



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 26, 1994

Jeff Mortensen, P.E.
Jeff Mortensen & Assoc.
6010-B Midway Park Blvd NE
Albuquerque, N.M. 87109

RE: GRADING & DRAINAGE PLAN FOR VINEYARD ESTATES UNIT IV (G-20/D3G)
RECEIVED SEPTEMBER 26, 1994 FOR WORK ORDER APPROVAL
ENGINEER'S STAMP DATED 09-23-94

Dear Mr. Mortensen:

Based on the information included in the submittal referenced above and the supplemental calculations submitted 09-21-94, City Hydrology approves this Project for Work Order.

Engineer's Certification of grading & drainage, per DPM checklist, must be approved before the Financial Guaranty will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Billy Goolsby, DRC - Project #3391.96
Andrew Garcia, Permits

WPHYD/8435/jpc

VINEYARD ESTATES, UNIT 4 NORTH POND ANALYSIS

INTRODUCTION

Vineyard Estates, Unit 4 is presently under construction. The project is located east of Ventura Street NE and South of Wilshire Avenue NE in a portion of North Albuquerque Acres recently annexed into the municipal limits of the City of Albuquerque. As a part of the development of the subdivision, public storm drainage improvements are being provided which benefit not only Vineyard Estates but upstream county land as well. In particular, an interim detention pond is under construction which accepts runoff from 2 county basins. The pond, located in the northern section of Vineyard Estates (see attached exhibit), is designed to manage fully developed flows from these two basins. The development potential of the county land is at 1 DU/acre per existing county A-1 zoning. As designed the pond has a maximum storage capacity of 3.98 acre feet.

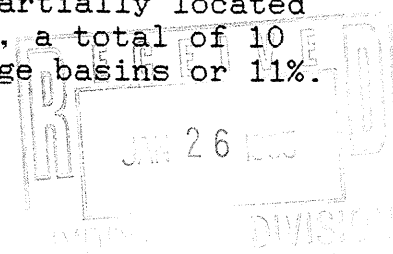
It has been determined that the pond may not be large enough to properly manage fully developed upstream runoff. This report studies the capacity of the pond, and outlines possible drainage management options for the contributing county drainage basins.

PROBLEM STATEMENT

Upon review of the project hydrology prepared by Jeff Mortensen & Associates, Inc (JMA), it was noticed that the land treatment percentages utilized in the AHYMO computer program are not in accordance with those typically required by the County for developed land in North Albuquerque Acres. The land treatment values used by JMA are: A=66%, B=0%, C=17%, D=17%. Land treatment values typically required by the County are: A=43%, B=20%, C=20%, D=17%. Analysis of the pond, utilizing county criteria, indicates that the pond capacity will be exceeded as a result of full development of upstream drainage basins. As a result of this apparent capacity limitation, all pending land development projects located within the upstream drainage basins contributing to the pond have been disapproved.

INVENTORY OF EXISTING DEVELOPMENT

A visual inventory of existing development within the 2 county drainage basins contributing to the pond was made by this office on December 5, 1994. The results of the inventory are illustrated on the attached exhibit. As shown by the exhibit, 97 lots are located within the 95 acre drainage basin. Seven developed lots are located totally within the basins. Another 5 developed lots and 3 lots in Del Arroyo are partially located within the basins. Under existing conditions, a total of 10 acres are developed within the 95 acre drainage basins or 11%.



Also, as shown by the exhibit, another 8 lots, or portions thereof, are pending drainage approval. Of the remaining 74 undeveloped lots, approximately 6 have limited development potential due to presence of arroyos or drainage features.

FUTURE STORM DRAINAGE IMPROVEMENTS

Future drainage improvements are planned for this area which will divert runoff from the 2 county drainage basins south to the North Domingo Baca Arroyo. As outlined in the "North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Management Plan", prepared by Resource Technology, Inc., storm drains are recommended in Holbrook, Ventura and Alameda Blvd (presently Wilshire Ave) which will collect and convey flows from the subject basins south to an improved section of the North Domingo Baca Arroyo. Once the Holbrook storm drain is constructed the county basins will be reduced to approximately 29 acres. At this time any deficiencies in the Vineyard Estates north pond will be eliminated. Upon construction of Alameda Boulevard, storm drains will be provided to convey the remaining county basins to the Ventura storm drain, thereby eliminating the need for the interim pond.

POND ANALYSIS

The following analysis of the Vineyard Estates Unit 4 north pond is provided to test the capacity of the pond and thereby determine if the upstream County drainage basins may develop without limitations prior to the construction of future storm drainage improvements. The pond was analyzed by editing the AHYMO input file prepared by JMA to upgrade the land treatment values to North Albuquerque Acres typicals. Next, various sediment bulking factors were applied to give a range of output for comparison.

1. As designed by JMA, the maximum storage required is 3.6646 acre feet. Storage to the spillway elevation (82.00) which is the flowline of the adjacent street is 3.98 acre feet. No provision is made for sedimentation.
2. Per the attached table, runoff from the upstream county basins under existing conditions, including a 20% sediment bulking factor, can be easily managed by the pond.
3. If the pond water surface is allowed to reach top of curb elevation (82.7) the pond will adequately manage the developed county basins, without sediment bulking.
4. Under fully developed conditions with a 20% sediment bulking factor, per county criteria, the pond capacity will be exceeded by approximately 2.32 acre feet.

HYDROLOGY COMPARISION AT VINEYARD NORTH POND						
ALL VALUES ARE FOR ZONE 3 RAINFALL						
	CONDITION	Q100(IN)	Q100(OUT)	STORAGE	VOL100	WSE
DEVELOPED PER JMA		145.9 cfs	54.4 cfs	3.6646 af	7.7752 af	81.56
DEVELOPED	SBF=1.0	165.7	60.5	4.5033	8.6768	82.72
DEVELOPED	SBF=1.1	182.1	60.7	5.4077	9.5445	83.98
DEVELOPED	SBF=1.2	198.6	73.4	6.2969	10.4122	85.21
EXISTING	SBF=1.2	123.8	48.3	2.8951	6.2141	80.45

DEVELOPMENT LIMITATIONS

Ideally, the County would prefer the pond to have capacity to safely manage the fully developed county basins with a 20% sediment bulking factor. Utilizing this criteria the storage required would be 6.30 acre feet, roughly 2.32 acre feet more than the current pond capacity.

By utilizing developed conditions with a 20% sediment bulking factor as the design storm, the percentage of the county basins that can safely develop without exceeding the pond capacity could be determined as follows:

Let the pond water surface reach top of curb elevation at the spillway (82.7)

max storage = 4.5033 af
Q100 = 165.7 cfs
V100 = 8.6768 af

The increased volume due to development is the difference between existing and developed conditions allowing for a 20% sediment bulking factor.

$10.4122 \text{ af} - 6.2141 \text{ af} = 4.1981 \text{ af}$

The volume increase is limited to the maximum volume routed through the pond @ maximum WSE = 82.7:

$8.6768 \text{ af} - 6.2141 \text{ af} = 2.4627 \text{ af}$

The percentage of development without future SD improvements or pond modifications is:

$2.4627 / 4.1981 = 59\%$

Total basin area = 0.1482 sq mi = 94.85 acres

$0.59(94.85) = 56 \text{ acres}$, roughly 56-1 acre lots

15 lots are presently developed within the basins.
This leaves $56 - 15 = 41$ lots which can develop without future SD improvements or pond modification.

