



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 29, 1999

Tucker Green
Per Se Engineering
9109 La Barranca NE
Albuquerque, New Mexico 87111

**RE: *Drainage Report and Grading and Drainage Plan for Economy Sales and Service
(G15/D10) Submitted for Building Permit Approval, Engineer's Stamp Dated 10/28/99.***

Dear Mr. Green:

Based on the information provided, the above referenced report, and the plan dated October 28, 1999, are approved for Building Permit release. This approval for Building Permit also includes approval for grading, paving and the foundation.

The owner should be aware that he is responsible for maintaining the on-site pond.

As you are aware, the Engineer's Certification of this plan is required prior to release of the Certificate of Occupancy for this site.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

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

C: Whitney Reiersen, City Hydrology
John Fitzpatrick, Economy Sales and Service
File

**DEVELOPMENT & BUILDING SERVICE CENTER
ONE STOP**

**600 SECOND ST. N.W./2ND FLOOR
ATTENTION: _____
505-924-3900**

Records Withdrawal Form

Project No. _____ Date: 7/17/00

Project Title: Economy Sales & Service

a. File b. Mylars c. Redlines/Comments G15-D10
d. Other _____

Requested By: Jake Bordenau Phone No.: 823-1344
Company

Comments: _____

Anticipated Return Date: _____

Receipt Acknowledged

I here by accept full responsibility for the security of the above noted records/plans until return receipt acknowledgement is completed. Records/plans will be returned to the Development & Building Services Center on or before the indicated anticipated return date.

Delivery Picked Up By:

Name: _____
Print

NOTE: Didn't sign for check-out!!
Organization: Off. Repro

Signed: _____
Phone No. _____

Date: _____

Office Use Only

Return Acknowledged

Received by: Arlene V. Portillo Date: 7/17/00
Print



A New Mexico Corp.

ECONOMY SALES and SERVICE

John Fitzpatrick
General Manager

Institutional Products
Warewashing and
Laundry Specialist

P.O. Box 25942
Albuquerque, NM 87125
(505) 251-3382
Fax (505) 344-3286
1-800-952-3476

DRAINAGE INFORMATION SHEET

PROJECT TITLE: ECONOMY SALES & SERVICE ZONE ATLAS/DRNG. FILE #: G-15-D10
 DRB #: _____ EPC #: _____ WORK ORDER #: _____
 LEGAL DESCRIPTION: LOT 13-B, BLOCK 1, COMAN INDUSTRIAL DISTRICT
 CITY ADDRESS: 821 RANKIN RD NE ALBQ 87108
 ENGINEERING FIRM: PER SE ENGINEERING CONTACT: TUCKER GREEN
 ADDRESS: 9109 LA BARRANCA NE PHONE: 275-0451 / 239-7855 MOBILE
 OWNER: ECONOMY SALES & SERVICE CONTACT: JOHN FITZPATRICK
 ADDRESS: 821 RANKIN RD NE PHONE: ~~344~~ 344-3242
 ARCHITECT: ENGINEERING ASSOCIATES CONTACT: VANCE MEYERS
 ADDRESS: 540 CHAMA NE # 11 PHONE: 266-3311
 SURVEYOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____
 CONTRACTOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

PRE-DESIGN MEETING:

- ☒ YES JOHN MURRAY
☐ NO
☐ COPY PROVIDED NO

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D. APPROVAL
☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☒ FOUNDATION PERMIT APPROVAL
☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY APPROVAL
☒ GRADING PERMIT APPROVAL
☒ PAVING PERMIT APPROVAL ON SIDE ONLY
☐ S.A.D. DRAINAGE REPORT
☒ DRAINAGE REQUIREMENTS
☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: _____

BY: TUCKER GREEN

DRAINAGE REPORT and CALCULATIONS
ECONOMY SALES & SERVICE
821 Rankin Rd. NE Albuquerque NM C.O.A. Drainage File G15/D10

LEGAL DESCRIPTION: ESS (Economy Sales & Service) is located on Lot 13-B, Block 1, Coman Industrial District.

FLOOD ZONE: Per FEMA Panel 35001CO 351 D the site is not located in a 100-year flood zone.

REVISION NOTE: The drainage plan and report for this site was originally for review on August 13, 1999, along with a Site/Traffic Control Layout plan. Comments regarding the TCL forced revisions to the site layout and thus to drainage. Per Se "withdrew" the original drainage submittal before it was reviewed by PWD Hydrology. This history accounts for the fact that some of the calculations are dated mid-August and others are dated mid-October.

SPECIAL NOTE: This plan actually addresses Lots 13A and 13B, even though it is prompted only by proposed changes to Lot 13B. The 1988 plat that created 13A & 13B from Lot 13 (Talos Log # 11-28-2161, Franklin Wilson, November 1988) contained a "reciprocal access easement for ingress and egress and drainage, parking, and refuse easements ..." (copy herewith). The approved drainage plan (G15/D10A, Marvin Kortum, March 1989) that went along with that plat action called for some (not all) of the flow from both lots to be directed to the EVEN-then-existing small concrete pond in the southwest corner of Lot 13A - the "other guy's" lot, not ESS's. The 1989 drainage plan referred to another approved plan from the early 1980's which established the allowable outflow rate for the site. The present design relies on that rate, which is 0.80 cfs peak.

EXISTING CONDITIONS: The site is located at the northeast end of the Rankin Rd. cul-de-sac. The east side of the site is actually part of the embankment for the on-ramp and frontage road for southbound Interstate 25. The embankment continues up past the east property line and a small part of the I-25 ROW drains onto and through the site. Flow from the main part of I-25, and from the pavement of the frontage road, is diverted past the site in a bar ditch and does not reach the site. Generally the land slopes down from the east to the west, parallel to I-25. As a result, there is no flow onto the site from the north and south adjoining lots, nor to those lots from the site.

Lot 13B, the site, occupies about 0.55 acres and Lot 13A occupies about 0.49; the combined total is 1.0317 acres per the plat. A significant portion of the combined site does not drain directly to the pond and/or Rankin Rd. but instead drains northwest to the Irrigation Supply company located on Lot 12. There is some question about how much of the site is affected. The topo for the 1989 drainage plan shows a high area in approximately the same place as the 1999 topo prepared for this project, and this is approximately the middle of the combined site (13A & 13B). A concrete-block retaining wall (partly hidden behind the honeysuckle) along the east edge of lot 12 raises up above grade keeps overland flow from 13A from sliding directly onto 12.

The 1989 plan indicates that a swale drained much of 13A to the pond but the evidence presented on the plan was not strong. The swale does not appear to exist today. The 1989 plan claimed only about 7200 sf of 13A was excluded from the pond. While this is obviously low, it is used in the present analysis: it's wrong, but it's consistent and it's conservative.

Current development on 13A and 13B is very much the same as for the 1989 plan, with the exception of 2 additional metal "ship's container" storage sheds on 13B, occupying about 160 sf each. Each site has a building and a concrete pad. 13B, the ESS site, has a small amount of landscaping. All parking areas are currently paved with gravel and/or crusher fines. The pond is not functional. It is filled with dirt, as it was at the time of the 1989 plan, and the drain hole called for by that plan was never built. At some time in the past, a shelf was cut into the bank east of the existing ESS building and an existing retaining wall extending north from the ESS building.

PROPOSED CONDITIONS: ESS proposes to add a new warehouse north of the existing one and contiguous to it. New paving will extend from the north end of the addition to the west property line. The existing pond will be cleaned out and the walls will be raised to provide additional capacity. There will be landscaping in the pond.

Total runoff as analyzed by this plan presumably represents an increase over the 1989 plan. Not only will more of the site be impervious but also the methods of calculating runoff have changed to ones that tend to yield higher peak runoff. The allowable peak rate has not changed, however; it is still at the 0.80 cfs set by the early 1980's drainage plan, based on then-acceptable formulas and criteria. An excerpt from that plan is included with this report; the copy quality is poor, but it's the best readily available. The 0.80 cfs is the allowable peak rate for runoff generated from Lots 13A & 13B. The total peak rate for runoff out of the site includes uncontrolled runoff from I-25 ROW. As shown in the calcs, this amounts to 0.44 cfs, making a total of 1.24 cfs.

In the present plan, the existing building and the front part of the site continue to discharge directly to the street. The peak rate for this area is apx 0.45 cfs, leaving $1.24 - 0.45 = 0.79$ cfs as the allowable peak outflow from the rest of the site and the contributing part of I-25 ROW. To achieve this rate, the pond will be enlarged upward (the walls will be extended) and there will be temporary ponding in the parking area (both asphalt and gravel paving) for the 100-year storm. The overflow spillway for the pond is actually a "sideways level" grade break in the newly paved area, so the overflow path is out the driveway.

