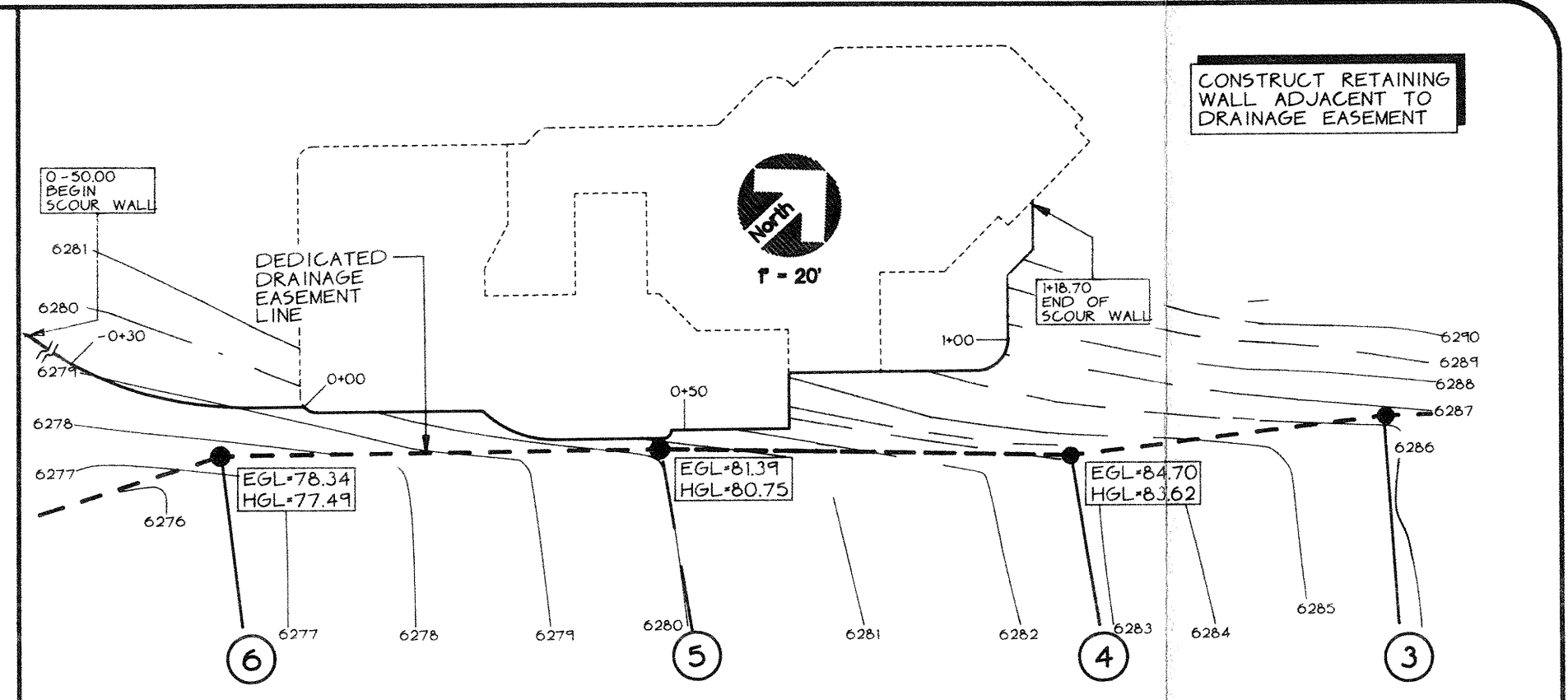
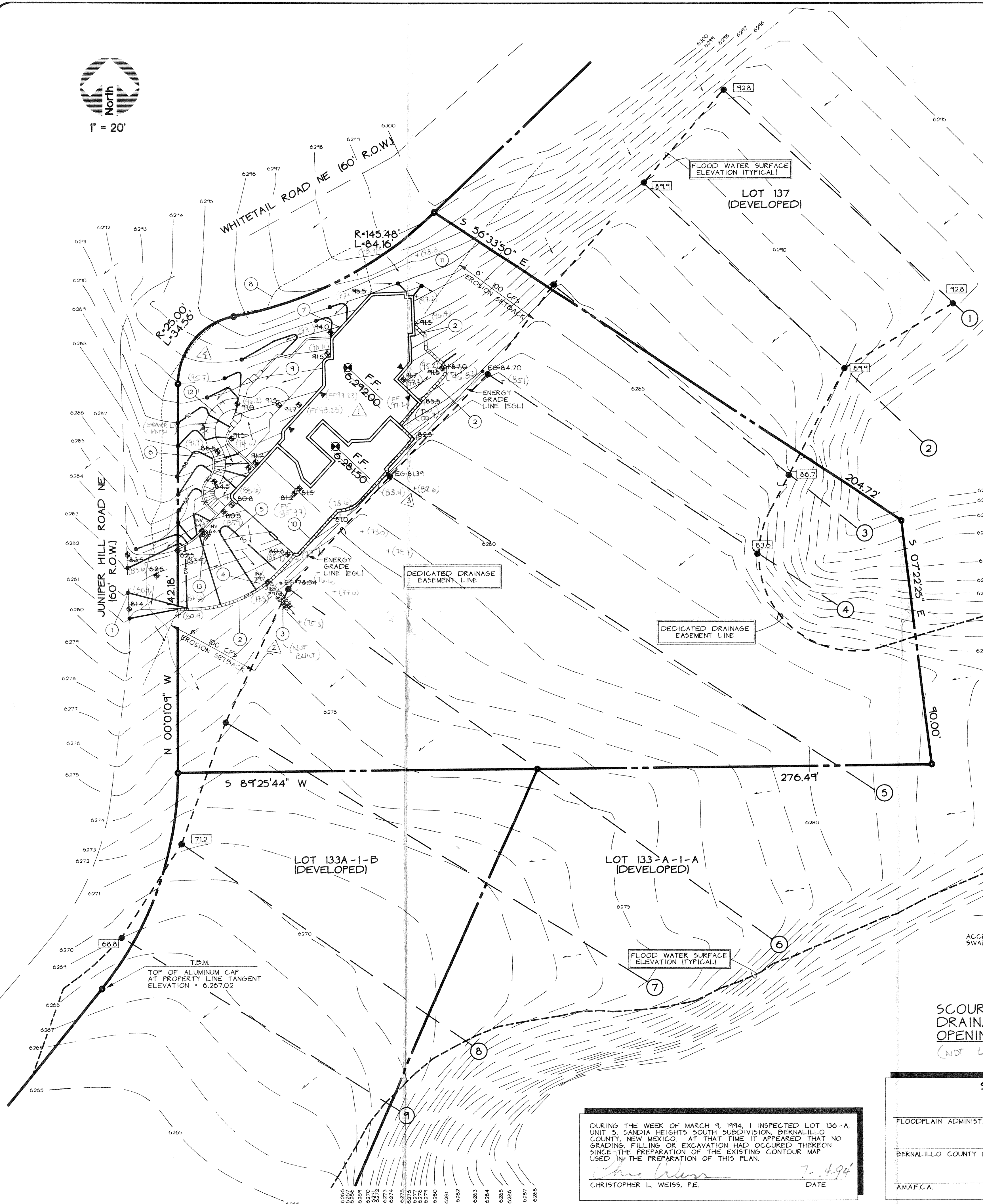
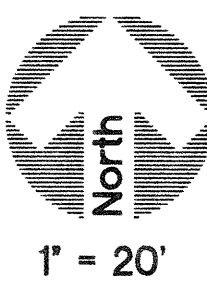
EXHIBIT A