This analysis demonstrates that development can proceed within the subject drainage basins for some period of time before future improvements will be necessary to protect downstream property from flooding. The form of improvements necessary and the timing of their construction is dependent on factors beyond the scope of this document. As previously described, future storm drainage improvements are planned in Holbrook Street, Ventura Street and Alameda Boulevard. Assuming the Holbrook storm drain is constructed before the next 41 lots develop within the basin, pond capacity will never be exceeded. The question

is, how long will it take for the next 41 lots to develop? Presently there are 15 developed lots in the basins. Of these, 7 have developed within the last 2 years. It's difficult to estimate whether development will proceed at this rate in the near future. There are other factors to consider which could effect development. Basin "C" contains a well defined arroyo channel which presents drainage, grading and erosion problems to many of the lots within the basin. Development will be very difficult, but not impossible. And of course, mortgage interest rates have a direct bearing on the residential housing market. The recent rise in the prime lending rate will surely effect development.

If we conservatively assume that between 7 and 10 lots develop each year, it would take between 4 and 6 years for the basin to exceed it's safe level of development. At that time either the Holbrook storm drain must be in place, or modifications to the pond should be made.

The Holbrook storm drain is not presently programmed for construction. Funding for the project would likely come from the County or AMAFCA. Given the rate of development in the area, it is not unreasonable to anticipate that this project would occur within the next 5 years. If the Holbrook storm drain is not in place when needed, and the pond requires modification, expansion of the pond would likely occur north into the right of way reserved for Alameda Boulevard. Right of way was dedicated by Vineyard Estates, Unit 4 for the future construction of Alameda. It is safe to assume that Alameda would not be built without the required storm drainage improvements in place, therefore, the pond would not exist simultaneously with, nor interfere with, the future street improvements.

Expanding the pond 60 feet north to the pre-existing south right of way of Wilshire (future Alameda) will increase the pond storage capacity by 2.3 acre feet for a total of approximately 6.28 acre feet, which is large enough to accept runoff from the fully developed county basins.

CONCLUSIONS

In summary, the following conclusions can be made regarding the capacity of the pond and the development limitations within the contributing drainage basins:

1. The pond does not have capacity to manage fully developed runoff resulting from county basins, if excess runoff is calculated utilizing North Albuquerque Acres typical land treatment values as established by the County Public Works Department.
2. The pond does have capacity to manage flows from the county basins if development within the basins is limited to 59% of the total area.

3. The time it will take for the county basins to reach a 59% development level is roughly estimated at 4-6 years.
4. Future storm drainage improvements in Holbrook, Ventura and Alameda will divert the county basins to the North Domingo Baca Arroyo eliminating the need for the pond.
5. If the the county basins reach their safe development level before the storm drainage improvements are in place, the pond can be expanded to provide the additional storage required to manage fully developed county basins.

Given the findings listed above the County should allow development within the county basins to proceed. It would be the County's responsibility to monitor development in the area and determine when improvements are required.



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 4, 1995

**Jeff Mortensen, PE
Jeff Mortensen & Assoc.
6010-B Midway Park Blvd NE
Albuquerque, NM 87109**

**RE: GRADING PLAN FOR LOTS 87-89, 104, 105 & 107
VINEYARD IV (C-20/D3C)
RECEIVED MARCH 10, 1995 FOR GRADING PERMIT
ENGINEER'S STAMP DATED 03-09-95**

Dear Mr. Mortensen:

Based on the information included in the submittal referenced above, Sheet 6 looks acceptable. Be aware that the Grading Plan approved by the DRB is the only plan that has legal status. The Engineer's Certification must be based on the DRB approved Grading Plan dated 08-29-94.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

**John P. Curtin, P.E.
Civil Engineer/Hydrology**

**c: Andrew Garcia
John Mechenbier, Mechenbier Homes, P.O. Box 90938, Albuquerque 87199**



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 3, 1995

CERTIFICATE OF COMPLETION AND ACCEPTANCE

Vineyard Partnership
5729 Academy Road
Albuquerque, NM 87111

RE: PROJECT NO. 3391.87 VINEYARD ESTATES, PHASE IV (MAP NO. C-20)

Dear Sir:

This is to certify that the City of Albuquerque accepts Project No. 3391.87 as being completed according to approved plans and construction specifications. Please be advised this certificate of completion and acceptance shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

The project is described as follows:

- The project consisted of installation of water and sanitary sewer improvements, storm drainage improvements. Also placed paving, curb and gutter and sidewalk and retaining walls.

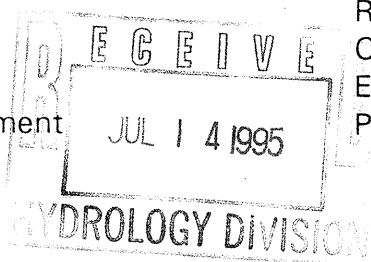
The contractor's correction period began the date of this letter, and was effective for a period of one (1) year.

Sincerely,

Rick Roybal, P.E.
City Engineer,
Engineering Group
Public Works Department

Sincerely,

Russell B. Givler, P.E.
Chief Construction Engineer,
Engineering Group
Public Works Department





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 14, 1995

Jeff Mortensen, PE
Jeff Mortensen & Assoc
6010-B Midway Park Blvd NE
Albuquerque, NM 87109

RE: ENGINEER'S CERTIFICATION FOR VINEYARD UNIT 4 (C-20/D3C)
RECEIVED JUNE 23, 1995 FOR SUBDIVISION CERTIFICATION
ENGINEER'S STAMP DATED 6-22-95

Dear Mr. Mortensen:

Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification of grading & drainage for Subdivision Certification. Contact the DRC Chairman, Billy Goolsby, to obtain the Financial Guaranty Release for City Project Number 3391.96.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Billy Goolsby, CPN 3391.96
Don Hoech, Hoech Real Estate Co, 6729 Academy Rd NE 87109

DRAINAGE CERTIFICATION

As indicated by the as-built information shown hereon:

1) House Pads

All house pad elevations were verified prior to the commencement of home construction and were as-built on August 29-31, 1994 and verified to be within 0.2 feet of the original approved Plan elevation. Pads which were not within 0.2 feet were regraded and rechecked as of September 6, 1994 and found to be per Plan. A plan revision dated March 09, 1995, was prepared for lots 87-90, 104, 105, and 107. This plan effectively lowered the pad elevations for lots 104, 105, and 107 by approximately one (1) foot and raised the pad elevations of lots 87-90 by approximately one (1) foot. The as-built elevations, obtained on May 15-19, 1995, substantiate that these pads are within 0.7 feet of the revised Plan grade and within 1.2 feet of the original approved Plan grade. In no case do the as-built pad elevations deviate by more than the allowable 18 inches. This plan has been included as sheet 7 of this Certification package. All pads have been graded in substantial compliance with the approved plan.

2) Curb and Gutter

The onsite curb and gutter elevations were as-built on June 14 and 15, 1995. The greatest difference in elevation from the approved Plan is 0.12 feet. The curb and gutter has been constructed in a manner consistent with the original approved Plan.

3) Trickle Channels

The onsite trickle channels were as-built on May 15-19, 1995. The grades for the trickle channels are within 0.13 feet of the original approved Plan elevation and drain in a manner consistent with the original approved Plan.

4) Backyard Grades

The backyard rough grades were as-built on May 15-19, 1995. These grades are within 1.2 feet of the original approved Plan elevations, which is within the rough grade tolerance of 1.5 feet. The backyard slopes for lots 9, 15, 20, 22, 32, 38, 40, 44, 51, 53, 55, 60, 61, 85, 86, 87, 92, 95, and 97 are less than 1% (one percent), but still drain in a manner consistent with the original approved Plan. The backyard slopes for lots 35, 37, 43, 45, 49, 57, 120 are less than 0.25% (one quarter of a percent). Finished grading for all lots shall be within 0.1 feet, and will be completed upon development of each lot by their respective builders. The finished lot elevations and slopes must conform with the original approved Plan.