Everyday outflow from the pond will be from a pair of 3-inch diameter holes to be cored in the driveway side of the existing concrete wall of the pond. The orifice location, at the southeast corner of the pond, is the same as for previously approved plans for the site. The peak outflow rate is 0.75 cfs at a water surface elevation of 43.31, compared to an available (for the orifices analyzed) 0.78 cfs at the overflow elevation of 43.5. Thus the plan allows for some additional runoff from future improvements not currently proposed, without further regrading the parking area..

The same AHYMO run also analyzed a single 4-inch diameter orifice. This would also work: peak outflow is 0.67 cfs at an elevation of 43.35, compared to an available 0.69 at 43.5. The pair of 3-inch orifices appears to be preferable because of having slightly more capacity to handle additional (future) development on site.

The new warehouse will primarily be a metal building, whereas the existing ESS building is CMU block construction. However, the east wall of the new building will be CMU designed by EAI (Engineering Associates, Inc, see structural plans for details) to retain soil at the levels shown on the plan. The north bay of the new structure will be open for the time being but is expected to be enclosed in the future. The retaining wall is not affected. The proposed wall extends past the end of the building, providing room for a notch carrying for flow from the upper level, and for finished grade slopes to tie back to the foot of the wall.

The "upper level" consists of the area between the buildings and a (2nd) new CMU wall to be built with this project (also designed by EAI). Most of the ground there slopes at 3H or 4H to 1V. Runoff from the embankment will pass over the wall without being concentrated and flow to a swale, which leads to the notch in the lower wall, previously mentioned. The swale collects only runoff from the embankment and the "upper level" area; the new roof flows to the west, away from the swale.

A NOTE ON GRADING: Paving in the front part of the site will be moderately steep asphalt. To avoid visual clutter, per General Note 5, grading in this area is specified only by spot elevations. Grading elsewhere is specified by a combination of contour lines and spot elevations.

END OF REPORT

10/17/99 9:48 AM

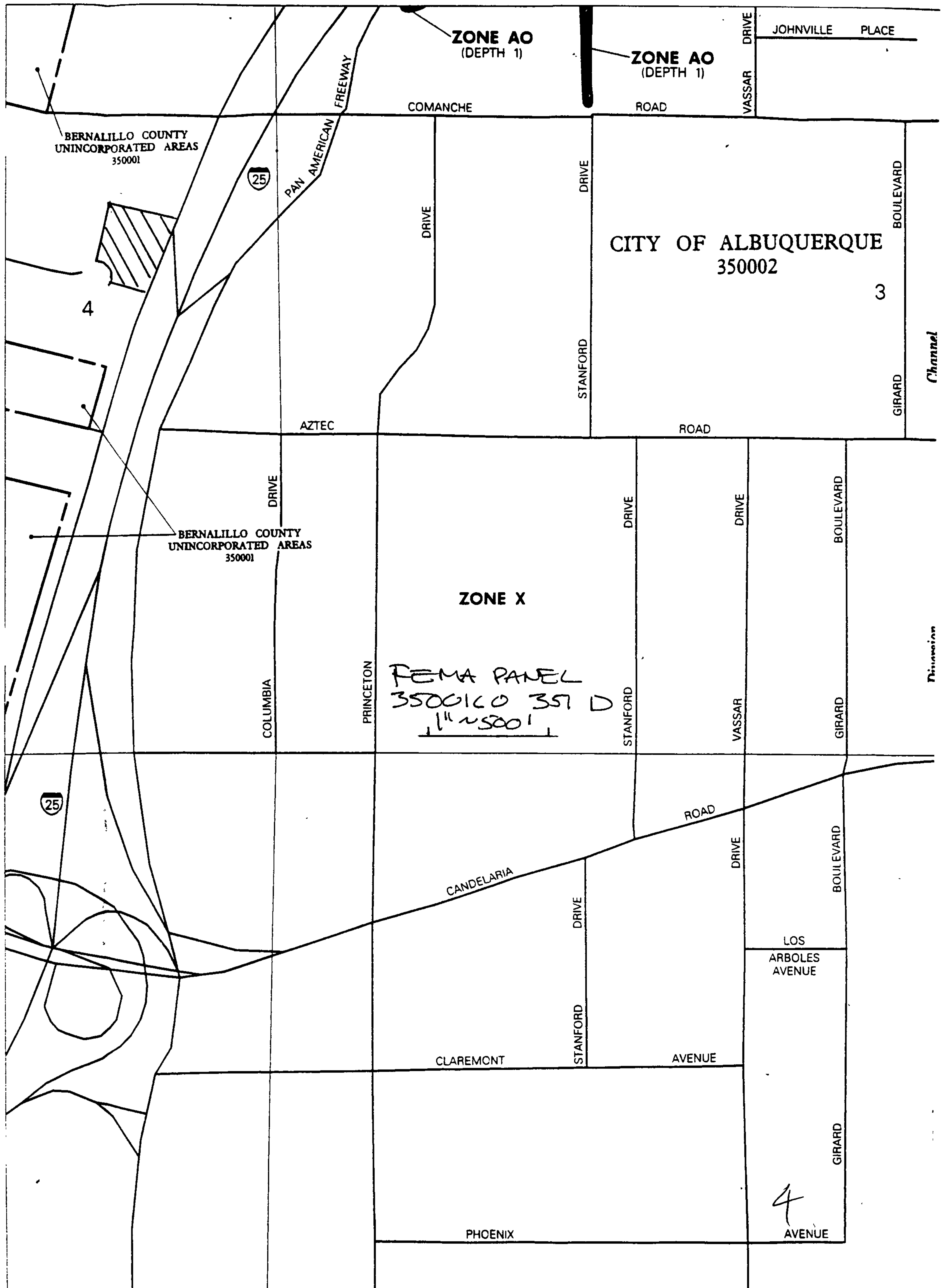
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Page 2 of 2

2

1'30"



Notes

1. Legal: Lot 13, Replat. of Coman Industrial District, Albuquerque, New Mexico (Area = 1.03 Acres)
2. Surveyor: Way John Surveying Co., April, 1982
3. Bench Mark: NMSHC Brass Cap No. 1-25-21, Elev. 5079.47
4. IBM: I.C. at South Lot Line Projection, Elev. 5041.38
5. Zoning: M-1
6. SCS Soil Type A (BKD)

Drainage Criteria

The site is located in the valley area, but not in a flood hazard area. In a pre-design meeting with Mr. Fred Aguirre, City Hydrology Department, it was determined that the site would be subject to Valley Criteria, i.e., pond Q_{50} with a Q_1 release rate onto public streets.

The offsite drainage is limited to a portion of the frontage road adjacent to the east side of the site. The areas north and south of the site drain in a parallel pattern to the site. Runoff from these two areas do not affect this site.

Offsite Area = 7500 ft.² draining to and across site.