(R) RECORD
(C) CALCULATED

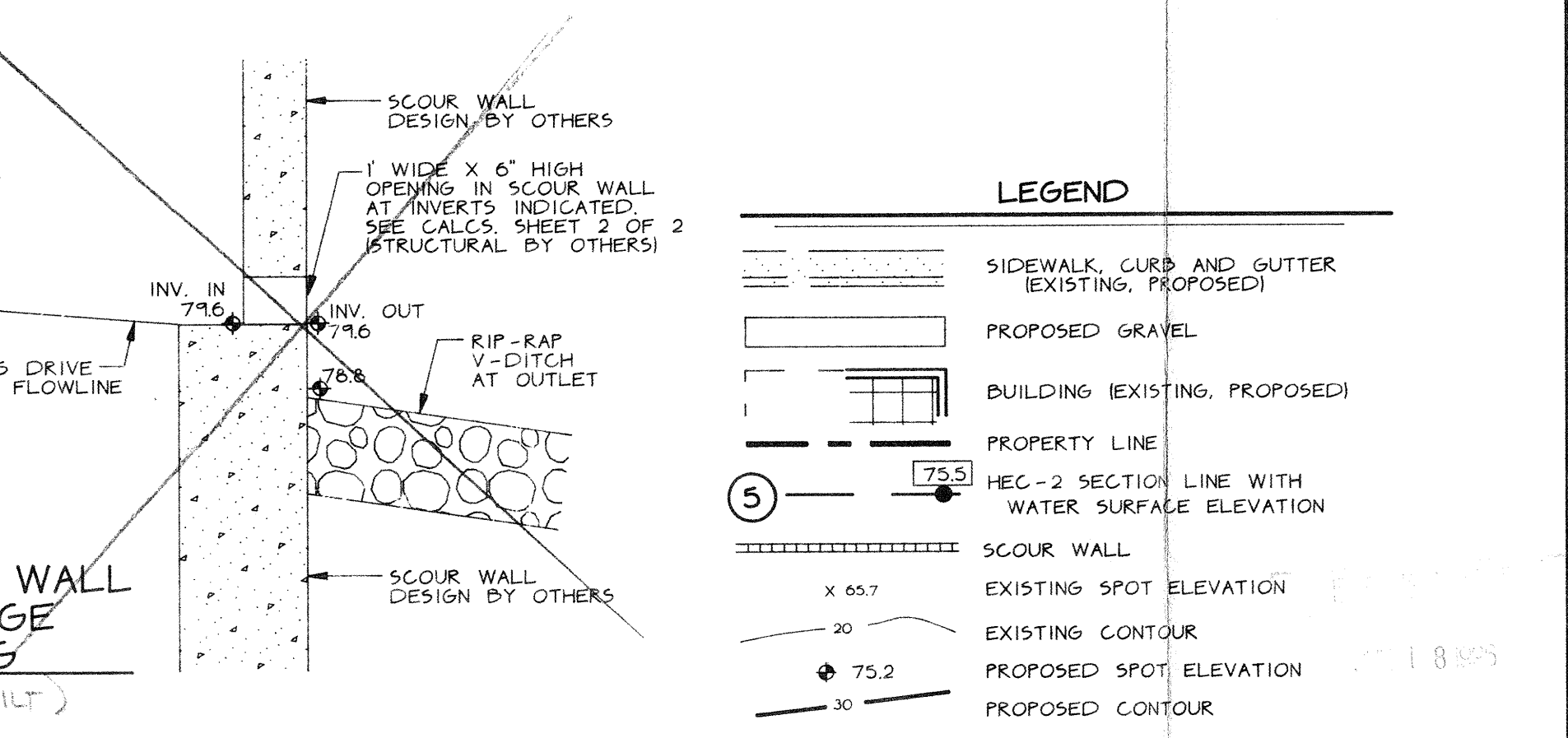


A certain parcel of land situate within the exterior boundaries of Lot 136A as the same is shown and designated on the plat entitled "REPLAT OF LOTS 200, 201, 133, 136, 142 and 143, SANDIA HEIGHTS SOUTH, UNIT 2," filed in the office of the County Clerk of Bernalillo County, New Mexico on December 11, 1970, in Book C7, Page 175 and being more particularly described by metes and bounds as follows:

Beginning at the northwest corner of the parcel herein described a point on the North line of said Lot 136A, whence the northwest corner of said Lot 136A bears N 56° 33' 50" W, a distance of 50.00 feet; thence, S 56° 33' 50" E, a distance of 109.54 feet along said North line of said Lot 136A to the northeast corner of the parcel herein described; thence, S 27° 20' 12" W, a distance of 23.96 feet to a point of curvature; thence, Southeasterly, a distance of 81.69 feet along the arc of a curve bearing to the left and having a radius of 35.00 feet (said arc having a long chord which bears S 39° 31' 40" E, a distance of 64.37 feet) to a point of tangency; thence, N 73° 36' 28" E, a distance of 13.32 feet to a point on the East line of said Lot 136A; thence, S 07° 22' 25" E, a distance of 47.06 feet along said East line of Lot 136A to the southeast corner of the parcel herein described; thence, S 89° 25' 44" W, a distance of 265.61 feet along the South line of said Lot 136A to the southwest corner of the parcel herein described; thence, N 20° 05' 58" E, a distance of 19.51 feet to a point; thence, N 24° 52' 06" E, a distance of 53.87 feet to a point; thence, N 42° 11' 29" E, a distance of 55.59 feet to a point; thence, N 43° 56' 54" E, a distance of 51.74 feet to a point; thence, N 36° 09' 02" E, a distance of 38.65 feet to the northwest corner and point of beginning of the parcel herein described and containing 0.6220 acres more or less.