5) Ponds

The original location and configuration of the Anaheim desedimentation pond is shown on sheet 6 of this set. During the course of construction, this Pond was redesigned and relocated offsite. The as-built configuration of this Pond is shown on sheet 8, Anaheim Sediment Pond Detail. A storm inlet has been placed in the pond to act as a standpipe and as a drain to insure that no standing water will remain in the pond for any prolonged periods of time. The Northeast and Southwest detention ponds, the Southeast retention pond, and the Northeast desedimentation pond were built in substantial conformance with the approved plan as indicated by the as-built elevations.

6) - Walls

A wall opening was not constructed on lot 36 because offsite development (by others) has removed the possibility of offsite flows from the east, thereby eliminating the need for a wall opening. These offsite flows now flow in a southeasterly direction, away from lot 36. Wall openings for lots 1-8, and 27-29 have been provided so as to allow for the drainage of their respective backyards onto the street. This has been done per the approved plan. The retaining wall as-builts for the site have been provided as part of this certification.

7) Lot Development

This plan also identifies the lots upon which houses have been completed or are under construction at the time of this Certification the lots are shown by an "H."

Therefore the site has been graded in substantial compliance with the approved plan. The above information was obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey G. Mortensen, NMPE 8547

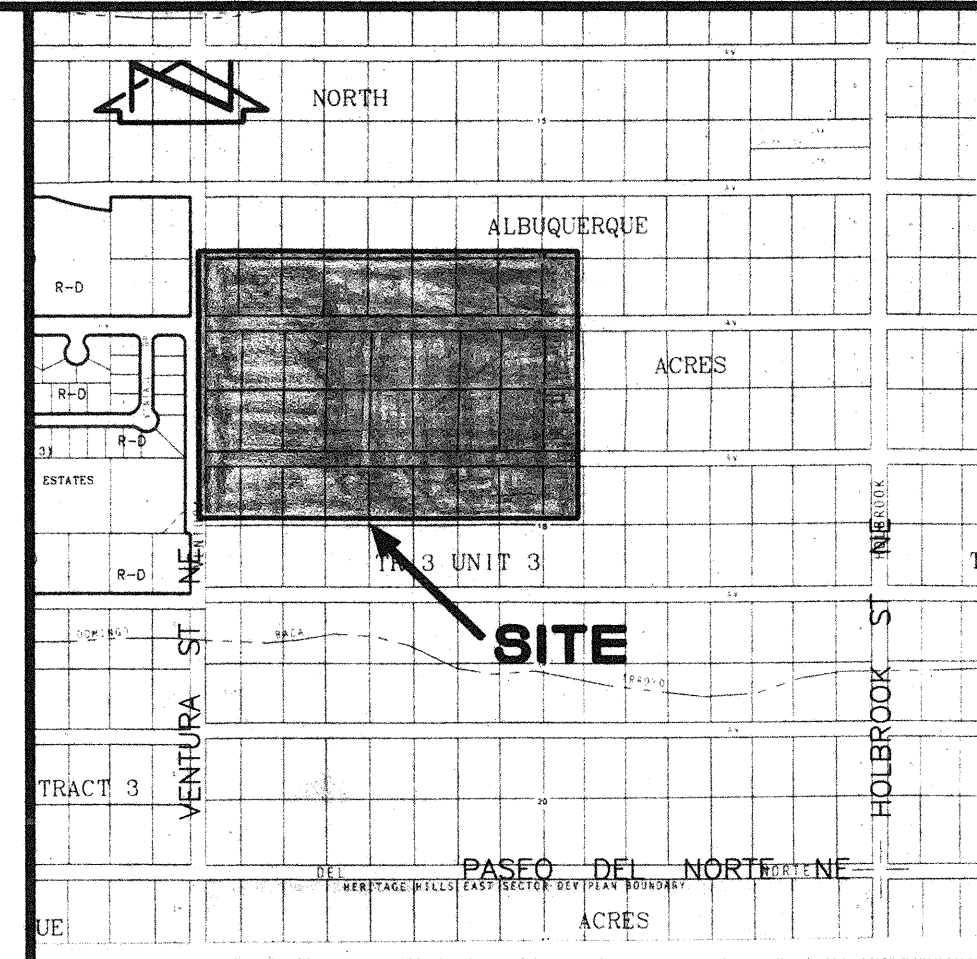


June 22, 1995

DRAINAGE CERTIFICATION for VINEYARD ESTATES UNIT IV ALBUQUERQUE, NEW MEXICO JUNE, 1995

INDEX OF DRAWINGS

SHEET	DESCRIPTION
1	COVER SHEET, VICINITY MAP, DRAINAGE CERTIFICATION AND INDEX OF DRAWINGS
2	GRADING AND DRAINAGE PLAN
3	GRADING AND DRAINAGE PLAN
4	NOTES, DETAILS AND SECTIONS
5	SECTIONS AND DETAILS
6	REVISED POND GRADING
7	GRADING PLAN FOR LOTS 87, 88, 89, 90, 104, 105 AND 107
8	ANAHEIM SEDIMENT POND DETAIL
9	RETAINING WALLS "A", "B", "C" AND "D" PLAN AND PROFILE
10	RETAINING WALL "E" PLAN AND PROFILE, RETAINING WALL "F" DETAIL



VICINITY MAP
SCALE: 1" = 750' (APPROX.)

C-20

AS-BUILT VOLUME FOR N.E. DETENTION POND

ELEV (ft)	AREA (sf)	VOL (cf)	EVOL (cf)
74.40	0	5,170.5	5,170.5
75.00	17,235	18,320.0	23,490.5
76.00	19,405	20,490.0	43,980.5
77.00	21,575	22,660.0	66,640.5
78.00	23,745	24,830.0	91,470.5
79.00	25,915	27,000.0	118,470.5
80.00	28,085	29,170.0	147,640.5
81.00	30,255	31,285.5	178,926.0
81.95	32,316		

As-Built Vol = 178,926 cf

V_{required} = 159,630 cf

V_{design} = 173,400

As-Built Vol > V_{required}

AS-BUILT VOLUME FOR S.W. DETENTION POND

ELEV (ft)	AREA (sf)	VOL (cf)	EVOL (cf)
41.6	0	3,752	3,752
42.0	18,760	19,803	23,555
43.0	20,846	21,889	45,444
44.0	22,932	23,975	69,419
45.0	25,018	26,061	95,480
46.0	27,104	28,147	123,627
47.0	29,190	30,233	153,860
48.0	31,276	32,319	186,179
49.0	33,362	34,405	220,584
50.0	35,448	36,491	238,568
50.5	36,491		

As-Built Vol = 238,568 cf

V_{required} = 169,280 cf

V_{design} = 223,500 cf

As-Built Vol > V_{required}

AS-BUILT VOLUME FOR S.E. POND/SPILLWAY

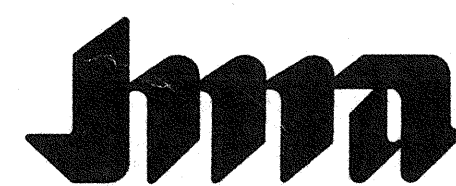
ELEV (ft)	AREA (sf)	VOL (cf)	EVOL (cf)
68	18,500	20,250.0	20,250.0
69	32,000	34,483.0	54,733.0
70	36,967	39,450.5	94,183.5
71	41,934	44,417.0	138,330.5
72	46,900		

As-Built Vol = 138,330.5

V_{required} = 135,500 cf

V_{design} = 135,500 cf

As-Built Vol > V_{required}



JEFF MORTENSEN & ASSOCIATES, INC.
6200-B MIDWAY PARK BLVD. NE
ALBUQUERQUE, NEW MEXICO 87109
ENGINEERS SURVEYORS (505) 345-4250