Q_{50} offsite = $(0.65)(4.87)(0.17 \text{ Ac.}) = 0.5 \text{ cfs}$

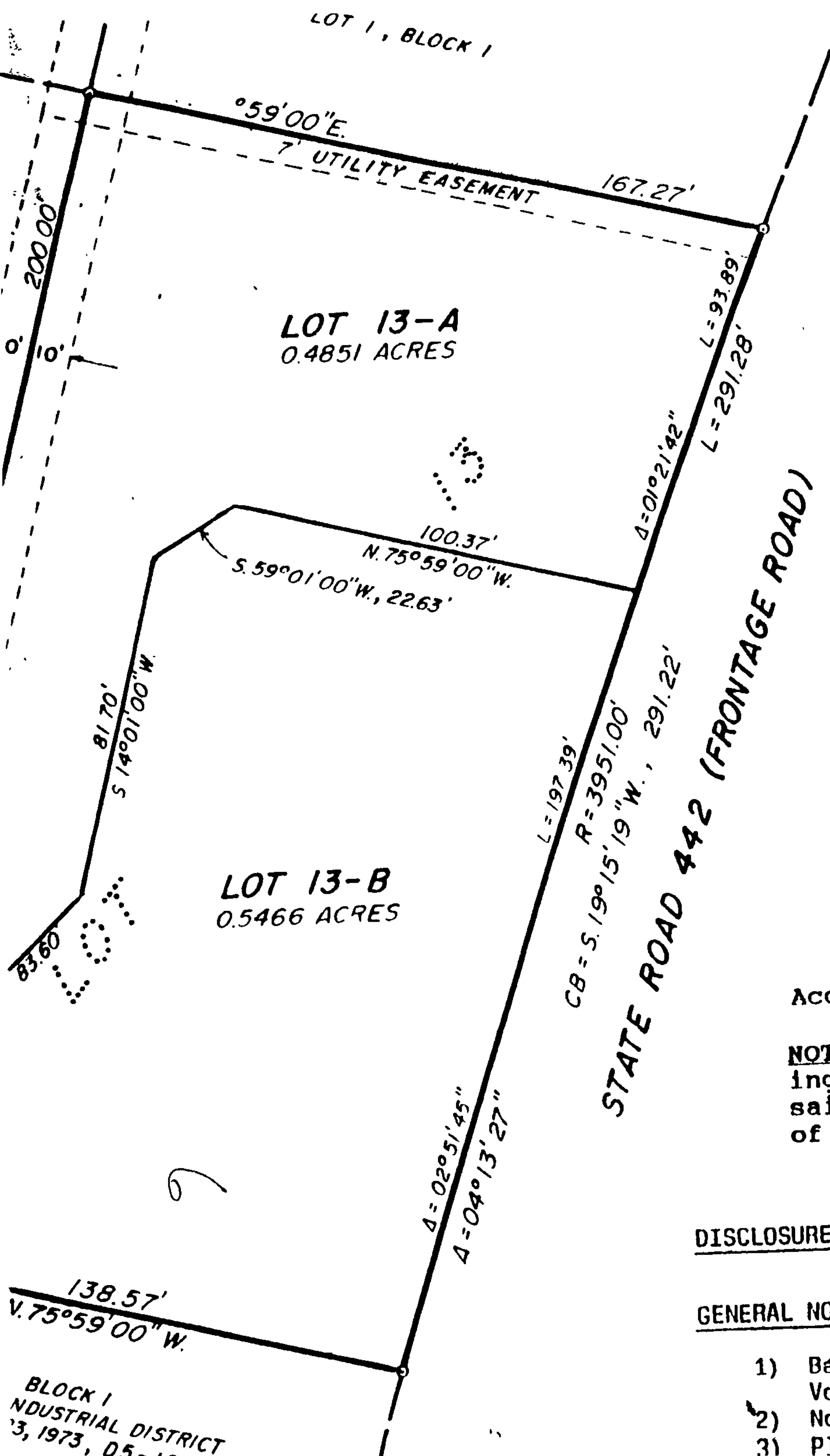
Vol. 50 offsite = $(0.65)(2.0/12)(7500) = 813 \text{ ft.}^3$

An equivalent on-site volume will be discharged directly to the site drivepad. The remaining site, plus the offsite drainage area along I-25 will be captured or controlled release from a pond at the SW corner of the site.

On-Site Drainage

- Equivalent free discharge area to account for offsite flows
 $813 \text{ ft.}^3 = (0.70)(2.0/12)(x) = 7000 \text{ ft.}^2$
- On-Site drainage to pond, plus offsite drainage area = 1.04 Ac.
- Vol. 50 to pond = $(0.47)(2.0/12)(45,302 \text{ ft.}^2) = 3549 \text{ ft.}^3$
 Q_{50} to pond = $(0.47)(4.87)(1.04) = 2 \text{ cfs}$
- Q_1 outflow rate = $(0.47)(1.62)(1.04) = 0.8 \text{ cfs}$
- Peak vol. stored while simultaneously outflowing Q_1 of 0.8 cfs = 2131 ft.³ at a time of 41 min. from start of condition (programmable calculator)
- Pipe size for a head of 1.5' while outflowing 0.8 cfs = 0.10 ft.², use 1-4" diameter pipe.
- Pond Size = 10' wide x 1.5' deep x 145' long
- Spillway capacity, based on $Q_{100} = (0.47)(5.4)(1.04) = 2.6 \text{ cfs}$.
Broad crested wier = CLH 3/2 - available head = 0.2'
Breadth = 12' to be discharged over drivepad.
- S.O. #19 submitted to City Design for outflow drain of pond to Rankin Rd.

5



Access is controlled to State Road 442 (frontage road).

NOTE: - Property is subject to a reciprocal access easement for ingress and egress and drainage, parking, and refuse easements and said easements are for the benefit and use by and for the owners of Lots 13-A and 13-B and are to be maintained by said owners.

DISCLOSURE STATEMENT: The purpose of this plat is to make 2 lots from 1 existing lot.

GENERAL NOTES:

- 1) Basis of Bearings = COMAN INDUSTRIAL DISTRICT filed October 23, 1973
Vol. D5, folio 188
- 2) No field work performed.
- 3) Plat shows all easements of record.

E-2-99

OFFSITE FLOW - PASS THROUGH

NMSHTD ROW FOR W I25 FRONTAGE
RD #
ON-RAMP

NATIVE, STEEP

TREAT AS CLASS "C" - $Q_{p100/6} = 3.14 \text{ CFS/Ac ZONE 2}$
AREAS BY AUTOCAD POLYLINES

OPP SITE - LOT 13-B

4659 SF

OPP 13-A

1498 SF

6157 SF

$$\frac{6157}{43560} \times 3.14 = 0.4438 \text{ } 20.44 \text{ CFS}$$

EXIST OFFSITE

82-99

ALLOWABLE OUT FLOW

FROM 13-13 (SIDE) + 13-A

0.80 CFS 1982 DRAINAGE PLAN

PASS THROUGH FROM NMSHD ROW

0.44 CFS

1.24 TOTAL CFS

8

8-2-99

TOTAL AREA OF SITE + LOT 13-A
FROM FRANK WILSON 1988 PLAT

$$1.5466 \text{ AC} + .4551 \text{ AC} = 1.0317 \text{ AC}$$
$$\sim 23,810 \text{ SF} + \sim 21,131 \text{ SF} \quad \sim 44,941 \text{ SF}$$

SITE = 13-B 13-A

LOT 13-A CONTRIBUTING

PER MARVIN KURTZ 1989 DRAINAGE PLAN
APX 7200 SF OF 13-A FLOWS OFFSITE OR
TO A SUMP ON SITE @ 13-A. IN ANY CASE,
DOES NOT CONTRIBUTE TO 13-B OR RANKIN RD.

→ * TO ADJACENT PROPERTY, NW CORNER

THIS PLAN REPRESENTED THEN-EXISTING
CONDITIONS, ESSENTIALLY THE SAME STRUCTURES
AS EXIST NOW.

7200 SF CORRESPONDS CLOSELY TO THE WEST
HALF OF 13-A NORTH OF THE PANHANDLE ROAD 13-B
SUPPOSEDLY. A SWALE EAST OF THE BLDGS &
CONC PAD TOOK EAST FLOW TOWARD RANKIN
VIA A SWALE.

ACTUALLY, THE HIGH POINT, THEN & NOW, WAS
APX 80 FT S OF THE START OF THE PANHANDLE *
SO ACTUALLY MOST OF 13-A & SOME OF 13-B DRAINS
OFFSITE TO NW.

FOR PRESENT PURPOSES ASSUME

ALL OF 13-A EXCEPT 7200 SF CONTRIBUTES
ALL EXISTING AS PERMIT "C", EITHER
GRAVEL PARKING OR STEEP NATIVE ON
THE FRONTAGE RD EMBANKMENT.