RETAINING WALL STATIONING - PROFILE
 HORIZONTAL SCALE • 1" = 20'
 VERTICAL SCALE • 1" = 5'



SIGNATURES

FLOODPLAIN ADMINISTRATOR	DATE
BERNALILLO COUNTY PUBLIC WORKS	DATE
ANAF.C.A.	DATE

LEGEND

[Symbol]	SIDEWALK, CURB AND GUTTER (EXISTING, PROPOSED)
[Symbol]	PROPOSED GRAVEL
[Symbol]	BUILDING (EXISTING, PROPOSED)
[Symbol]	PROPERTY LINE
[Symbol]	HEC-2 SECTION LINE WITH WATER SURFACE ELEVATION
[Symbol]	SCOUR WALL
[Symbol]	EXISTING SPOT ELEVATION
[Symbol]	EXISTING CONTOUR
[Symbol]	PROPOSED SPOT ELEVATION
[Symbol]	PROPOSED CONTOUR
[Symbol]	SURFACE FLOW DIRECTION (EXISTING, PROPOSED)
[Symbol]	LA LANDSCAPED AREA
[Symbol]	T&W TOP OF GRADE WALL (< 18" HIGH)
[Symbol]	TRW TOP OF RETAINING WALL (> 18" HIGH)
[Symbol]	TA TOP OF ASPHALT
[Symbol]	TC TOP OF CURB
[Symbol]	FL FLOW LINE
[Symbol]	FF FINISHED FLOOR
[Symbol]	R/W RIGHT OF WAY
[Symbol]	PL PROPERTY LINE
[Symbol]	ST SEPTIC TANK

KEYNOTES

- PAVED DRIVE MATCH EXISTING ELEVATIONS AT ENTRANCE TO PROVIDE A SMOOTH RIDING TRANSITION.
- CONSTRUCT SCOUR WALL THIS AREA SEE PLAN / PROFILE AT LEFT FOR GENERAL INFORMATION (STRUCTURAL DESIGN BY OTHERS).
- PROVIDE 1' WIDE X 6" HIGH OPENING IN WALL AT LOW POINT. CONSTRUCT 3' WIDE RIP-RAP PAD TO CHANNEL BED AT OUTLET FOR EROSION PROTECTION.
- PROVIDE 1' WIDE X 6" HIGH OPENING IN RETAINING WALL AT INVERTS INDICATED ON PLAN.
- CONSTRUCT A SHALLOW SWALE AT ELEVATIONS INDICATED TO CARRY FLOWS EAST.
- CONSTRUCT SHALLOW SWALE THIS AREA. STABILIZE WITH LANDSCAPING, COBBLES, AND/OR NATIVE SEEDING.
- CONSTRUCT RETAINING / EXTENDED STEM WALLS AT PROPOSED RESIDENCE TO MAINTAIN ELEVATIONS SHOWN ON PLAN. DESIGN BY OTHERS.
- EXTENT OF BASIN FLOWS CROSSING DRIVE.
- GRADE INTERIOR COURTYARD TO DRAIN THROUGH GATEWAY AS SHOWN.
- SEE ARCHITECTURAL FOR ROOF OUTLET LOCATIONS. PROVIDE 3' WIDE RIP-RAP V-DITCH TO CHANNEL BED FOR EROSION PROTECTION AT ALL DRAINAGE OUTLETS ON CHANNEL SIDE.
- INSTALL SEPTIC TANK AND LEACHFIELD THIS AREA, PER COUNTY STANDARDS.
- STAIR / WALK SHOWN ON PLAN REPRESENTS GENERAL CONCEPT TO ACCESS ENTRY. SEE ARCHITECTURAL FOR ACTUAL DESIGN.
- PROVIDE 3' X 3' X 1' DEEP RIP-RAP SPLASH PAD AT OUTLET FOR EROSION PROTECTION (NOT REQ'D FOR ASPHALT OR CONC. DRIVE)

THE SCOUR / RETAINING WALL INFORMATION AT LEFT REPRESENTS MINIMUM DESIGN REQUIREMENTS. SEE STRUCTURAL DESIGN OF SCOUR WALL BY ENGINEERING ASSOCIATES FOR ACTUAL WALL / FOOTING DESIGN.