DESIGNED BY			DATE		BY		REVISIONS		JOB NO.	
M.F.D.			6/95		M.F.D.		COVER SHEET AND CERTIFICATION		930847	
DRAWN BY			T.N.T.				Vineyard Estates Unit IV		DATE	
APPROVED BY			J.G.M.				June 23, 1995		06-1995	
									SHEET	
									1 OF 10	

STREET FLOW ANALYSIS									
ANALYSIS POINT	Q ₁₀₀ (CFS)	SLOPE (FT/FT)	DEPTH (FT)	VELOCITY (FPS)	F _R	FLOW ACCEPTED BY INLETS (CFS)	RESIDUAL FLOW (CFS)	Y _{SEG} (FT)	
AP-2	27.7	0.017	0.46	4.0	1.04	N/A	27.7	0.48	
AP-3	37.7	0.025	0.47	5.0	1.29	32	5.7	0.65	
AP-4	22.6	0.005	0.52	2.6	0.64	N/A	22.6	N/A	
AP-5	29.4	0.005	0.57	2.9	0.67	26	3.4	N/A	
AP-6	17.6	0.029	0.38	4.2	1.20	N/A	17.6	0.48	
AP-7	33.4	0.029	0.45	5.0	1.31	N/A	33.4	0.64	
AP-8	45.5	0.028	0.49	5.7	1.43	N/A	45.5	0.78	
AP-9	62.1	0.009	0.68	4.6	0.98	44	18.1	N/A	
AP-10	4.3	0.018	0.24	2.8	1.00	2	2.3	N/A	

Depths and Velocities obtained from D.P.M. Plate 22.3 D-1
Inlet Capacities obtained from D.P.M. Plates 22.3 D-5,6
Sequent Depths calculated assuming Rectangular Channel

PIPE FLOW ANALYSIS				
ANALYSIS POINT	Q ₁₀₀ (CFS)	PIPE SIZE OUT (IN.)	SLOPE OUT (FT/FT)	MAXIMUM CAPACITY (CFS)
AP-15	54.4	30	0.045	93.8
AP-16	54.4	30	0.022	65.4
AP-17	92.1	36	0.025	113.4
AP-18	92.1	36	0.025	101.5
AP-19	21.0	36	0.010	71.8
AP-20	113.1	48	0.013	176.2
AP-21	26.0	24	0.064	61.3
AP-22	117.3	42	0.053	133.9
AP-23	196.0	48	0.019	213.0

Maximum Capacity Calculated from Manning's Equation using n = 0.013

The following items concerning the Vineyard Estates Unit IV Drainage Plan are contained herein:
1. Vicinity Map 2. Grading Plan 3. Sections and Details 4. Calculations

As shown by the Vicinity Map, the site is located on the east side of Ventura Street, between Alameda Boulevard N.E. on the north and Carnel Avenue N.E. on the south. The area is zoned RD as set forth in the Vineyard Sector Plan. The proposed development is single family residential.

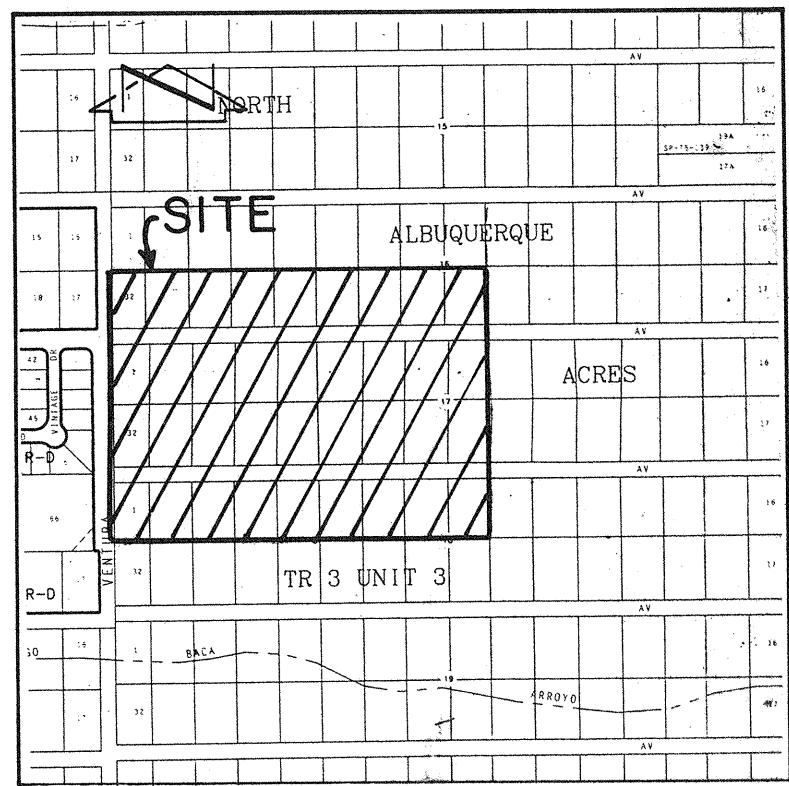
As indicated by Panel 10 of 50 of the National Flood Insurance Program Flood Insurance Rate Maps (FIRM) for the City of Albuquerque, New Mexico, dated October 14, 1983, the site lies in close proximity to the designated Flood Hazard Zone associated with the North Arroyo de Domingo Baca (NDB). The erosion setback associated with the North Domingo Baca Arroyo, based upon a peak flow of 471 cfs (from Ventura Street Drainage Study prepared by Jeff Mortensen & Associates, Bernalillo County Public Works Department, Case No. PWD 93-50) is (471 cfs) x (6.23/100 cfs) = 29.3 feet. The proposed subdivision is approximately 190' from the floodway limits at their closest point, hence the site lies outside the erosion setback limits. The floodway limits are delineated on the Grading Plan. Offsite flows impact the site. A detailed analysis of these flows can be found in the Vineyard Estates Unit IV Subdivision Master Drainage Plan prepared by Jeff Mortensen & Associates (Hydrology File C-20/D3C).

The Grading Plan shows: 1) existing and proposed grades indicated by spot elevations and contours at 1'0" intervals, 2) proposed pades, 3) limits of proposed street improvements, 4) limits of proposed storm drainage improvements, 5) offsite and onsite ponding areas, 6) proposed retaining walls and private drainage improvements, and 7) continuity between existing and proposed grades. The grading has been accomplished in a manner which is consistent with the Vineyard Estates Unit IV Master Drainage Plan (C20/D3C). The Master Drainage Plan identifies the developed drainage patterns by which the subdivision is to be graded. The detailed grading plan which follows conforms with the requirements of the Master Drainage Plan. Certain drainage facilities are only identified in this Plan. These improvements will be constructed by City Work Order and will be included in the construction plans for the construction of public infrastructure. The magnitude of offsite flows, as calculated by the Master Drainage Plan, have been superimposed onto this plan for reference. The offsite flows generated upstream from Ventura Street will be intercepted by that roadway and diverted south via new public storm drain to the on-site detention pond.

The maintenance of all ponds will be the responsibility of the Developer. The Developer will acquire the lands underlying all ponds and/or obtain permission via agreement to perform all offsite grading. This will be demonstrated prior to preliminary plat approval. All of the proposed and future improvements have been designed to conform with the North and South Domingo Baca and Paseo del Norte Corridor Drainage Management Plan prepared by R.T.I., as presented to and accepted by AMAFCA. The Developed Conditions Analysis presented in the Master Drainage Plan demonstrates that the peak rate of discharge from this site will be lessened for all rainfall events due to mitigation efforts. This includes a reduction of the peak discharge rates of all offsite flows which enter the site.