ESS PROPOSED CONVD

10-17-99

- UNCONTROLLED RUNOFF - DIRECTLY TO STREET
- AREAS BY AUTOCAD POLYLINE S

LANDSCAPING $Q_{p, 100} = 2.28 \text{ CFS/ACRE} - \text{ZONE 2}$

616 -- S OF BLDG, EXIST
43
42 } EXIST PLANTERS AT BLDG
139
103 } NEW PLANTERS

943 SF

IMPERVIOUS $Q_{p, 100} = 4.37 \text{ CFS/AC} \text{ ZONE 2}$

2174 EXIST BLDG
1795 PAVING & SW

3969

$Q_{p, 100}$

$$\frac{(943)(2.28)}{43560} + \frac{(3969)(4.37)}{43560} = 0.049 + 0.398$$

$\sim 0.45 \text{ CFS}$

ESS

8-10-99

ALLOWABLE OUTFLOW RATE FROM POND

$$\text{OUT}_{\text{ALLOW POND}} = (\text{ALLOW OUT, SITE}) + (\text{PASS THROUGH}) - (\text{UNCONTROLLED TO STREET})$$

$$= 0.80 + 0.44 - 0.45$$

↑ HISTORICAL BY SENSE OF PREVIOUS
DRAINAGE PLANS FOR THE SITE

$$\text{OUT}_{\text{POND ALLOWED}} = 0.79 \text{ LPS PEAK}$$

ESS

E-10-99

AREA TO DETENTION/DELAY PONDING

LOTS (13A + 13-B) + OFFSITE ROW

- 13A NON CONTRIB

- 13B DIRECTLY TO STREET

13A	13B	13A-ROW	13B-ROW
21	126	23	808

+ (4659 + 1498)

- 7200 - (616 + 43 + 2174 + 1915)

= ~~1118744~~

(44934 + 6157) - (7200 + 4748)

= 51091 - 11948 = 39,143 SF

ESS

8-11-99

WEIR CAPACITY - 1 16" CMU OMITTED

$$Q = C L H^{3/2}$$

$$C \sim 3, \text{ say } 2.75$$

$$Q_{\text{CAP}} = 2.75 \left(\frac{16}{12} \right) \left(\frac{6}{12} \right)^{3/2} \\ = 1.9959 \\ \sim 2200 \text{ cfs}$$

AREA DRAINING TO CUT OUT
AREA BY AUTOCAD POLYLIN
EAST OF BLDG & WALL (ALONG NEW RIDGE)
UP TO TOP OF DRAINAGE @ 125 ROW.

A = 11032 SF ALL STEEP NATURAL - RAIN ZONE 2
LND RT A \rightarrow TRT C'

10 PM TABLE A-9

$$\frac{11032 \text{ SF}}{43560 \text{ SF/Ac}} \cdot \frac{3.14 \text{ cfs}}{\text{Ac}} = .2532 \text{ Ac} \cdot \frac{3.14 \text{ cfs}}{1 \text{ Ac}}$$

$$\sim 0.7952 \sim 0.80 \text{ cfs}$$

0.80 < 2.00 \Rightarrow 1 CMU CUT OUT ~~OK~~
OK ALL FLOW

SINCE 1 CUTOUT HAS ADEQUATE CAPACITY (WEST WALL)
SEVERAL WILL HAVE MORE THAN ENOUGH (EAST WALL)

NOTE: ACTUAL NORTH WIDTH = 24" > 16" OK

ESS - PROPOSED 10-17-99

FLUDES / TREATMENT MEAS TO POND

TOTL = 39,143 SF 134 A REBARS STREET THESE CARS

ALL "LANDSCAPE" AREAS EXCEPT POND SO STEP AS TO BE CONSIDERED TREATMENT "D"

"A", NATURAL TREAT, MILD SLOP
 "B", MILD SLOPE LS (POUD)
 "D", IMPERVIOUS

NEW BLDG 2546
 NEW PAVE 4737

2 EX SHEETS 2x149

298
 7583

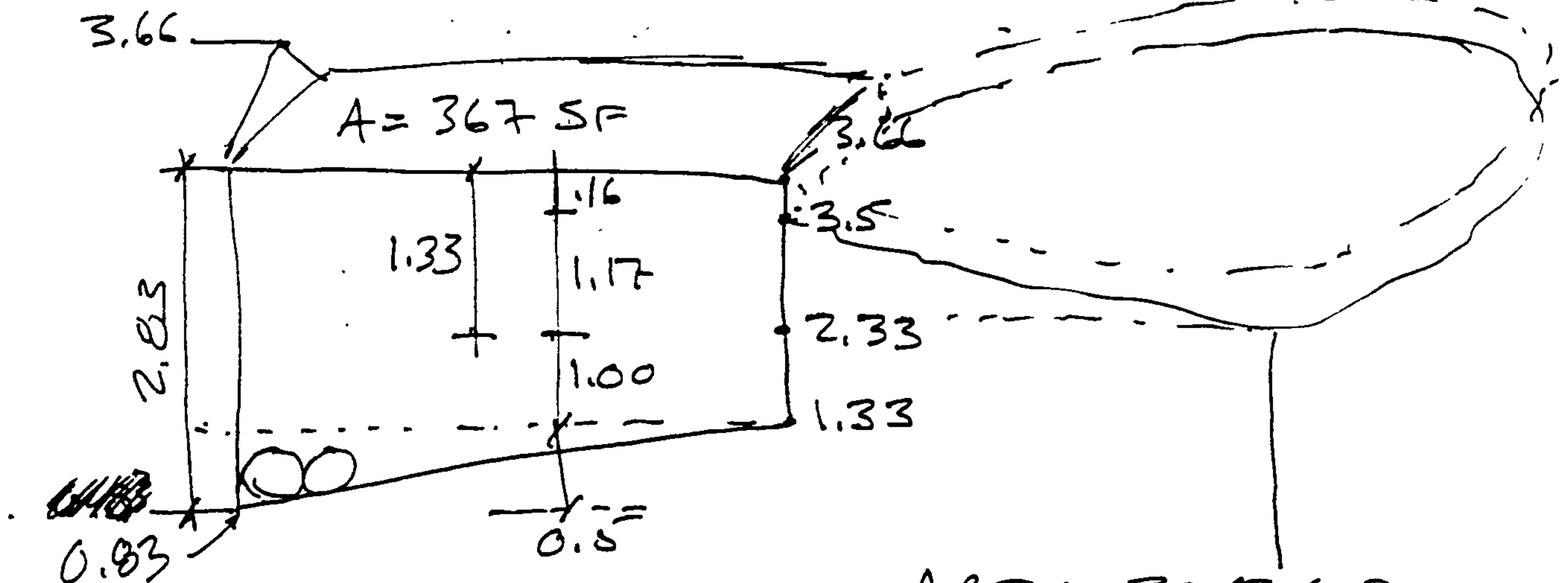
"C" THE ELSE 39143-7548 = 31,562

39,143 SF = 0.8986 AC = 0.0014041 SQ MI

TREAT %

A B C D
 0 0.84 2/75 17.41

1ST APPROXIMATION
PARKIN LOT AREA AT
3.66 SAME AS AT 35.5



AREA 3.5 ~~3.66~~ CONTOUR
IN PARKING AREA
5203 SF

AREA 3.0 CONTOUR
IN PARKING
1418 SF

FILE=ESSVOL.WQ1

10/17/99 07:49 AM

ECONOMY SALES AND SERVICE - 421 RANKIN RD. NE
 SMALL RECTANGULAR POND W/ VERICAL WALLS AS AVERAGE END AREA,
 PLUS PARKING LOT PONDING AS "PYRAMID", ELEV 2.33 AND UP

RECTANGULAR POND IN CORNER

ELEV FT	AREA	PYRAMID				AV END AREA			
		DVOL	CONE	VOL FT ^ 3	VOL AC-FT	DVOL	AV AREA	VOL FT ^ 3	VOL AC-FT
3.66	367	59	916	0.0210	59	947	0.0217		
3.5	367	184	858	0.0197	184	888	0.0204		
3	367	246	674	0.0155	246	705	0.0162		
2.33	367	367	428	0.0098	367	459	0.0105		
1.33	367	61	61	0.0014	92	92	0.0021		
0.83	0		0	0.0000		0	0.0000		

PARKING AREA PONDING

PYRAMID						AV END AREA		
ELEV FT	AREA	DVOL CONE	VOL FT ^ 3	VOL AC-FT	DVOL AV AREA	VOL FT ^ 3	VOL AC-FT	
3.66	5203	832	2705	0.0621	832	2963	0.0680	
3.5	5203	1556	1873	0.0430	1655	2130	0.0489	
3	1418	317	317	0.0073	475	475	0.0109	
2.33	0		0	0.0000		0	0.0000	

ELEV =

H =

TOTAL VOLUME =

TOTAL VOLUME =

3.66	2.83	3,652 CU FT, OR	0.0838 AC FT
3.5	2.67	2,761 CU FT, OR	0.0634 AC FT
3	2.17	1,021 CU FT, OR	0.0234 AC FT
2.33	1.5	459 CU FT, OR	0.0105 AC FT
1.33	0.5	92 CU FT, OR	0.0021 AC FT
0.83	0	0 CU FT, OR	0.0000 AC FT

16

FILE = ESorifice2.123

08/13/99

09:48 AM

ORIFICES FOR POND ROUTING

HEAD MATCH ELEVS FOR POND VOULUMES

FREE DISCHARGE FLOW THROUGH ORFICE: $Q = C * A * \text{SQRT}(2 * g * h)$

C=COEFFICIENT, APX 5/8; A= FLOW AREA, SF; g=GRAVITY=32.17 FT/SEC ^ 2

h=HT OF WATER SURFACE ABOVE *CENTROID* OF FLOW AREA, FT

H=HT OF WATER ABOVE BOTTOM OF ORIFICE, = CENTROID + h)

 $C * \text{SQRT}(2 * g)$ OFTEN TAKEN AS 5.0, ==> C=0.623346

MATHEMATICALLY NOT VALID FOR WATER SURFACE BELOW CENTROID OF ORIFICE!