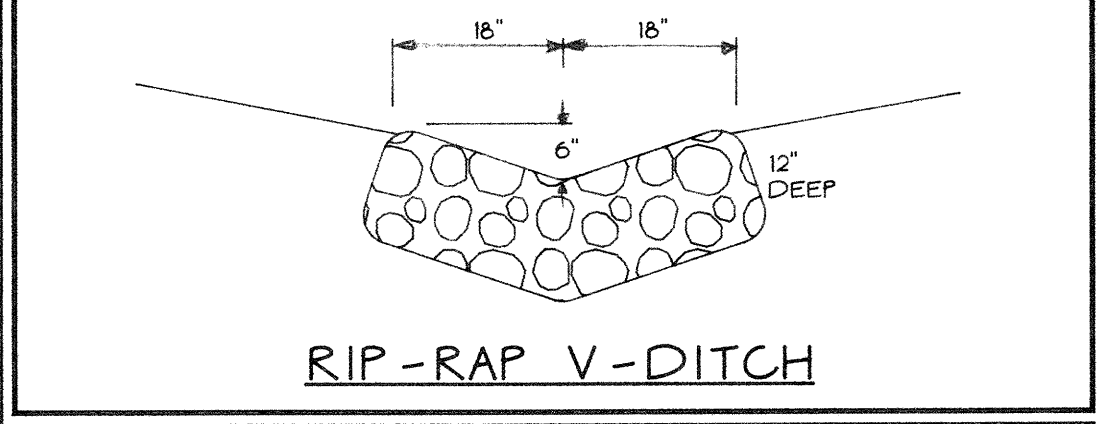
AREAS OF MODIFICATION BETWEEN APPROVED DRAINAGE GRADING PLAN AND ACTUAL AS-BUILT

- As-built F.F. Elevation approx. 5' above designed F.F. Elevation. Drainage opening in scour wall not constructed. Flows from the north now cross at the property line and go around the wall.
- Elevation differences shown within the drainage easement adjacent to the midpoint of the building will have an insignificant effect on channel flows. No remedial actions are recommended.
- Additional loop driveway constructed at northwest corner of property.

I, Christopher L. Weiss, P.E. hereby certify that the as-built information shown, although not in compliance with the approved grading plan, sufficiently addresses the drainage requirements established in the approved drainage / grading plan.

Christopher L. Weiss 5-29-96
 Christopher L. Weiss, P.E. LICENSE #46653 Date

NOTE: THE FOLLOWING APPLIES TO ALL RIP-RAP ON-SITE:
 PERCENT PASSING
 8" - 100%
 6" - 50%
 4" - 0%



C.L. WEISS ENGINEERING, INC.

	SANDIA PARK OFFICE	
	POST OFFICE BOX 97 SANDIA PARK, NM 87047 (505) 281-1800	
	ALVARADO OFFICE	
	100 ALVARADO DR. NE ALBUQUERQUE, NM 87110 (505) 266-3444	