Specific notes related to the grading of the residential lots are included on Sheet 3 of this submittal. In particular, all runoff generated by these lots shall be directed to the public right-of-way, or to private drainage facilities to be constructed along the rear property lines of certain lots. Those lots are clearly depicted on the Grading Plan. Retaining walls are also required at various locations throughout the subdivision. The limits of those walls are graphically shown on the Grading Plan. Plan and profile designs and typical wall sections will be presented in conjunction with the Work Order Plans following preliminary plat approval.

The calculations which appear herein analyze the developed conditions for the 100-year, 24-hour rainfall event. The Procedure for 40-acre and Smaller Basins, as set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, the runoff to be generated onsite is equal to peak discharges identified in the Master Drainage Plan.



VICINITY MAP
SCALE: 1" = 750'

PROJECT BENCHMARK

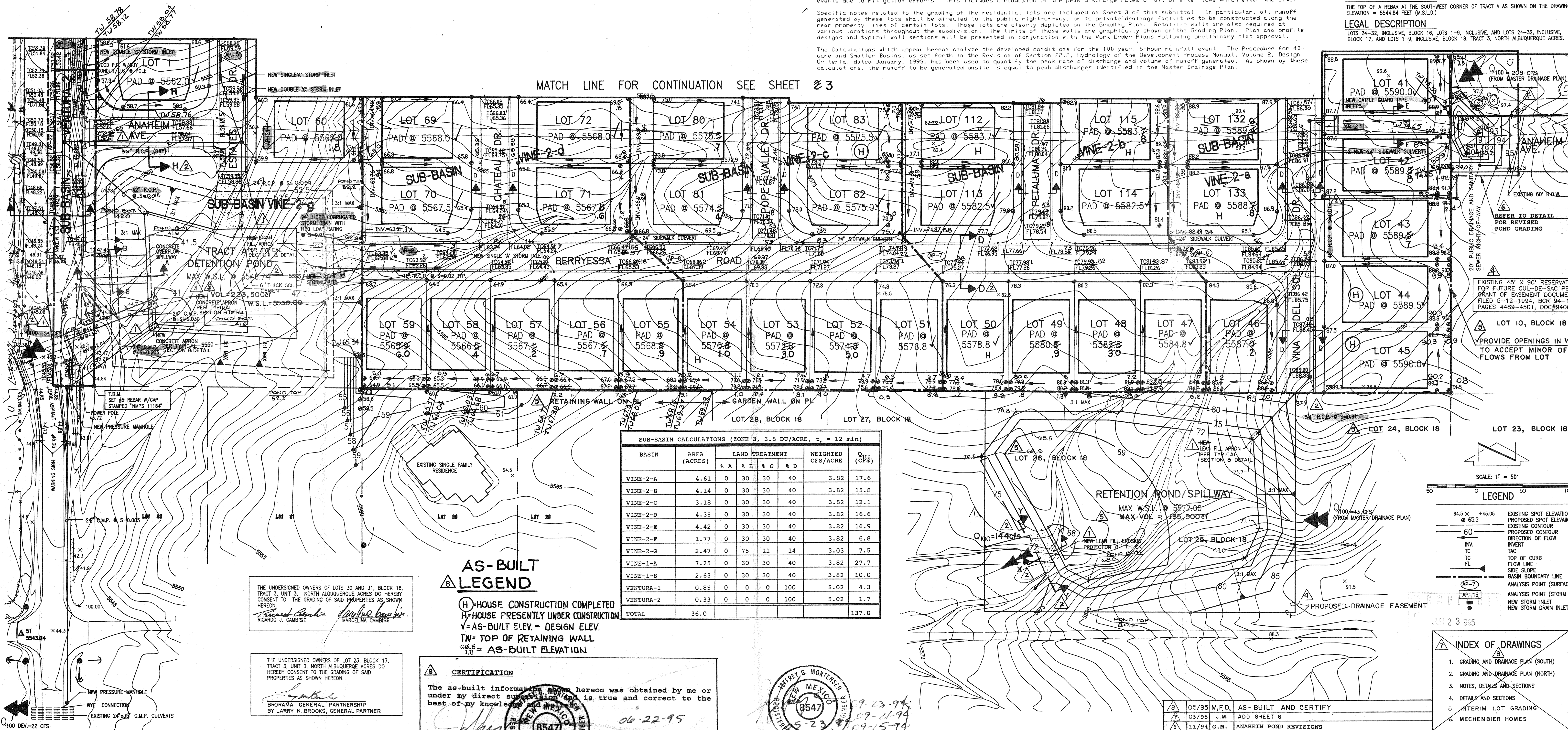
A STANDARD A.C.S. BRASS TABLET STAMPED "C21A-1978", SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND.
ELEVATION = 5548.84 FEET (M.S.L.D.)

T.B.M.

THE TOP OF A REBAR AT THE SOUTHWEST CORNER OF TRACT A AS SHOWN ON THE DRAWING.
ELEVATION = 5548.84 FEET (M.S.L.D.)

LEGAL DESCRIPTION

LOTS 24-32, INCLUSIVE, BLOCK 16, LOTS 1-9, INCLUSIVE, AND LOTS 24-32, INCLUSIVE, BLOCK 17, AND LOTS 1-9, INCLUSIVE, BLOCK 18, TRACT 3, NORTH ALBUQUERQUE ACRES.



SUB-BASIN CALCULATIONS (ZONE 3, 3.8 DU/ACRE, t _c = 12 min)						
BASIN	AREA (ACRES)	LAND TREATMENT				WEIGHTED Q ₁₀₀ (CFS)
		% A	% B	% C	% D	
VINE-2-A	4.61	0	30	30	40	3.82 17.6
VINE-2-B	4.14	0	30	30	40	3.82 15.8
VINE-2-C	3.18	0	30	30	40	3.82 12.1
VINE-2-D	4.35	0	30	30	40	3.82 16.6
VINE-2-E	4.42	0	30	30	40	3.82 16.9
VINE-2-F	1.77	0	30	30	40	3.82 6.8
VINE-2-G	2.47	0	75	11	14	3.03 7.5
VINE-1-A	7.25	0	30	30	40	3.82 27.7
VINE-1-B	2.63	0	30	30	40	3.82 10.0
VENTURA-1	0.85	0	0	0	100	5.02 4.3
VENTURA-2	0.33	0	0	0	100	5.02 1.7
TOTAL	36.0					137.0

AS-BUILT LEGEND

(H) = HOUSE CONSTRUCTION COMPLETED
(H) = HOUSE PRESENTLY UNDER CONSTRUCTION
V = AS-BUILT ELEV. = DESIGN ELEV.
TW = TOP OF RETAINING WALL
10 = AS-BUILT ELEVATION

CERTIFICATION

The as-built information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge.

Jeffrey G. Mortensen, N.M.P.E. 3547
Date: 06-22-95

GRADING AND DRAINAGE PLAN VINEYARD ESTATES UNIT IV

JMA JEFF MORTENSEN & ASSOCIATES, INC.
600-3 MIDWAY PARK BLVD. N.E.
ALBUQUERQUE, N.M. 87109
ENGINEERS & SURVEYORS (505) 345-4250

APPROVED FOR ROUGH GRADING

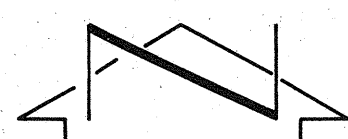
John P. Curtis, 6-9-94
HYDROLOGY DATE

DESIGNED BY: G.M.
DRAWN BY: ACAD.
APPROVED BY: J.G.M.

