



February 23, 1998

Ronald Bohannon, P.E.
Tierra West LLC
4421 McLeod NE
Suite D
Albuquerque, NM 87109

**RE: SAN MIGUEL APARTMENTS - PHASE 1 GARAGE ADDITION (C13-D12A).
GRADING PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP
DATED 1-30-98.**

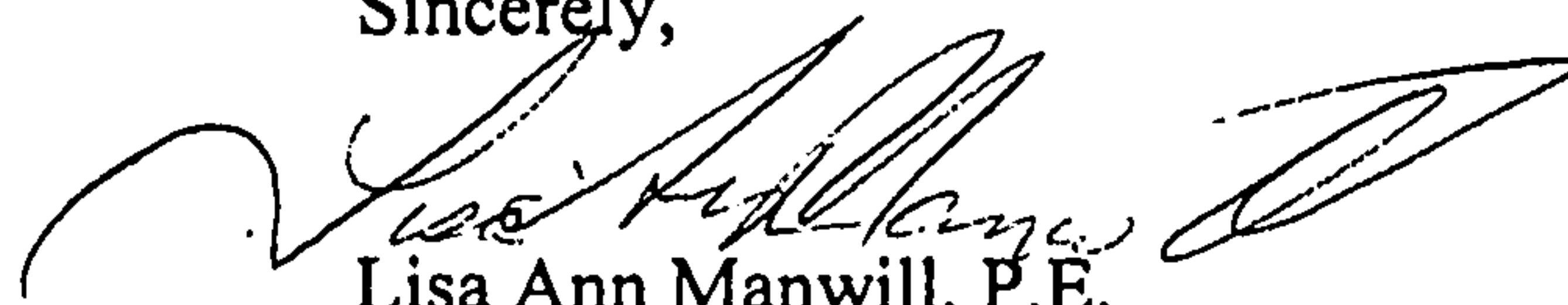
Dear Mr. Bohannon:

Based on the information provided on your January 30, 1998 submittal, the above referenced project is approved for Building Permit.

An Engineer's Certification will be required prior to Certificate of Occupancy approval.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,