==> ENTER THIS NUMBER

CIRCULAR

 $5 * A * \text{SQRT}(h)$

# H, FT	0.200	0.500	1.500	2.170	2.670	2.830	3.000
# DIAM,FT	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
h, FT	0.075	0.375	1.375	2.045	2.545	2.705	2.875
AREA, SF	0.049	0.049	0.049	0.049	0.049	0.049	0.049
Q, CFS	0.067	0.150	0.288	0.351	0.392	0.404	0.416
V, FPS	1.369	3.062	5.863	7.150	7.977	8.223	8.478
$Q * 2$ (2 ORIFICES)	0.134	0.301	0.576	0.702	0.783	0.807	0.832

CIRCULAR

 $5 * A * \text{SQRT}(h)$

# H, FT	0.200	0.500	1.500	2.170	2.670	2.830	3.000	3.200	3.400
# DIAM,FT	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333
h, FT	0.033	0.333	1.333	2.003	2.503	2.663	2.833	3.033	3.233
AREA, SF	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
Q, CFS	0.080	0.252	0.504	0.618	0.690	0.712	0.734	0.760	0.785
V, FPS	0.913	2.887	5.774	7.077	7.911	8.160	8.416	8.708	8.991

17

*C PRINT CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; 3,5,10,20 SIMILAR
 *C RATING CURVE ID NEGATIVE => COMPUTE BUT NOT PRINT RATING CURVE
 ; RATING CURVE n NEGATIVE => FLOODPLAIN SLOPE, n POSITIVE => CHANNEL SLOPE
 J
 *S FILE ESS600b - Economy Sales & Service, 6-hour, 100 year storm, run b
 *S 421 Rankin Rd NE at I-25 west frontage road
 *S OUTFLOW LIMITED TO 0.79cfs so entire (site + offsite) matches exist allowable
 *S
 *S FLOW IS **NOT** BULKED FOR SEDIMENT
 *C RAINFALL ESTIMATED FROM CITY OF ALBUQUERQUE D.P.M. FIGURES C-1, C-2, & C-3
 *C 1 hr => 1.95 INCHES; 6hrs => 2.3 INCHES; 24 hrs => 2.6 INCHES
 *C
 *C BASIN & CHANNEL ROUTING PARAMETERS REFLECT THE JUDGMENT OF THE ENGINEER,
 *C AND MAY DIFFER FROM OTHER STUDIES IN THE AREA.
 *C
 *C REVISION NOTES: ORIGINAL FILE CREATED 8-11-99 BY TUCKER GREEN P.E.
 *C 10-17-99: REVISED PARKING AND PAVING, AND REV'D PONDING CONTOURS
 *C

 * RAINFALLS PER ALBUQUERQUE NM DPM - COMMENT OUT THOSE THAT DON'T APPLY
 * TYPE 1 IS 6-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C5)
 * FOR 6-HR USE DT = 0.033333 HR = 2 MINUTES
 * TYPE 2 IS 24-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C6)
 * FOR 24-HR USE DT = 0.0500 HR = 5 MINUTES
 * RAIN QUARTER = 0.0 EXCEPT FOR TYPE 3 (6-HR PMP: SEE AHYMO MANUAL)
 * FOR 10-YR STORM, USE 0.667 * 100-YR VALUES (PER DPM 22.2 TABLE A-3, JAN 1993)
 *

 * RAINFALL AMOUNTS, INCHES
 * RAINFALL HUNDRED TYPE= 2 RAIN QUARTER= 0.0 RAIN ONE= 1.97
 RAIN SIX= 2.31 RAIN DAY= 2.7 DT= .05 HR
 AINFALL HUNDRED TYPE= 1 0.0 1.95 2.3 2.6 0.033333
 * RAINFALL TENYEAR TYPE= 1 0.0 1.31 1.54 1.80 0.033333
 *

 *S ALL CONTRIBUTING. INCLUDES I25 ROW, EXCLUDES EX.BLDG & FRONT OF SITE
 COMPUTE NM HYD ID= 1 HYD= WEST DA=0.0014041 SQ MI
 PER A= 0 B= 0.84 C= 81.75 D= 17.41
 TP= -0.13333 HRS RAIN= -1
 PRINT HYD ID= 1 CODE= 5
 *

 *S HYD PONDOUT.2D3 IS FOR 2 3-INCH DIAMETER ORIFICES
 ROUTE RESERVOIR ID=3 HYD=PONDOUT.2D3 INFLOW ID=1 CODE=5.

OUTFLOW CFS	STORAGE AC-FT	ELEVATION FT
0.000	0.000	0.83
0.301	0.0021	1.33
0.576	0.0105	2.33
0.702	0.0236	3.0
0.783	0.0619	3.5
0.807	0.0809	3.66

 *S HYD PONDOUT.1D4 IS FOR 1 4-INCH DIAMETER ORIFICE
 ROUTE RESERVOIR ID=4 HYD=PONDOUT.1D4 INFLOW ID=1 CODE=5.

OUTFLOW CFS	STORAGE AC-FT	ELEVATION FT
0.000	0.000	0.83
0.252	0.0021	1.33
0.504	0.0105	2.33
0.618	0.0236	3.0
0.690	0.0619	3.5
0.712	0.0809	3.66

 FINISHre

AHYMD PROGRAM (AHYMD194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 10/17/1999
 START TIME (HR:MIN:SEC) = 08:13:22 USER NO. = PERSEENG.194
 INPUT FILE = ESS600b.dta

*
 *C PRINT CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; 3,5,10,20 SIMILAR
 *C RATING CURVE ID NEGATIVE => COMPUTE BUT NOT PRINT RATING CURVE
 *C RATING CURVE n NEGATIVE => FLOODPLAIN SLOPE, n POSITIVE => CHANNEL SLOPE
 *S
 *S FILE ESS600b - Economy Sales & Service, 6-hour, 100 year storm, run b
 *S 421 Rankin Rd NE at I-25 west frontage road
 *S OUTFLOW LIMITED TO 0.79cfs so entire (site + offsite) matches exist allowable
 *S
 *S FLOW IS **NOT** BULKED FOR SEDIMENT
 *C RAINFALL ESTIMATED FROM CITY OF ALBUQUERQUE D.P.M. FIGURES C-1, C-2, & C-3
 *C hr => 1.95 INCHES; 6hrs => 2.3 INCHES; 24 hrs => 2.6 INCHES
 *C
 *C BASIN & CHANNEL ROUTING PARAMETERS REFLECT THE JUDGMENT OF THE ENGINEER,
 *C AND MAY DIFFER FROM OTHER STUDIES IN THE AREA.
 *C
 *C REVISION NOTES: ORIGINAL FILE CREATED 8-11-99 BY TUCKER GREEN P.E.
 *C 10-17-99: REVISED PARKING AND PAVING, AND REV'D PONDING CONTO
 *C
 *C

 * RAINFALLS PER ALBUQUERQUE NM DPM - COMMENT OUT THOSE THAT DON'T APPLY
 * TYPE 1 IS 6-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C5)
 * FOR 6-HR USE DT = 0.033333 HR = 2 MINUTES
 * TYPE 2 IS 24-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C6)
 * FOR 24-HR USE DT = 0.0500 HR = 5 MINUTES
 * RAIN QUARTER = 0.0 EXCEPT FOR TYPE 3 (6-HR PMP: SEE AHYMD MANUAL)
 * FOR 10-YR STORM, USE 0.667 * 100-YR VALUES (PER DPM 22.2 TABLE A-3, JAN 1993)
 *

 * RAINFALL AMOUNTS, INCHES
 * HUNDRED TYPE= 2 RAIN QUARTER= 0.0 RAIN ONE= 1.97
 * RAIN SIX= 2.31 RAIN DAY= 2.7 DT= .05 HR
 * RAINFALL HUNDRED TYPE= 1 0.0 1.95 2.3 2.6 0.033333

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033333 HOURS END TIME = 5.999940 HOURS