NO.	DATE	BY	REVISIONS	JOB NO.
1	05/95	M.F.D.	AS-BUILT AND CERTIFY	930847
2	03/95	J.M.	ADD SHEET 6	
3	11/94	G.M.	ANAHEIM POND REVISIONS	05-1994
4	9/94	GM	LABEL ADJOINING LOTS, PERIMETER WALLS, POND VOLUMES	2 OF 10
5	7/94	GM	REVISE APRONS, EROSION PROTECTION. ADD Q ₁₀₀	
6	8/94	GM	SHOW ROAD TAPER, ADD CURB ELEVATION, MODIFY PIPE SIZES AND SLOPES,	
7	9/94	JM	MODIFY PIPE SIZES AND SLOPES, ADD SECTION CUTS	
8	9/94	JM	CHANGE Q ₁₀₀ , CHANGE W.S.L.	
9	9/94	JM	REFERENCE DETAIL (1)	
10	9/94	JM	ADD EASEMENTS	

INDEX OF DRAWINGS

1. GRADING AND DRAINAGE PLAN (SOUTH)
2. GRADING AND DRAINAGE PLAN (NORTH)
3. NOTES, DETAILS AND SECTIONS
4. DETAILS AND SECTIONS
5. INTERIM LOT GRADING
6. MECHENBIER HOMES



DRAINAGE PLAN

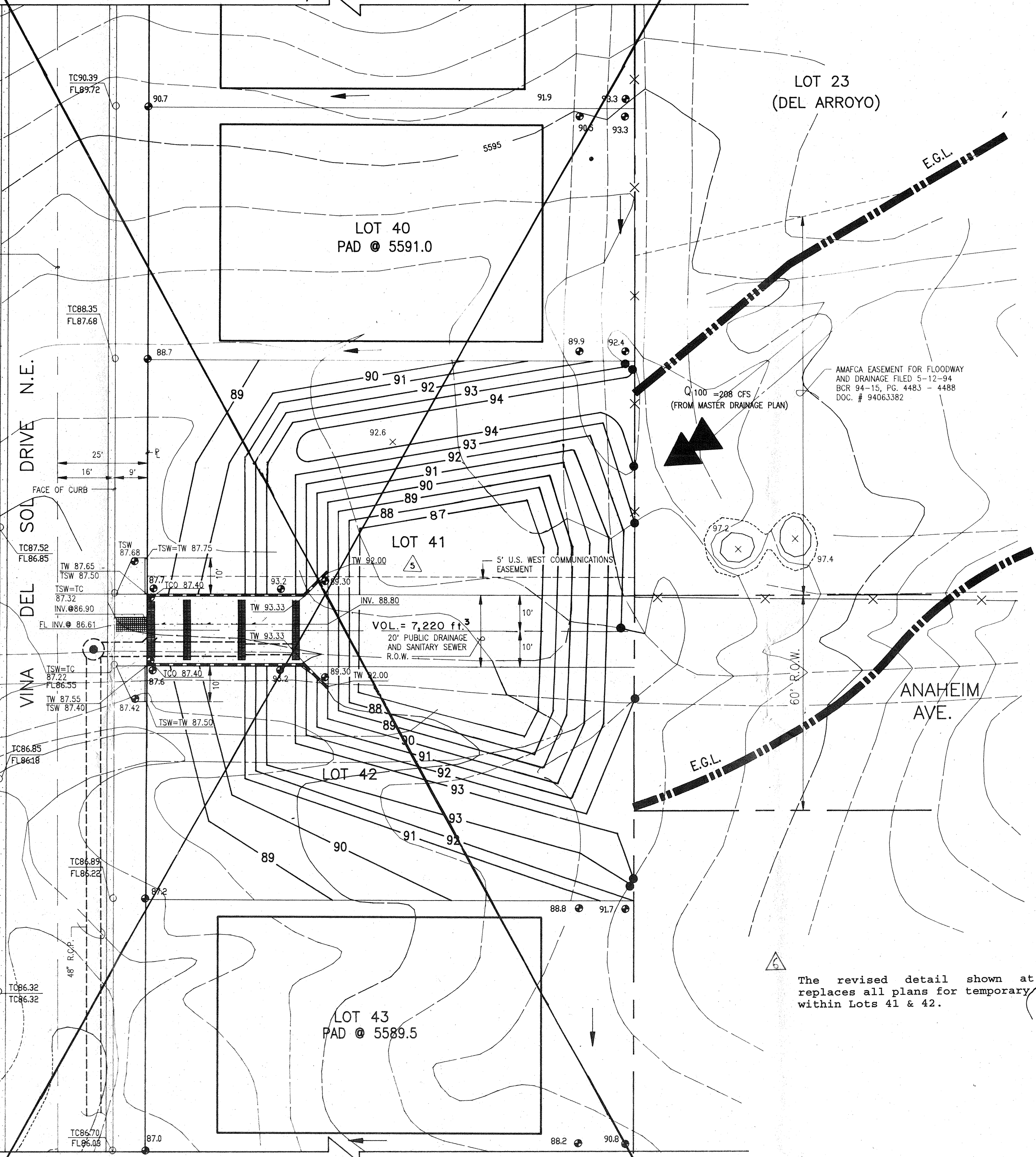
Interim ponding is proposed by this plan within Lots 41 and 42, Vineyard Estates Unit IV. This ponding is interim in nature intended to serve as a sediment removal basin until such time as upstream contributing flows are significantly reduced and/or an alternate pond location is obtained. As stated above, the purpose for this pond is for sediment removal. In doing so, the pond also provides for the overflow of the runoff collected into the public storm drain channel which lies in a 20' public drainage right-of-way. The 20' public drainage right-of-way separates Lots 41 and 42. The portion of the channel to be constructed at this time is consistent with the full design of the channel. The channel will run from Vina Del Sol Drive N.E. to the westerly terminus of Anaheim Street N.E. within the jurisdiction of Bernalillo County. It should be noted that the section of Anaheim Street N.E. immediately east of the subdivision is an unmaintained County road which is currently not being used to provide access to developed properties. It will be the ultimate goal to relocate the sediment pond to the westerly terminus of the Anaheim Street right-of-way. This will be addressed by subsequent submittal.

An AMAFCA drainage easement also abuts the site on the east. Corresponding energy grade lines for the calculated flow within the upstream arroyo system have been prepared using the current ARHYMO program coupled with a HEC-2 analysis. These results have been previously submitted for review and approval. Constructing a portion of the sediment pond within the AMAFCA easement is also intended and will be addressed by subsequent submittal. It is understood that an agreement with AMAFCA will be required pursuant to this offsite grading.

This Plan shall remain in effect and supersede sheet 20 (Project # 3391.96) for the extent of Public Drainage Channel Construction. Upon relocation of the sediment pond from lots 41 and 42, the channel limits shown on sheet 20 shall again take precedence and void this plan. Relocation of this Pond will require coordination with and approval from Bernalillo County Public Works Dept. and AMAFCA.

CL VINA DEL SOL DR. N.E.