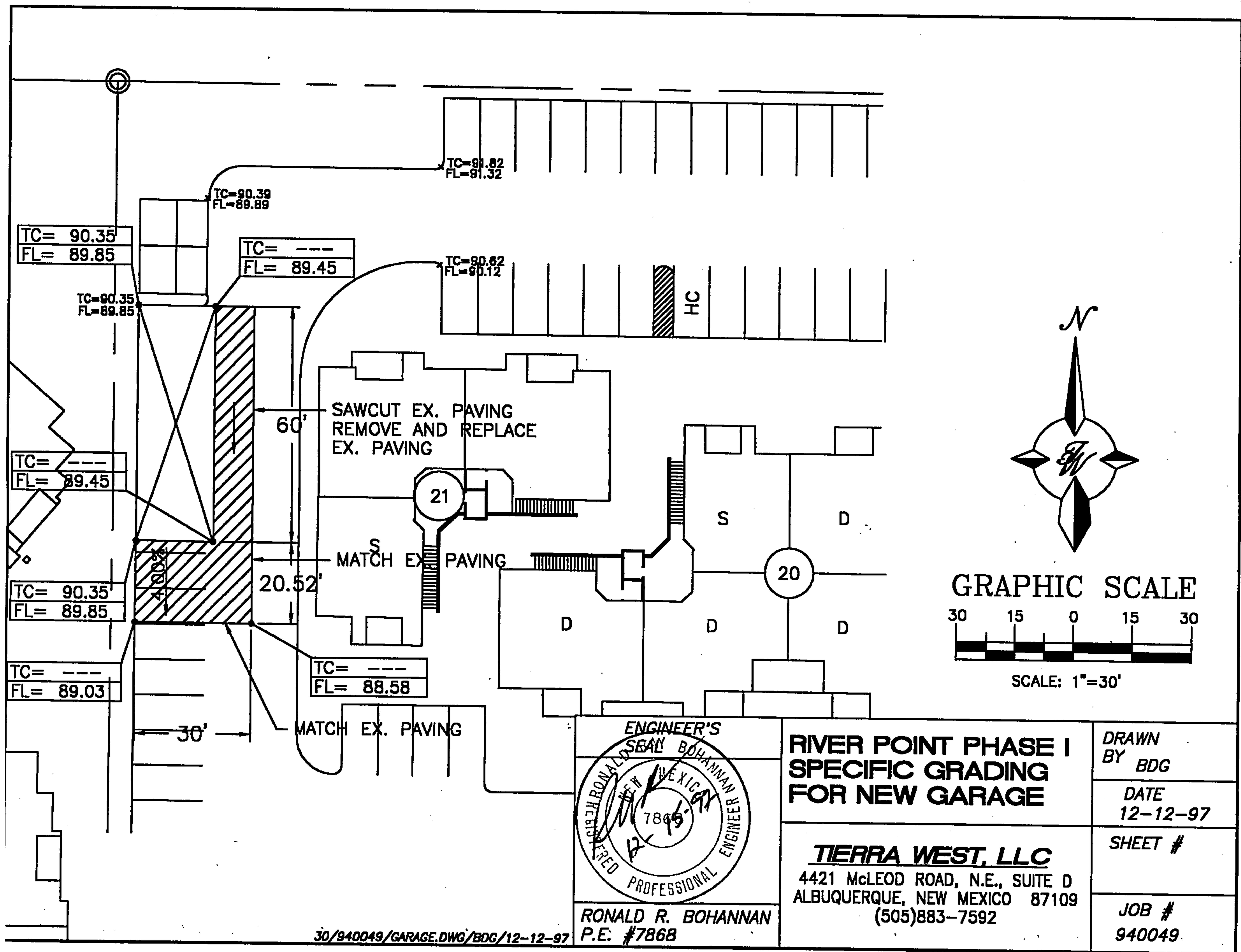
Lisa Ann Manwill, P.E.
Hydrology

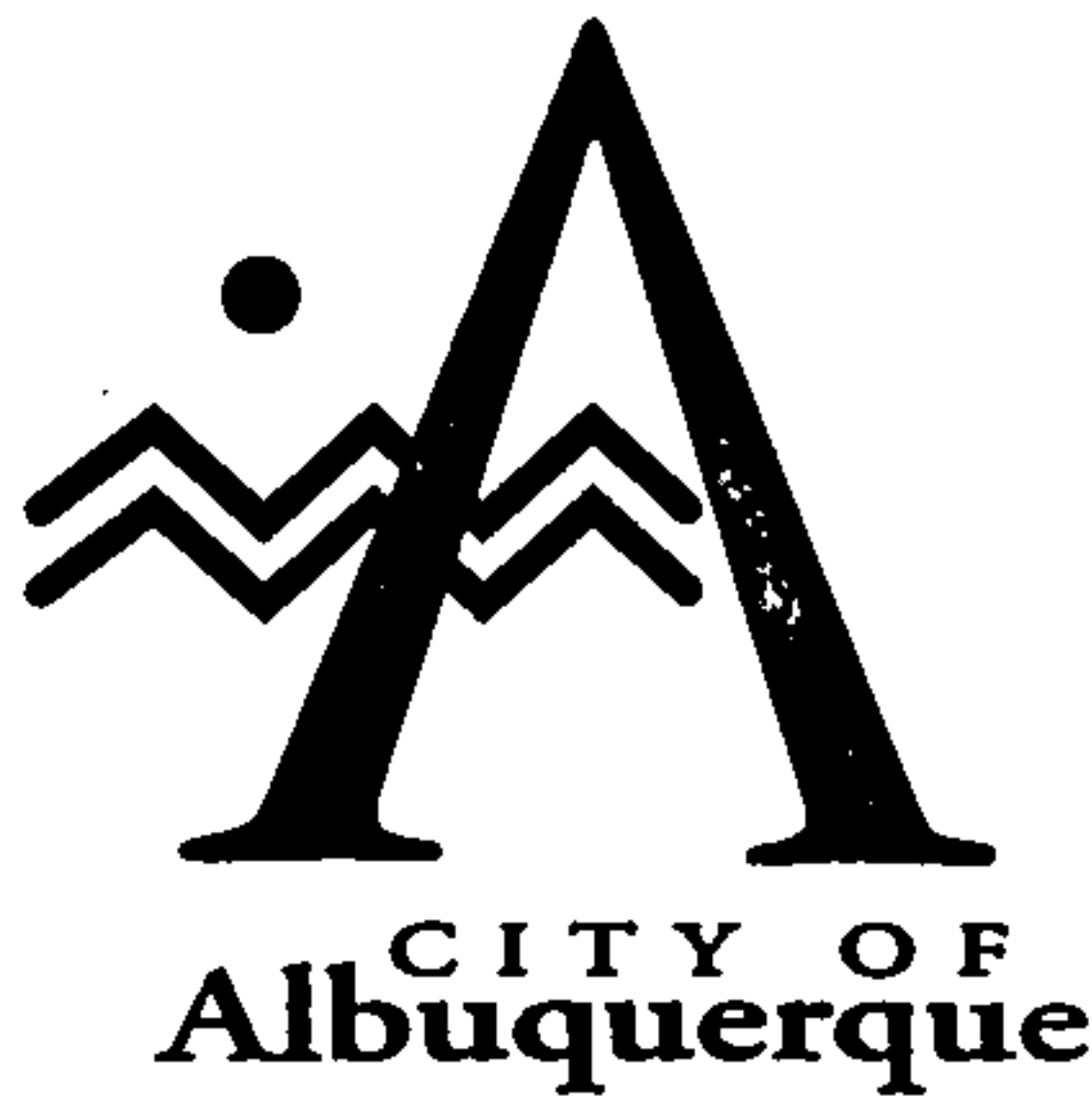
c: Andrew Garcia

File

Good for You, Albuquerque!







August 12, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannon
Tierra West Development
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

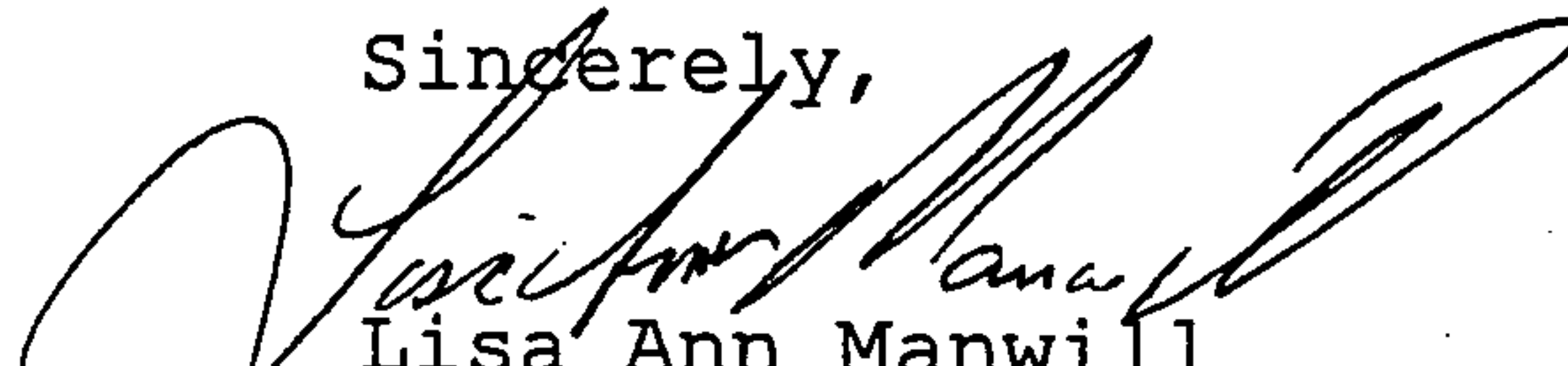
**RE: SAN MIGUEL APARTMENTS - PHASE II AND THE ROADWAY PORTION OF
PHASE III (C13-D12A). ENGINEER'S CERTIFICATION FOR
CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S CERTIFICATION
DATE IS UNKNOWN. ENGINEER'S STAMP DATED 5-7-99 (PHASE II)
AND 4-8-96 (ROADWAY PORTION OF PHASE III).**

Dear Ron:

Based on the information provided on your July 23, 1996
submittal, the above referenced project is approved for
Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me
at 768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

Good for You, Albuquerque!





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 12, 1995

Shahab Biazar
Tierra West Mgmt Ser
4600 Montgomery NE #3
Albuquerque, NM 87109

RE: DRAINAGE REPORT FOR SAN MIGUEL APARTMENTS PHASE 2 (C13-D12A)
RECEIVED JUNE 16, 1995 FOR S D PLAN FINAL PLAT & BUILDING PERMIT
ENGINEER'S STAMP DATED 6/15/95

Dear Mr. Biazar:

Based on the information included in the submittal referenced above, City Hydrology accepts the Drainage Report for Site Development Plan, Final Plat & Building Permit.

Include a copy of the Grading & Drainage Plan, dated 6/15/95, in each set of construction documents that will be submitted to Code Administration for the Building Permit.