.0000	.0018	.0035	.0054	.0072	.0092	.0111
.0131	.0152	.0173	.0194	.0216	.0239	.0262
.0286	.0311	.0336	.0363	.0390	.0418	.0447
.0477	.0508	.0541	.0575	.0610	.0648	.0686
.0727	.0771	.0816	.0870	.0928	.0989	.1122
.1418	.1874	.2529	.3423	.4597	.6095	.7959
1.0234	1.2339	1.3220	1.3963	1.4625	1.5227	1.5781
1.6295	1.6776	1.7227	1.7651	1.8051	1.8429	1.8787
1.9126	1.9447	1.9752	2.0041	2.0316	2.0580	2.0841
2.0498	2.0553	2.0605	2.0655	2.0703	2.0749	2.0794
2.0837	2.0879	2.0919	2.0958	2.0996	2.1033	2.1070
2.1105	2.1139	2.1172	2.1205	2.1237	2.1268	2.1299
2.1329	2.1358	2.1387	2.1416	2.1443	2.1471	2.1497
2.1524	2.1550	2.1575	2.1600	2.1625	2.1649	2.1673
2.1697	2.1720	2.1743	2.1765	2.1788	2.1810	2.1831
2.1853	2.1874	2.1895	2.1916	2.1936	2.1956	2.1976
2.1996	2.2015	2.2034	2.2053	2.2072	2.2091	2.2109
2.2128	2.2146	2.2164	2.2181	2.2199	2.2216	2.2233
2.2250	2.2267	2.2284	2.2301	2.2317	2.2333	2.2350
2.2366	2.2381	2.2397	2.2413	2.2428	2.2444	2.2459

2.2474 2.2489 2.2504 2.2519 2.2533 2.2548 2.2562
 2.2577 2.2591 2.2605 2.2619 2.2633 2.2647 2.2661
 2.2674 2.2688 2.2701 2.2715 2.2728 2.2741 2.2754
 2.2767 2.2780 2.2793 2.2806 2.2818 2.2831 2.2844
 2.2856 2.2868 2.2881 2.2893 2.2905 2.2917 2.2929
 2.2941 2.2953 2.2965 2.2977 2.2988 2.3000

* RAINFALL TENYEAR TYPE= 1 0.0 1.31 1.54 1.80 0.033333

*

*S ALL CONTRIBUTING. INCLUDES I25 ROW, EXCLUDES EX.BLDG & FRONT OF SITE

COMPUTE NM HYD ID= 1 HYD= WEST DA=0.0014041 SQ MI

PER A= 0 B= 0.84 C= 81.75 D= 17.41

TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = .96490 CFS UNIT VOLUME = .9881 B = 526.28 P60 = 1.9500
 AREA = .000244 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .107043HR TP = .133330HR K/TP RATIO = .802846 SHAPE CONSTANT, N = 4.460466
 UNIT PEAK = 3.3466 CFS UNIT VOLUME = .9965 B = 384.78 P60 = 1.9500
 AREA = .001160 SQ MI IA = .35153 INCHES INF = .83427 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 1 CODE= 5

HYDROGRAPH FROM AREA WEST

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.4	2.667	.0	4.000	.0	5.333	.0
.167	.0	1.500	3.0	2.833	.0	4.167	.0	5.500	.0
.333	.0	1.667	1.6	3.000	.0	4.333	.0	5.667	.0
.500	.0	1.833	.8	3.167	.0	4.500	.0	5.833	.0
.667	.0	2.000	.5	3.333	.0	4.667	.0	6.000	.0
.833	.0	2.167	.2	3.500	.0	4.833	.0	6.167	.0
1.000	.0	2.333	.1	3.667	.0	5.000	.0		
1.167	.0	2.500	.1	3.833	.0	5.167	.0		

RUNOFF VOLUME = 1.24383 INCHES = .0931 ACRE-FEET
 PEAK DISCHARGE RATE = 2.98 CFS AT 1.500 HOURS BASIN AREA = .0014 SQ. MI.

*

*S HYD PONDOUT.2DB IS FOR 2 3-INCH DIAMETER OFFICES

ROUTE RESERVOIR ID=3 HYD=PONDOUT.2DB INFLOW ID=1 CODE=5.

OUTFLOW CFS	STORAGE AC-FT	ELEVATION FT
0.000	0.000	0.83
0.301	0.0021	1.33
0.576	0.0105	2.33
0.702	0.0236	3.0
0.783	0.0619	3.5
0.807	0.0809	3.66

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

20

.00	.00	.83	.000	.00
.17	.00	.83	.000	.00
.33	.00	.83	.000	.00
.50	.00	.83	.000	.00
.67	.00	.83	.000	.00
.83	.00	.83	.000	.00
1.00	.00	.83	.000	.00
1.17	.00	.83	.000	.00
1.33	.41	1.07	.001	.14
1.50	2.98	2.77	.019	.66
1.67	1.57	3.23	.042	.74
1.83	.82	3.30	.047	.75
2.00	.48	3.28	.045	.75
2.17	.22	3.21	.040	.74
2.33	.11	3.11	.032	.72
2.50	.07	2.99	.023	.70
2.67	.04	2.56	.015	.62
2.83	.02	1.99	.008	.48
3.00	.01	1.37	.002	.31
3.17	.01	.92	.000	.06
3.33	.01	.85	.000	.01
3.50	.01	.84	.000	.01
3.67	.00	.84	.000	.01
3.83	.00	.84	.000	.00

PEAK DISCHARGE = .751 CFS - PEAK OCCURS AT HOUR 1.87

MAXIMUM WATER SURFACE ELEVATION = 3.305

MAXIMUM STORAGE = .0470 AC-FT INCREMENTAL TIME= .033333HRS

*S HYD PONDOUT.1D4 IS FOR 1 4-INCH DIAMETER ORIFICE
 ROUTE RESERVOIR ID=4 HYD-PONDOUT.1D4 INFLOW ID=1 CODE=5.
 OUTFLOW CFS STORAGE AC-FT ELEVATION FT
 0.000 0.000 0.83
 0.252 0.0021 1.33
 0.504 0.0105 2.33
 0.618 0.0236 3.0
 0.690 0.0619 3.5
 0.712 0.0809 3.66

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.83	.000	.00
.17	.00	.83	.000	.00
.33	.00	.83	.000	.00
.50	.00	.83	.000	.00
.67	.00	.83	.000	.00
.83	.00	.83	.000	.00
1.00	.00	.83	.000	.00
1.17	.00	.83	.000	.00
1.33	.41	1.08	.001	.13
1.50	2.98	2.81	.020	.58
1.67	1.57	3.26	.044	.66
1.83	.82	3.34	.050	.67
2.00	.48	3.34	.050	.67
2.17	.22	3.28	.045	.66
2.33	.11	3.19	.038	.65
2.50	.07	3.09	.031	.63
2.67	.04	2.96	.023	.61
2.83	.02	2.58	.015	.55

10/17/99 8:46 AM

I:\ESS\nonACAD\AhyrRpt\Ess600bOUT.lwp

Page 4 of 4

3.00	.01	2.10	.009	.45
3.17	.01	1.51	.004	.30
3.33	.01	1.03	.001	.10
3.50	.01	.88	.000	.02
3.67	.00	.85	.000	.01
3.83	.00	.84	.000	.01
4.00	.00	.84	.000	.00

PEAK DISCHARGE = .668 CFS - PEAK OCCURS AT HOUR 1.90

MAXIMUM WATER SURFACE ELEVATION = 3.350

MAXIMUM STORAGE = .0504 AC-FT INCREMENTAL TIME= .033333HRS

*

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:13:22

22

ADDENDUM/REVISION
TO
DRAINAGE REPORT and CALCULATIONS
ECONOMY SALES & SERVICE
821 Rankin Rd. NE Albuquerque NM C.O.A. Drainage File G15/D10

LEGAL DESCRIPTION: ESS (Economy Sales & Service) is located on Lot 13-B, Block 1, Coman Industrial District.