Revisions

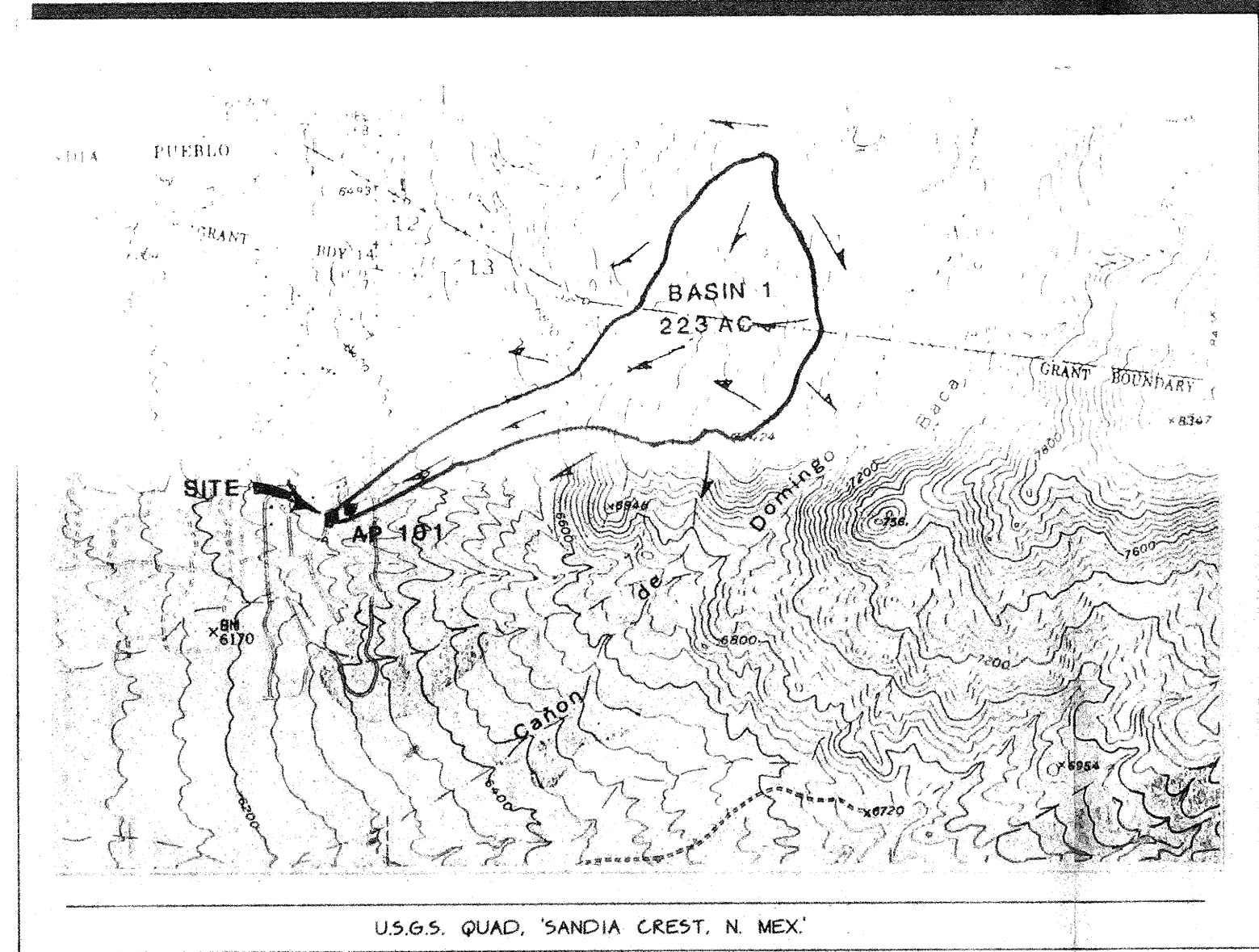
**HARMON RESIDENCE
ULTIMA HOMES INC.**

Scale: 1" = 20'	Drawn By: BJB	Checked By: CLW	Job Number:	Date: JULY 1994
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D:\ULTIMA\06 07/13/94 10:41:48

Sta	Q	ALOB	ACH	AROB	A tot	TOPWID	b eff	b' eff	V	D	F	q = yc = Ds	E	t	c	l	a	tot		
1	559	3.0	68.3	1.4	72.7	99.25	96.2	86.6	7.69	0.73	1.58	5.8	1.02	1.31	1.65	0.00	0.06	1.13	0.81	1.99
2	559	5.1	65.5	3.3	73.9	96.57	91.1	82.0	7.56	0.77	1.52	6.1	1.05	1.31	1.65	0.00	0.06	1.16	0.78	2.00
3	559	3.4	65.4	1	69.8	106.70	103.3	93.0	8.01	0.65	1.74	5.4	0.97	1.32	1.65	0.00	0.05	1.05	0.88	1.98
4	559	0.9	66.4	0.7	68.0	110.26	109.0	98.1	8.22	0.62	1.84	5.1	0.94	1.33	1.67	0.00	0.05	1.02	0.92	1.99
5	559	0.9	66.8	0.8	68.5	119.53	118.4	106.5	6.32	0.74	1.29	4.7	0.88	1.03	1.36	0.00	0.06	0.94	0.55	1.54
6	559	5.7	71.1	2.1	78.9	115.23	109.5	98.6	7.08	0.68	1.51	5.1	0.93	1.16	1.46	0.00	0.05	0.97	0.69	1.71
7	559	5.6	69.1	0.5	75.2	119.19	114.4	102.9	7.43	0.63	1.65	4.9	0.91	1.19	1.49	0.00	0.05	0.94	0.76	1.74
8	770	4.5	96.2	0.1	100.8	110.75	108.2	97.4	7.64	0.37	1.47	7.1	1.12	1.42	1.82	0.00	0.07	1.25	1.22	2.47
9	770	3.9	98.4	1.2	101.4	104.74	99.9	83.3	3.43	0.37	1.47	7.1	1.12	1.42	1.82	0.00	0.07	1.25	1.22	2.47