FOR CONTINUATION, SEE SHEET 3



FOR CONTINUATION, SEE SHEET 12

DETAIL 1/8 3/4
SCALE: 1" = 40'

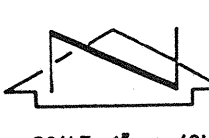
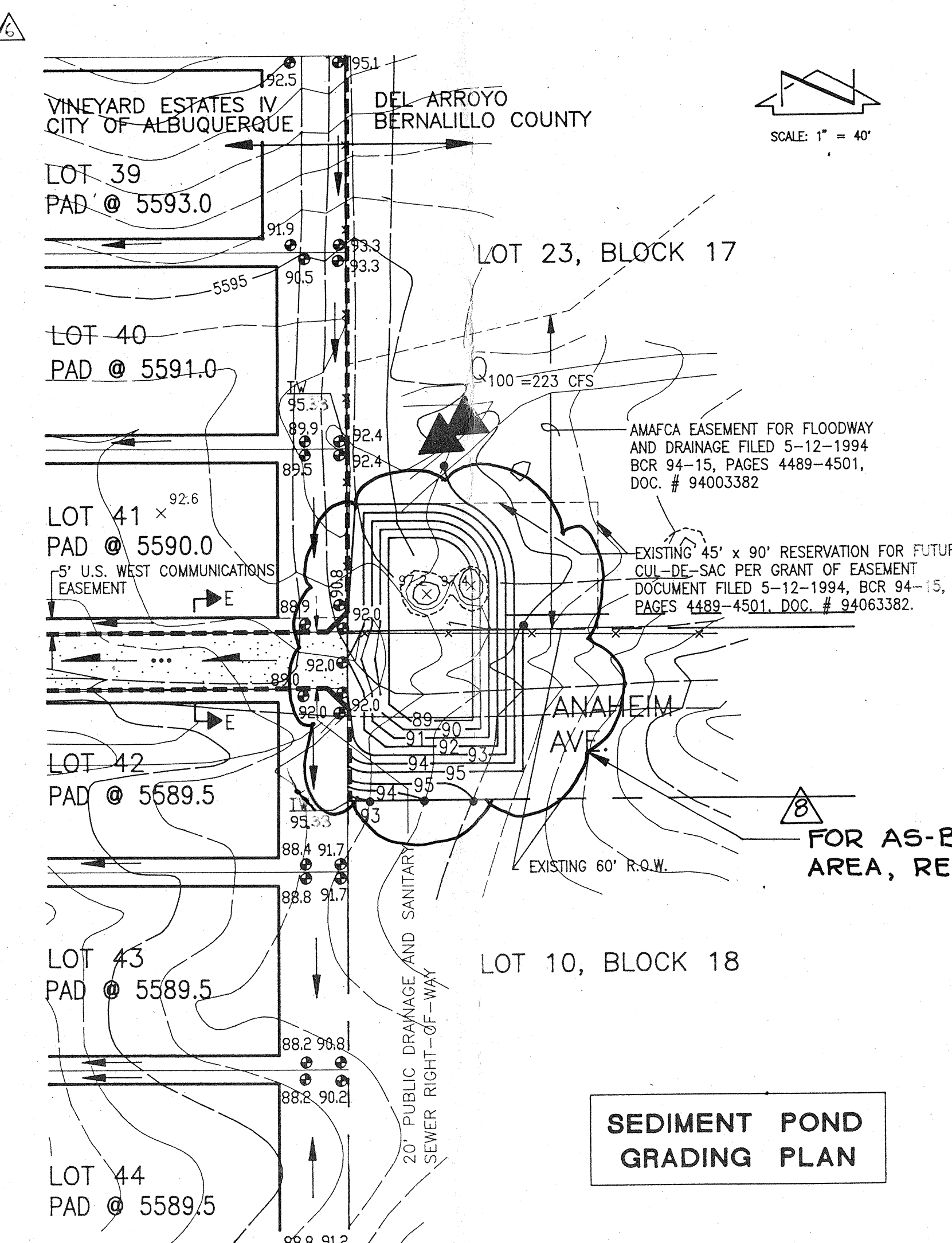
CERTIFICATION
The as-built information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge.
Jeffrey S. Mortensen
Professional Engineer
06-22-95
Date

LEGEND

64.5 x 45.05	EXISTING SPOT ELEVATION
65.3	PROPOSED SPOT ELEVATION
60	EXISTING CONTOUR
60	PROPOSED CONTOUR
TC	DIRECTION OF FLOW
FL	TOP OF CURB
TSW	FLOW LINE
TW	TOP OF SIDEWALK
TCO	TOP OF WALL
TCO	TOP OF CONCRETE
---	ENERGY GRADE LINE PER HEC-2 ANALYSIS DATED 09-13-94
---	EXISTING FENCE BY DEL ARROYO

ENTRANCE CONDITION TO CHANNEL

$$Q = CLH^{1/2}$$
$$L = 30.00'$$
$$H = 2.0 \text{ FT.}$$
$$C = 2.63$$
$$Q = 223 \text{ CFS} > Q_{100}$$



SCALE: 1" = 40'

FOR AS-BUILT OF THIS AREA, REFER TO SHEET 8

SEDIMENT POND GRADING PLAN



JEFFREY S. MORTENSEN & ASSOCIATES, INC.
6002-B MIDWAY PARK BLVD. N.E.
ALBUQUERQUE, NEW MEXICO 87109
ENGINEERS SURVEYORS (505) 345-4250