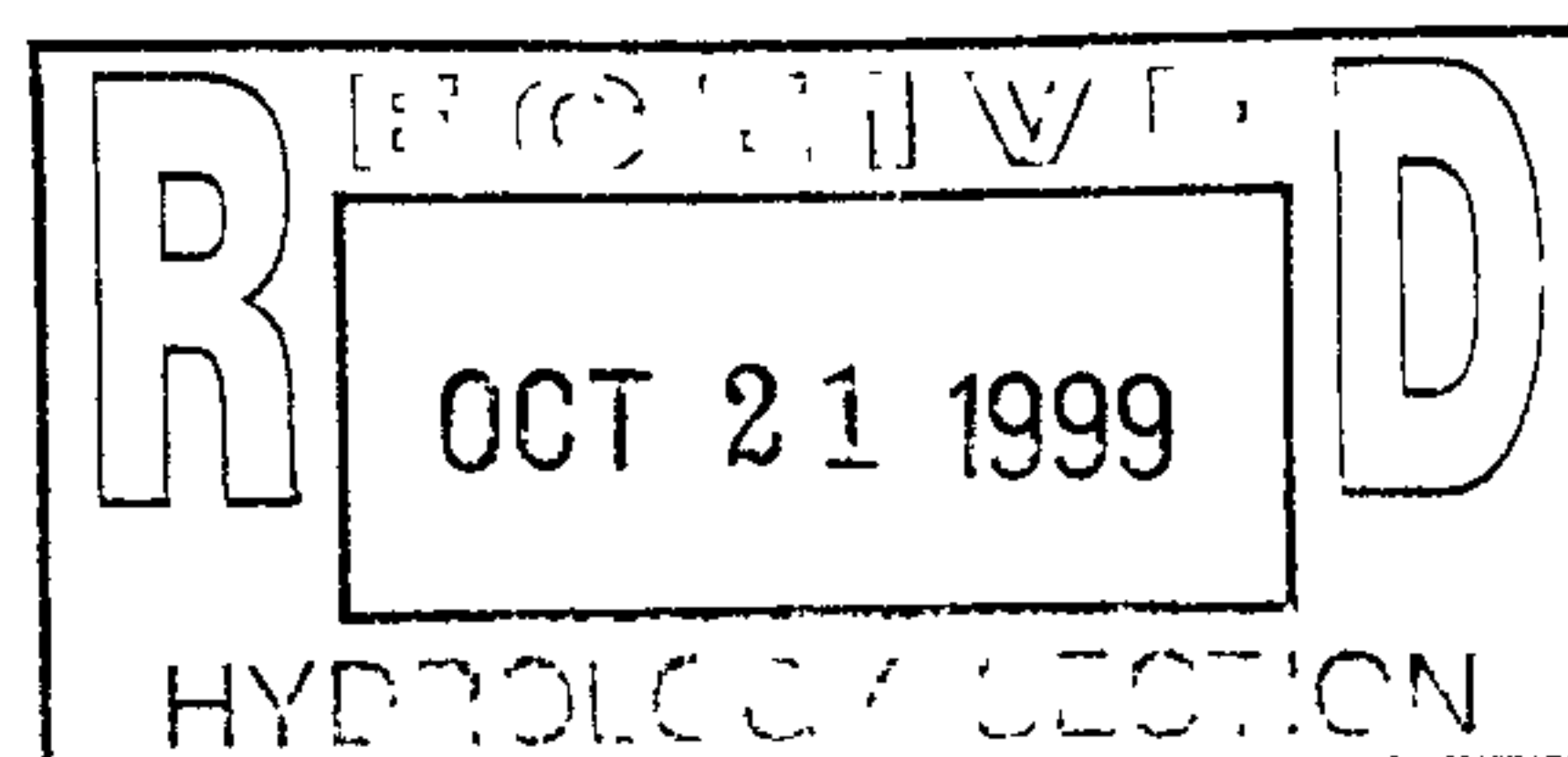
THE DUMPSTER LADY STRIKES AGAIN:

Shortly after the 10-17-99 drainage plan was submitted, Theresa Baca, reviewing for the City of Albuquerque, disapproved the location of the dumpster enclosure and pad. The plan dated 10-21-99 and submitted herewith shows the revised location.

Moving the dumpster forced minor changes to the grading, which are shown on the new plan. How minor? So minor that the calculations and AHYMO run were not redone. The table below provides before-and-after comparisons of the pavement areas draining to the street and to the pond, and also of the 43.0 & 43.5 contours used in calculating ponding volumes. Then the attached spreadsheet gives ponding volumes corresponding to the revised 43.0 and 43.5 contours. As shown, the changes are very minor, yeah, even trivial.

ITEM	OLD	NEW	NEW-OLD
Paving to street, sf	1795	1823	+28
Paving to pond, sf	4737	4710	-27
43.0 contour, sf	5203	5291	+88
43.5 contour, sf	1418	1420	+2

END OF ADDENDUM/REVISION



FILE=ESVOL2.123

10/21/99

12:26 AM

ECONOMY SALES AND SERVICE - 421 RANKIN RD. NE

SMALL RECTANGULAR POND W/ VERICAL WALLS AS AVERAGE END AREA,
PLUS PARKING LOT PONDING AS "PYRAMID", ELEV 2.33 AND UP

RECTANGULAR POND IN CORNER

ELEV FT	AREA	PYRAMID				AV END AREA			
		DVOL CONE	VOL FT ^ 3	VOL AC-FT	DVOL AV AREA	VOL FT ^ 3	VOL AC-FT		
3.66	367	59	916	0.0210	59	947	0.0217		
3.5	367	184	858	0.0197	184	888	0.0204		
3	367	246	674	0.0155	246	705	0.0162		
2.33	367	367	428	0.0098	367	459	0.0105		
1.33	367	61	61	0.0014	92	92	0.0021		
0.83	0		0	0.0000		0	0.0000		

PARKING AREA PONDING

ELEV FT	AREA	PYRAMID				AV END AREA			
		DVOL	CONE	VOL FT ^ 3	VOL AC-FT	DVOL	AV AREA	VOL FT ^ 3	VOL AC-FT
3.66	5291		847	2739	0.0629		847	3000	0.0689
3.5	5291		1575	1892	0.0434		1678	2153	0.0494
3	1420		317	317	0.0073		476	476	0.0109
2.33	0			0	0.0000			0	0.0000

ELEV =

H =

TOTAL VOLUME =

TOTAL VOLUME =

3.66

2.83

3,686 CU FT, OR

0.0846 AC FT

3.5

2.67

2,781 CU FT, OR

0.0638 AC FT

3

2.17

1,022 CU FT, OR

0.0235 AC FT

2.33

1.5

459 CU FT, OR

0.0105 AC FT

1.33

0.5

92 CU FT, OR

0.0021 AC FT

0.83

0

0 CU FT, OR

0.0000 AC FT



City of Albuquerque

Mr. Vincent Meyer
Engineering Associates, Inc.
540 Chama NE, Suite #11
Albuquerque, NM 87108

September 14, 1999

RE: TRAFFIC CIRCULATION LAYOUT REVIEW FOR BUILDING PERMIT
APPROVAL
ECONOMY SALES & SERVICES WAREHOUSE ADDITION, G15-D010, Engineer's
Stamp dated August 17, 1999

Dear Mr. Meyer:

The above referenced Traffic Circulation Layout (TCL) requires modifications to the site plan prior to review for Building Permit. The comments are indicated in red ink on the attached marked-up site plan.

Please note on the site plan that the engineer's certification required by the Hydrology section needs to include certification that this site was constructed in accordance with the TCL before Certificate of Occupancy (C.O.) is released.

Please return the attached marked-up site plan with your next submittal.

You can reach me at 924-3993 to set up a meeting to discuss this project.