SCOUR ANALYSIS DATA



OFFSITE DRAINAGE BASIN

Version 4.6.2; May 1991

NOTE: ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

UNM

SUMMARY PRINTOUT TABLE 150

SECTNO	XLCH	ELTRD	ELLC	ELNIN	Q	CUSEL	CRWS	EG	104KS	VCH	AREA	.01K
1.000	.00	.00	.00	92.00	559.00	92.78	93.06	93.76	655.47	8.03	72.62	21.83
2.000	46.00	.00	.00	89.00	559.00	89.85	90.15	90.86	605.28	8.21	73.83	22.72
3.000	44.00	.00	.00	86.00	559.00	86.70	87.02	87.76	822.25	8.37	69.85	19.49
4.000	35.00	.00	.00	83.00	559.00	83.62	83.95	84.70	933.95	8.36	67.96	18.29
* 5.000	52.00	.00	.00	80.00	559.00	80.75	80.90	81.39	431.59	6.40	88.54	26.91
6.000	58.00	.00	.00	76.50	559.00	77.49	77.74	78.34	640.06	7.54	78.98	22.10
7.000	43.00	.00	.00	73.00	559.00	74.40	74.66	75.31	797.51	7.74	75.17	19.79
* 8.000	56.00	.00	.00	70.00	770.00	71.17	71.43	72.13	451.99	7.91	100.87	36.22
9.000	39.00	.00	.00	67.00	770.00	68.84	69.21	70.07	610.93	8.99	91.14	31.15

HEC-2 WATER SURFACE PROFILES

HYMO SUMMARY TABLE (HYMO392) - ANAPCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MM/DD/YY) = 05/14/1992 INPUT FILE = 1136ash.dat USER NO. = C.WEISS_692

COMMAND	HYDROGRAPH ID	ID	AREA (SQ MI)	DISCHARGE (CFS)	RURKFF (AC-FT)	RURKFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NH HYD	101.00	- 1	.35000	558.88	24.371	1.30557	1.633	2.495	PER IMP= 2.00
COMPUTE NH HYD	102.00	- 2	.14000	269.96	6.270	1.10754	1.500	3.013	PER IMP= 5.00
ADD HYD	103.00	14 2 1	.49000	769.85	32.640	1.24899	1.567	2.454	
COMPUTE NH HYD	104.00	- 2	.11700	228.97	7.104	1.13846	1.500	3.038	PER IMP= 5.00
ADD HYD	105.00	14 2 3	.60700	972.10	39.744	1.22768	1.567	2.502	
FINISH									

HYMO SUMMARY

SCOPE: The proposed improvements includes an approximately 3,000 SF (footprint) private residence with associated driveway, walks, and patio areas. Septic tank and leach field to be located in the area indicated on the plan. Approximately 130 lf of scour wall will be constructed at the east side of the house to protect the property from flood run-off.

The present site is undeveloped land with a usable portion of the lot sloping at 20% to the south. The southeast majority of the property (71% of the lot) is a dedicated drainage easement.

The intent of this plan is to show:

- Grading relationships between the existing ground elevations and proposed finished elevations in order to facilitate positive drainage to designated discharge points.
- The extent of proposed site improvements, including buildings, walks and pavement.
- The flow rate/volume of rainfall runoff across or around these improvements and methods of handling these flows to meet County requirements for drainage management.
- The relationship of on-site improvements with existing neighboring property to insure an orderly transition between proposed and surrounding grades.

DRAINAGE PLAN CONCEPT: All run-off from the site will drain to the major arroyo southeast of the house location. Flows from the west basin will be captured in a shallow swale and directed south where they will cross the drive and enter the arroyo.

GENERAL NOTES:

LEGAL: Lot 136 A Sandia Heights South, Unit 2, Bernalillo County, NM.

SURVEYOR: Southwest Surveying Co, Albuquerque, New Mexico

B.M.: "1C24", a standard ACS brass tablet set in the top of a concrete post projecting 0'2" and located at the crest of a small rise 226' east of Big Horn Ridge, 0.4 mile southeast of the intersection with White Oak Road. Elevation = 6,953.00

I.B.M.: Top of aluminum cap at tangent point on lot 133 A 1 B, approximately 83' south-southwest of southwest property corner. Elevation = 6,267.02

SOILS: SCS Soil Survey of Bernalillo County indicates that the soil is Embudo Tijeras complex (eTc), a gravelly fine sandy loam classified in Hydrologic Soil Group B.