APPROVED FOR ROUGH GRADING

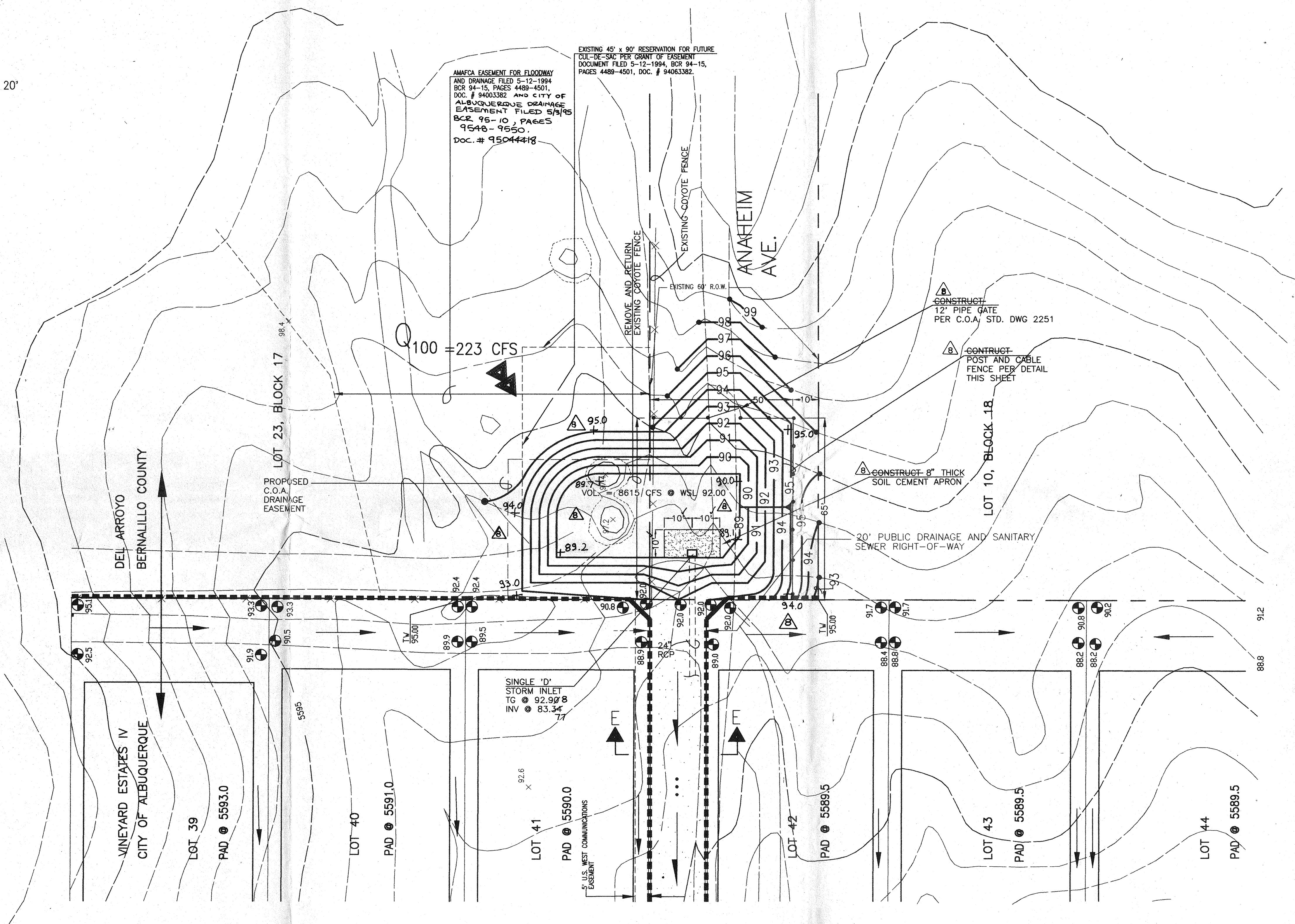
HYDROLOGY DATE

REVISED POND GRADING
VINEYARD ESTATES UNIT IV

DESIGNED BY: J.G.M.
DRAWN BY: S.G.H.
APPROVED BY: J.G.M.

NO.	DATE	BY	REVISIONS	JOB NO.
6	9/94	J.G.M.	ADDED TEXT, REVISE POND GRADES.	930847
7	11/94	G.M.	VOID INTERIM GRADING, ADD REVISED POND DETAIL	DATE 09-1994
8	05/95	M.F.D.	AS-BUILT AND CERTIFY	SHEET 6 OF 10

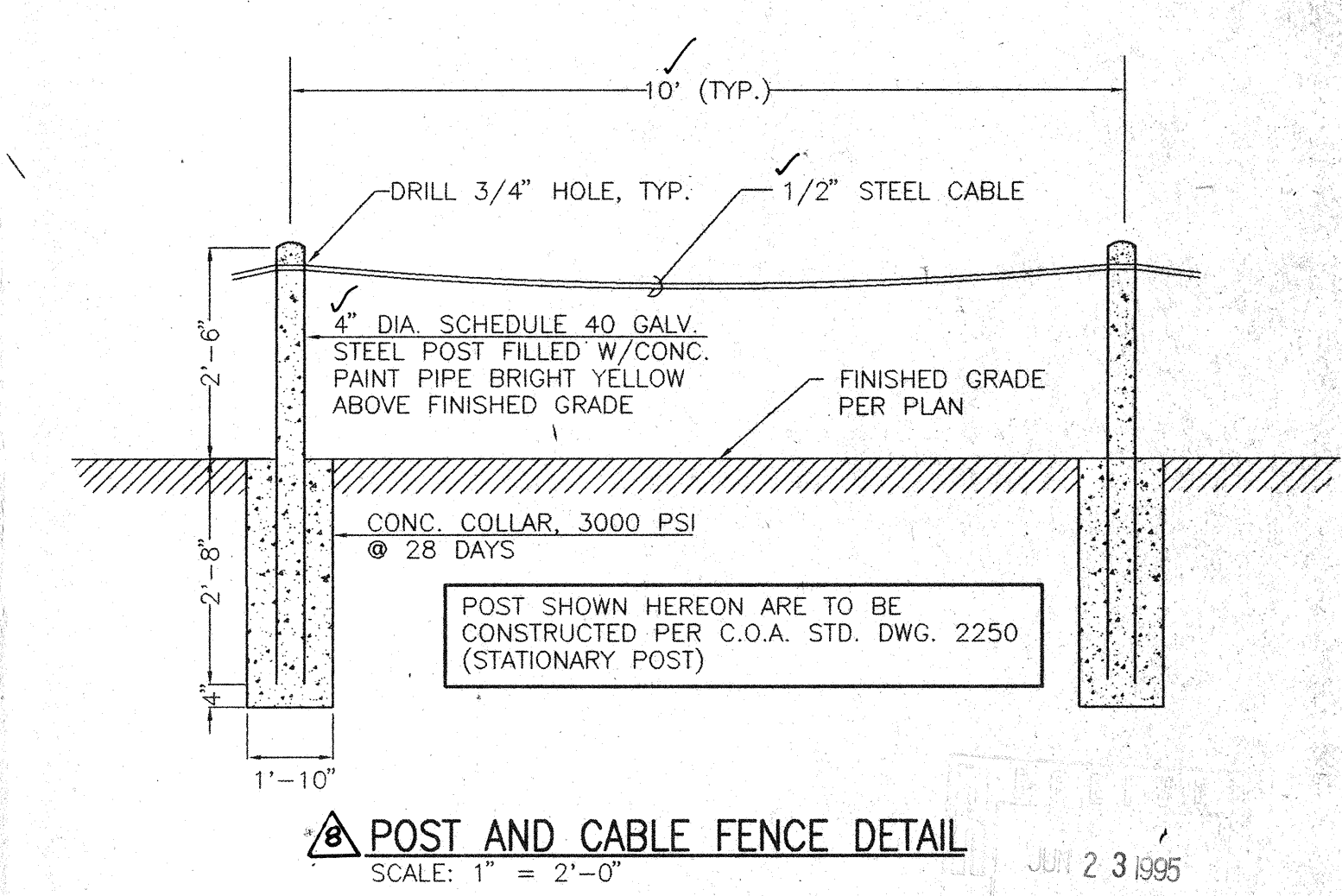
SCALE: 1" = 20'



As-Built Volume for Anaheim Sediment Pond

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
89.2	766	1271	1271
90.0	2412	2869	4140
91.0	3327	3851	7991
92.0	4375		

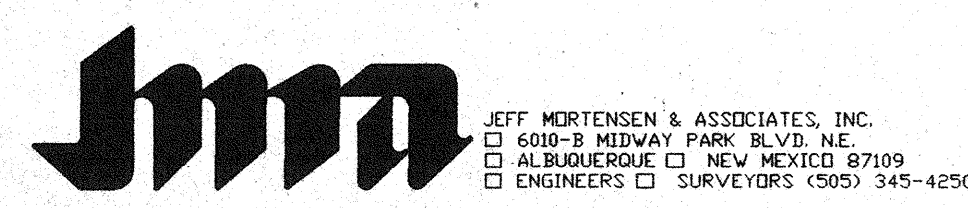
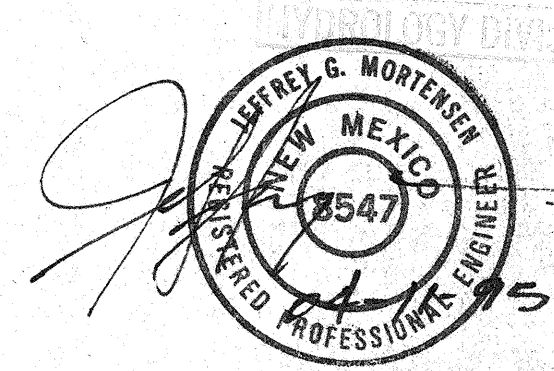
As-Built Vol = 7991 cf
 V_{design} = 8615 cf
 V_{required} = 6708 cf
 As-built Vol > V_{required}



CERTIFICATION

The as-built information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey G. Mortensen, N.M.P.E. 8547 Date 06-22-95



**ANAHEIM SEDIMENT POND DETAIL
VINEYARD ESTATES UNIT IV**

DESIGNED BY	G.M.	NO.	DATE	BY	REVISIONS	JOB NO.
DRAWN BY	C.J.H./S.G.H.	8	05/95	M.F.D.	AS-BUILT AND CERTIFY	930847
APPROVED BY	J.G.M.					DATE
						04/1995
						SHEET
						8 OF 10