Engineer's Certification of grading & drainage per DPM checklist must be accepted by City Hydrology before any Certification of Occupancy 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: Andrew Garcia
Fred Aguirre, DRB 95-167
Millie Arnold, San Miguel Del Bosque Ltd Co, 20 First Plaza, Suite 510, 87102


DRAINAGE REPORT
FOR
SAN MIGUEL APARTMENTS
PHASE 1 AND 2

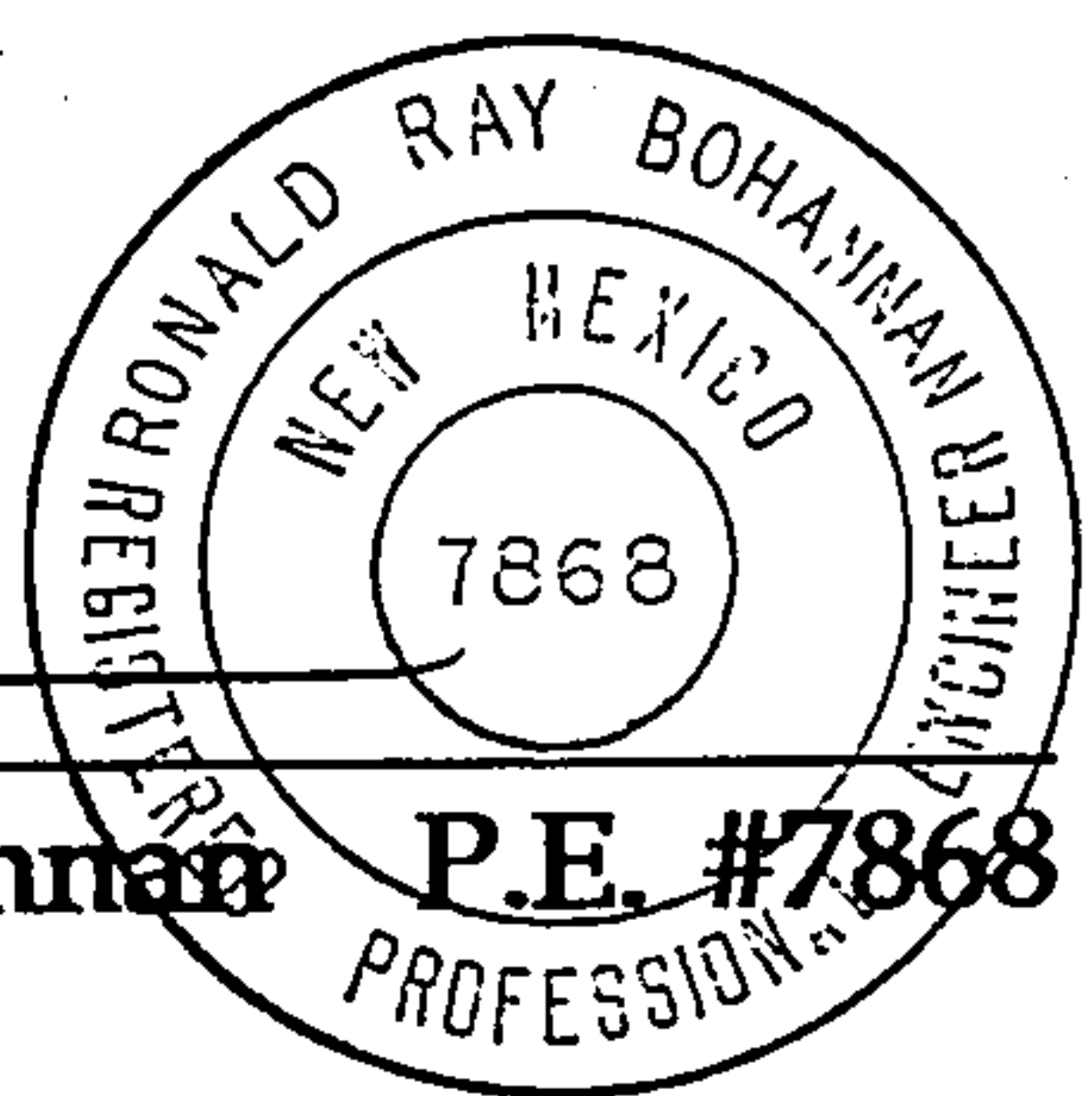
Prepared for
San Miguel del Bosque Ltd. Co.