FLOOD HAZARD: Per FEMA Boundary Maps and the Subdivision plat, a floodzone (drainage easement) crosses the east portion of the property.

OFF-SITE DRAINAGE: A small area adjacent to the road slopes toward the site. Flows from this area are insignificant and are routed around the house via the finished grading. Flows in the major arroyo located in the drainage easement on the east side of the property are described below.

FLOOD ZONE FLOWS: The offsite drainage basin which discharges its flows across the east portion of the lot is 223 acres in size. Using the AHYMO output, the peak discharge rate is 559 cfs. These flows were analyzed for flood level and scour depths by Dr. Richard Heggen. A summary of his findings follows:

- This section of the flood plain is a wide, straight, steep reach where the 100 year flow rarely exceeds one foot in depth.
- There will be roughly one foot of surge wave action, but not standing oblique waves initiated by channel geometry.
- HEC-2 results show the dedicated drainage easement accommodating the high-water mark.
- Scour analysis shows a worst case total depth of 2.53' at section 9 (see plan) and a worst case total depth adjacent to the proposed construction of 1.99'. Normal footing burial of two feet must be added. Total depth of scour wall below the existing channel bed to be footing depth (2') + scour depth (2.5') = 4.5' (unless solid rock is encountered at a shallower depth).

Recommendations: Wall footings are not jeopardized by foreseeable channel changes, but structural design should presume that the streamside sediment has been washed away to the total shown scour depths.

CALCULATIONS: Calculations are based on the Drainage Design Criteria for Bernalillo County, Section 22.2, DPM, Vol 2, dated Jan., 1993

AREA OF SITE: 42340 SF = 0.97 Ac.

ON-SITE		EXCESS PRECIPITATION:	
On-Site Land Condition	On-Site Historic Flow Rate	Precep. Zone	4
Area a = 30000 SF	Area a = 30000 SF	Ea =	0.80
Area b = 4340 SF	Area b = 12340 SF	Eb =	1.08
Area c = 3000 SF	Area c = 0 SF	Ec =	1.46
Area d = 5000 SF	Area d = 0 SF	Ed =	2.64
Total Area = 42340 SF	Total Area = 42340 SF		

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

Weighted E = $\frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$

Proposed E = 1.09 in. Historic E = 0.88 in.

On-Site Volume of Runoff: V360 = $\frac{E \cdot A}{12}$

Proposed V360 = 3856 CF Historic V360 = 3111 CF

On-Site Peak Discharge Rate: $Qp = QpaAa + QpbAb + QpcAc + QpdAd / 43,560$

For Precipitation Zone 4

Qpa = 2.20 Qpb = 3.73
Qpc = 2.92 Qpd = 5.25

Proposed Qp = 2.7 CFS Historic Qp = 2.3 CFS

WEST BASIN DRAINING OVER DRIVE

From field inspection and FEMA contour map analysis:

Flows crossing drive = 5000.0 SF = 0.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right.

Off-Site Weighted Excess Precipitation (see formula above)

Weighted E = 1.93 in.

Off-Site Volume of Runoff (see formula above)

V360 = 805 CF

Off-Site Peak Discharge Rate: (see formula above)

Qp = 0.5 cfs

TREATMENT	
A =	0%
B =	0%
C =	60%
D =	40%

WALL OPENING INLET CAPACITY

Using Weir Formula, $Q100 = CLH^{3/2}$, with $C = 2.68$, $L = 1.0'$, and $H = 0.5'$

Q100 = 0.95 cfs available
0.5 cfs required OK

1' wide x 6" high opening in retaining walls (see plan) has adequate capacity to carry flows.

KEYNOTES

VICINITY MAP # C-23-Z



FEMA MAP # 11



C.L. WEISS ENGINEERING, INC.

SANDIA PARK OFFICE
POST OFFICE BOX 17
SANDIA PARK, NM 87047
(505) 281-1800

ALVARADO OFFICE
100 ALVARADO DR. NE
ALBUQUERQUE, NM 87110
(505) 266-3444

Revisions

**HARMON RESIDENCE
ULTIMA HOMES INC.**

Scale: N.T.S. Drawn By: BJB Checked By: CLW Job Number: Date: JULY 1994

**DRAINAGE AND
GRADING PLAN**

C2
SH. 2 OF 2