Prepared By
Tierra West Development Management Services

April 1995
(Revised June 1995)

**I certify that this report was prepared under my supervision,
and I am a registered professional engineer in the
State of New Mexico in good standing.**


Ronald R. Bohannon **P.E. #7868**



The seal is a circular stamp. The outer ring contains the text "RONALD RAY BOHANNAN" at the top and "REGISTERED PROFESSIONAL ENGINEER" at the bottom. The inner ring contains "NEW MEXICO". The center of the seal contains the license number "7868".

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<u>MAP POCKET</u>	
Storm Drain Discharge System	
Grading And Drainage Plans	
Approved Grading And Drainage Plan For Dinostor Project (0.75 cfs Drainage Point)	

Purpose & Statement

The purpose of the Drainage Plan is to submit Phase 2 of the San Miguel Apartments at River Point and modify the ponds on Phase 1 of the same project. This report is also to provide the detail to secure an approval for building permit. The original Plan (Phase I) was submitted by Easterling & Associates under City Draiage File C13/D12.

Location

The site is located off of Coors Road, just south of the frontage road, adjacent to Paseo del Norte. The legal description is Tracts 4, 5, and 6 of River Point, recorded in Book 93-C Page 337. The site is being developed in two phases. Phase 1 consists of 8.82 acres and has been previously submitted by Easterling & Associates, under file number C13/D12. Phase 2 consists of Tract 4 and 5, with a combined acreage of 6.6517 acres for combined total of 15.1817.

DRAINAGE PLAN (PHASE 2)

Existing Conditions

The Project Site (Phase 1, River Point) consists of approximately 15.18 acres, which up to the start of Phase 1 was partially developed, consisting of a vacated mobile home park with minimal improvements. Existing on-site drainage characteristics are not well-defined, but the overall drainage pattern is from north to south, with free discharge to the abutting Southwestern Indian Polytechnic Institute campus. The site lies east of the Corrales Main Canal with minimal flow to the clear ditch that parallels the River. The topography suggests that the site is not impacted by off-site flows from the east or south. However, runoff from the eastbound driving lane of the Paseo del Norte Frontage Road appears to discharge to the site.

The site has been expanded since Phase 1 was approved to include what was entitled the Riverside Animal Hospital. This site, which is Tract 4, is being turned into apartments. The flows identified previously as the Riverside Animal Hospital now discharge to the site in Phase 1. Phase 2 consists of approximately 6.6517 acres and was previously a mobile home park and the Riverside Animal Hospital. Both uses are being discontinued and redeveloped as apartments. Again, existing on-site flow patterns are not well defined, but drains from north to south.

Flood Plain

According to Panel 8 of the FEMA Flood Boundary and Floodway Map for Albuquerque, NM, dated October, 1983, the site does not lie within a designated 100-Year Flood Hazard Zone.]

Developed Conditions

Tracts 4, 5, and 6 consisting of Phase 1 and 2 are proposed to be develop for multifamily residential use, as San Miguel Apartments. New circulation roads and parking areas are to be constructed from asphalt, with concrete walks connecting building entrances to parking area. Approximately 33% of the site area is to consist of landscaping, with ground cover predominantly comprising turf and native grasses.

The original plan had called for several ponds that retained 100% of the storm drainage. This revision proposes that all the flows be concentrated into Ponds 2 and 3 and pumped to the bar ditch aligning along Paseo del Norte. Pond 1 will retain the 10 day storm storage value for that subbasin. The 100 year 24 hour event was used to calculate the flow to Ponds 2 and 3.

Phase 1 and 2 are proposed to drain to Ponds 2 and 3. Pond 3 will then be drained over a 24 hour period to the State Highway right-of-way at

.75 cfs. From that point it will drain in the Paseo del Norte right-of-way to the clear ditch and into the river. The ability to pump Pond 3 to the Paseo del Norte right-of-way and then to the river will allow us to use the 100 year ²⁴ hour storm to analyze the site.

The discharge of the 0.75 cfs was approved as part of the Garding and Dragine Approval on Dinostor project from the County and State Highway Department. See Appendix B for Grading and Drainge Approval letter from the County and State Highway Departement. Also see the approved Grading Plan on Dinostor project for the 0.75 cfs dishcharge point located in Map Pocket 3.

A pumping system will be placed within Pond 3 that will be activated by low flows and pump to Paseo del Norte. Shown in Sheet 4 is the schematic of the system to be used. The pump housing is proposed for a submersible pump to be within an 8' diameter type "E" manhole. The pumps will operate on a float switch to move all flows from the site to the ditch. The storm sewer pumps have been listed in the Map Pocket 1 for documentation. A ten inch line will discharge the flow to Paseo del North right-of-way.

State Highway Permit

Under the State Highway permit and encroachment, the grading plan has also been approved for discharge into the bar ditch. Under that permit, the additional flows created by San Miguel have been included in this report (See Exhibit B).

The County Public Works Department under PWD-94-281 has approved the drainage discharge into the swale. Shown in Map Pocket 3 is a copy of the approved Grading and Draige Plan for the Dinostor project.

Ponding Volume

The runoff and pond volume were computed using the AHYMO program, revision January 1994 (AHYMO 194). The pond volume was checked for the total storage and was computed to be 2.028 acre feet or 88,340 cubic feet. The storage provided in Pond 2 and 3 is 2.181 acre feet.

Table 1 shows a recap of the basins and the volumes that were computed based upon the stage storage of the pond.

TABLE 1

POND	FLOW IN	FLOW OUT	WATER DEPTH
1	1.80 CFS	0.0 CFS	2.50'
2 & 3	66.38 CFS 56.38	31.00 CFS 0.75	1.00' @ Pond #2 10.00' @ Pond #3

DRAINAGE CALCULATIONS

The site is @ Zone 1

LAND TREATMENT

D = 60%
C = 20%
B = 20%

DEPTH (INCHES) @ 100-YEAR STORM

$P_{60} = 1.87$ inches

$P_{360} = 2.20$ inches

$P_{1440} = 2.66$ inches

DEPTH (INCHES) @ 10-YEAR STORM

$P_{60} = 1.87 \times 0.667$
 $= 1.25$ inches

$P_{360} = 1.47$

$P_{360} = 1.77$

See the following Table

UNDER PROPOSED CONDITIONS

BASIN	Q-100YR CFS	V-100YR AC-FT	Q-10YR CFS	V-10YR AC-FT
1	36.39	1.269	21.93	0.733
2	1.8	0.062	1.09	0.036
3	19.99	0.697	12.05	0.403

UNDER EXISTING CONDITIONS

BASIN	Q-100YR CFS	V-100YR AC-FT	Q-10YR CFS	V-10YR AC-FT
1	20.51	0.562	7.75	0.189
2	1.02	0.028	0.38	0.009
3	11.26	0.309	4.26	0.104

See the summary output from AHYMO calculations.

Pond 1 Calculations:

The site is @ Zone 1

Basin 2 Area = 0.50 Acre

Land Treatment:

D = 60%, C = 20%, B = 20%

Weighted E For The Runoff

$$E = \frac{20(0.67)}{100} + \frac{20(0.99)}{100} + \frac{60(1.97)}{100}$$

$$E = 1.514 \text{ inches.}$$

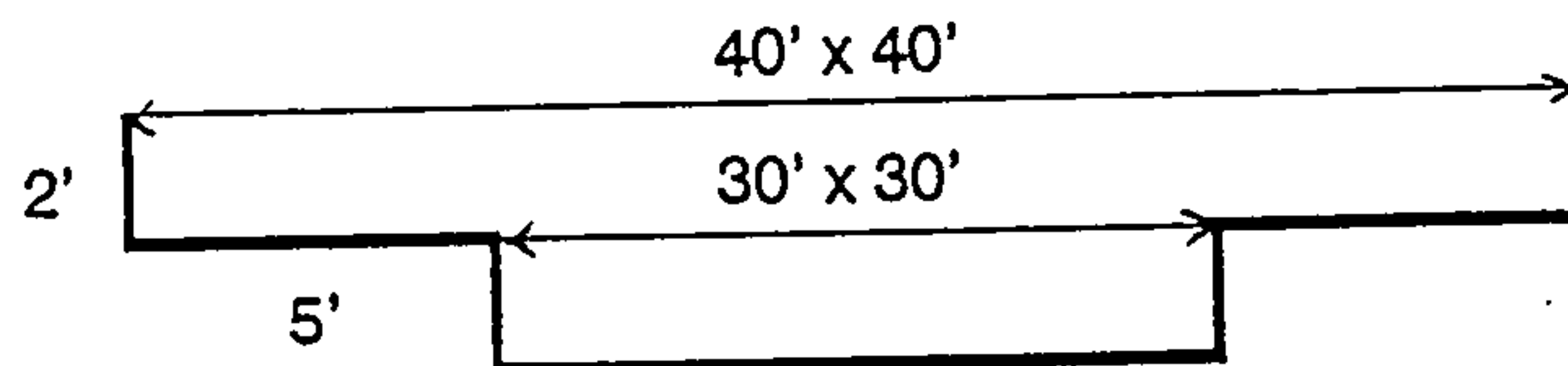
$$V_{360} = 1.514/12 \times .050 = 0.063 \text{ Ac-Ft}$$

$$V_{10 \text{ DAY}} = V_{360} + A_D \cdot \frac{(P_{10} - P_{360})}{12}$$

$$\begin{aligned} V_{10 \text{ DAY}} &= 0.063 + 0.3 \times (3.67 - 2.2)/12 \\ &= 0.010 \text{ Ac-Ft} = 4350 \text{ CF} \end{aligned}$$

$$\text{Volume Provided} = 40^2 \times 2 + 30^2 \times 2 = 5000 \text{ CF} > 4350 \text{ CF}$$

Pond Section



Pond 2

Pond bottom = 77 x 22 = 2079 SF

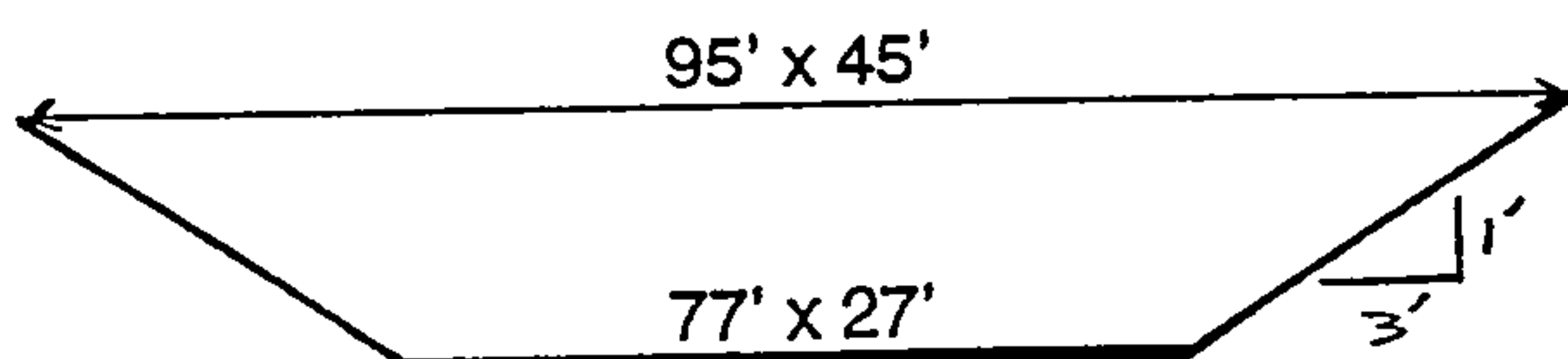
Pond Top = 95 x 45 = 4275 SF

Volume @ a give Depth "D":

$$V = \frac{77 \times 22 + (77 + 2 \times 3 \times D)(27 + 2 \times 3 \times D)}{2} D$$

$$V = 2079 D + 312 D^2 + 18 D^3$$

Pond Section



Pond 3

Volume @ 3' = 60x95x3 = 17,100 CF

Volume @ 6' = 17,100 + 70x105x3 = 39,150 CF

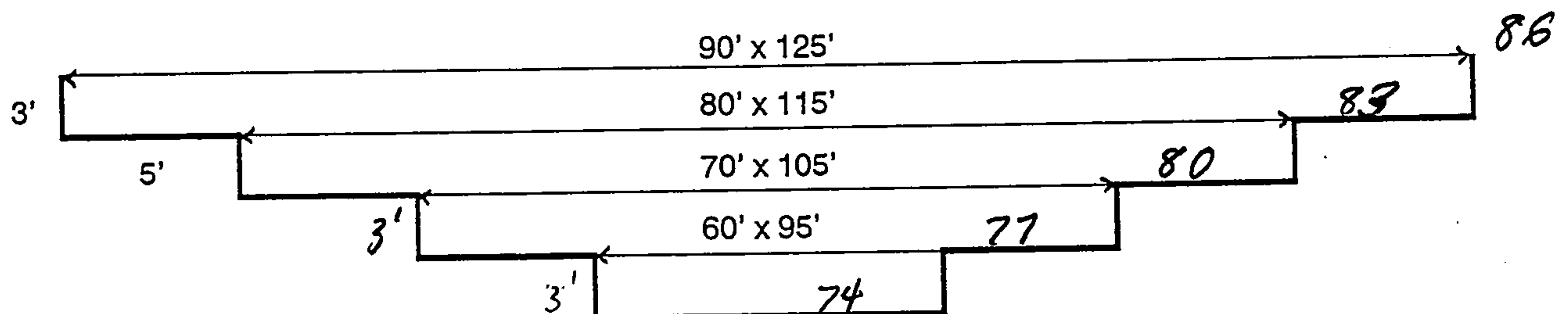
Volume @ 9' = 39,150 + 80x115x3 = 66,750 CF

Volume @ 12' = 66,750 + 90x125x3 = 100,500 CF

Volume @ 13' = 100,500 + 22687.50 = 123,187.50 CF

↑ Volume within the parking lot

Pond Section



See pond 2 & 3 Tables for AHYMO Input Files.

POND 2 TABLE FOR AHYMO INPUT FILE

	ELEV (FT)	STO CFT	STO AC-FT
83.00	0.00	0.00	0.00000
	0.10	211.56	0.00486
	0.20	430.44	0.00988
	0.30	656.64	0.01507
	0.40	890.16	0.02044
83.50	0.50	1131.00	0.02596
	0.60	1379.16	0.03166
	0.70	1634.64	0.03753
	0.80	1897.44	0.04356
	0.90	2167.56	0.04976
84.00	1.00	2445.00	0.05613
	1.10	2729.76	0.06267
	1.20	3021.84	0.06937
	1.30	3321.24	0.07624
	1.40	3627.96	0.08329
84.50	1.50	3942.00	0.09050
	1.60	4263.36	0.09787
	1.70	4592.04	0.10542
	1.80	4928.04	0.11313
	1.90	5271.36	0.12101
85.00	2.00	5622.00	0.12906
86.00	3.00	9531.00	0.21880

POND 3 TABLE FOR AHYMO INPUT FILE

ELEV (FT)	OUTFLOW PUMP (CFS)	STO CFT	STO AC-FT	POND 2 + 3 AC-FT
0.00	0.00	0.00	0.00000	0.00000
1.00	0.75	5700	0.13085	0.13085
2.00	0.75	11400	0.26171	0.26171
3.00	0.75	17100.00	0.39256	0.39256
4.00	0.75	24450	0.56129	0.56129
5.00	0.75	31800	0.73002	0.73002
6.00	0.75	39150.00	0.89876	0.89876
7.00	0.75	48350	1.10996	1.10996
8.00	0.75	57550	1.32116	1.32116
8.1	0.75	58470	1.34228	1.34228
8.2	0.75	59390	1.36340	1.36340
8.3	0.75	60310	1.38452	1.38452
8.4	0.75	61230	1.40564	1.40564
8.5	0.75	62150	1.42676	1.42676
8.6	0.75	63070	1.44788	1.44788
8.7	0.75	63990	1.46900	1.46900
8.8	0.75	64910	1.49012	1.49012
8.9	0.75	65830	1.51124	1.51124
83.00	9.00	66750.00	1.53236	1.53236
	9.1	67875	1.55819	1.56305
	9.2	69000	1.58402	1.59390
	9.3	70125	1.60984	1.62492
	9.4	71250	1.63567	1.65610
83.50	9.5	72375	1.66149	1.68746
	9.6	73500	1.68732	1.71898
	9.7	74625	1.71315	1.75067
	9.8	75750	1.73897	1.78253
	9.9	76875	1.76480	1.81456
84.00	10.00	78000	1.79063	1.84676
	10.1	79125	1.81645	1.87912
	10.2	80250	1.84228	1.91165
	10.3	81375	1.86811	1.94435
	10.4	82500	1.89393	1.97722
84.50	10.5	83625	1.91976	2.01025
	10.6	84750	1.94558	2.04346
	10.7	85875	1.97141	2.07683
	10.8	87000	1.99724	2.11037
	10.9	88125	2.02306	2.14408
85.00	11.00	89250	2.04889	2.17795
86.00	12.00	100500.00	2.30715	2.52595
	13.00	123187.50	2.82798	2.82798

SEE POND CALCULATIONS AS WELL AS
THE AHYMO OUT PUT RESUTLS