Sincerely,

Afsaneh Yavari
Associate Engineer

Attachments

cc: Tucker Green, Per Se Engineering

PROJECT TITLE: ECONOMY SALES & SERVICE ZONE ATLAS/DRNG. FILE #: G-15-DD10

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: LOT 13-B, BLOCK 1, COMAN INDUSTRIAL DISTRICTCITY ADDRESS: 821 RANKIN RD NE ALBQ 87108ENGINEERING FIRM: PEIRSE ENGINEERING CONTACT: TUCKER GREENADDRESS: 9109 LA BARRANCA NE PHONE: 275-0451 / 239-7855 MOBILEOWNER: ECONOMY SALES & SERVICE CONTACT: JOHN FITZPATRICKADDRESS: 821 RANKIN RD NE PHONE: ~~344~~ 344-3242ARCHITECT: ENGINEERING ASSOCIATES CONTACT: VINCE MEYERSADDRESS: 540 CHAMA NE # 11 PHONE: 266-3311

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

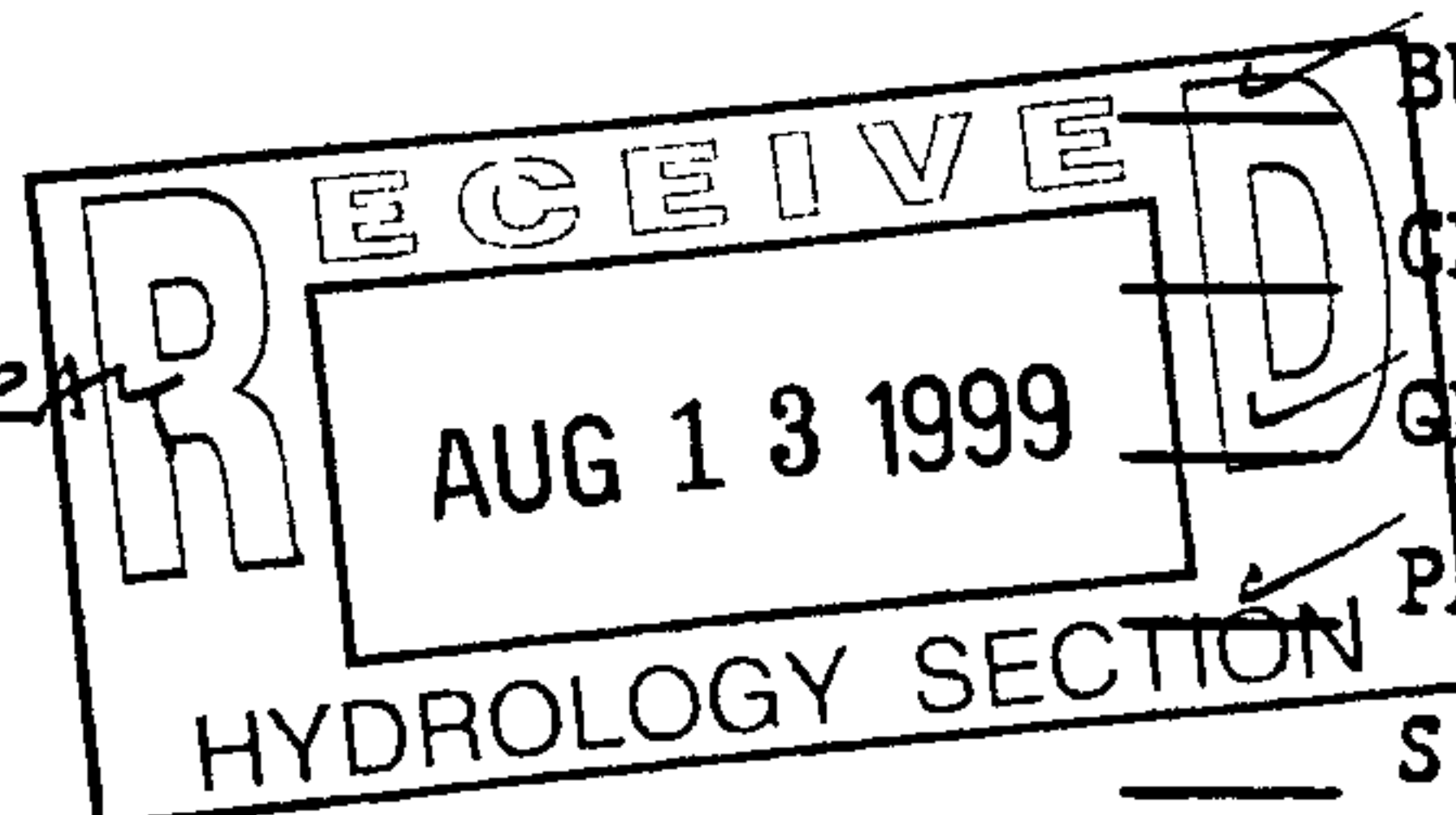
- ☒ DRAINAGE REPORT
- ☒ DRAINAGE PLAN
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION
- ☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☒ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☒ PAVING PERMIT APPROVAL ON SIDE ONLY
- ☐ S.A.D. DRAINAGE REPORT
- ☒ DRAINAGE REQUIREMENTS
- ☐ OTHER _____ (SPECIFY)

PRE-DESIGN MEETING:

- ☒ YES John Muerz
- ☐ NO
- ☐ COPY PROVIDED NO

DATE SUBMITTED: 8-13-99BY: TUCKER GREEN

DRAINAGE REPORT and CALCULATIONS
ECONOMY SALES & SERVICE
821 Rankin Rd. NE Albuquerque NM Map G-15

LEGAL DESCRIPTION: ESS (Economy Sales & Service) is located on Lot 13-B, Block 1, Coman Industrial District.

FLOOD ZONE: Per FEMA Panel 35001CO 351 D the site is not located in a 100-year flood zone.

SPECIAL NOTE: This plan actually addresses Lots 13A and 13B, even though it is prompted only by proposed changes to Lot 13B. The 1988 plat that created 13A & 13B from Lot 13 (Talos Log # 11-28-2161, Franklin Wilson, November 1988) contained a "reciprocal access easement for ingress and egress and drainage, parking, and refuse easements ..." (copy herewith). The approved drainage plan (G15/D10A, Marvin Kortum, March 1989) that went along with that plat action called for some (not all) of the flow from both lots to be directed to the EVEN-then-existing small concrete pond in the southwest corner of Lot 13A - the "other guy's" lot, not ESS's. The 1989 drainage plan referred to another approved plan from the early 1980's which established the allowable outflow rate for the site. The present design relies on that rate, which is 0.80 cfs peak.

EXISTING CONDITIONS: The site is located at the northeast end of the Rankin Rd. cul-de-sac. The east side of the site is actually part of the embankment for the on-ramp and frontage road for Interstate 25. The embankment continues up past the east property line and a small part of the I-25 ROW drains onto and through the site. Flow from the main part of I-25, and from the pavement of the frontage road, is diverted past the site in a bar ditch and does not reach the site. Generally the land slopes down from the east to the west, parallel to I-25. As a result, there is no flow onto the site from the north and south adjoining lots, nor to those lots from the site.

Lot 13B, the site, occupies about 0.55 acres and Lot 13A occupies about 0.49; the combined total is 1.0317 acres per the plat. A significant portion of the combined site does not drain directly to the pond and/or Rankin Rd. but instead drains northwest to the Irrigation Supply company located on Lot 12. There is some question about how much of the site is affected. The topo for the 1989 drainage plan shows a high area in approximately the same place as the 1999 topo prepared for this project, and this is approximately the middle of the combined site (13A & 13B). A concrete-block retaining wall (partly hidden behind the honeysuckle) along the east edge of lot 12 raises up above grade keeps overland flow from 13A from sliding directly onto 12.

The 1989 plan indicates that a swale drained much of 13A to the pond but the evidence presented on the plan was not strong. The swale does not appear to exist today. The 1989 plan claimed only about 7200 sf of 13A was excluded from the pond. While this is obviously low, it is used in the present analysis: it's wrong, but it's consistent and it's conservative.

Current development on 13A and 13B is very much the same as for the 1989 plan, with the exception of 2 additional metal "ship's container" storage sheds on 13B, occupying about 160 sf each. Each site has a building and a concrete pad. 13B, the ESS site, has a small amount of landscaping. All parking areas are currently paved with gravel and/or crusher fines. The pond is not functional. It is filled with dirt, as it was at the time of the 1989 plan, and the drain hole called for by that plan was never built. At some time in the past, a shelf was cut into the bank east of the existing ESS building and an existing retaining wall extending north from the ESS building.

PROPOSED CONDITIONS: ESS proposes to add a new warehouse north of the existing one and contiguous to it. Largely in response to current criteria for parking and landscaping, the front part of the site is being revised, with some asphalt paving and probably some additional landscaping. Part of the landscaping may be in the ponding area. However: the site has very little frontage, all in the southwest corner, and the site has existing landscaping

RECEIVED
AUG 13 1999
HYDROLOGY SECTION

along the south side; and there is extensive existing landscaping along the west side - it's just located on Lot 12. In short, the landscaping discussion is ongoing. Thus, while this plan shows proposed additional landscaping near the HC access path, the calculations do not rely on it: for calculation purposes that area is considered paved.

Total runoff as analyzed by this plan presumably represents an increase over the 1989 plan. Not only will more of the site be impervious but also the methods of calculating runoff have changed to ones that tend to yield higher peak runoff. The allowable peak rate has not changed, however; it is still at the 0.80 cfs set by the early 1980's drainage plan, based on then-acceptable formulas and criteria. An excerpt from that plan is included with this report; the copy quality is poor, but it's the best readily available. The 0.80 cfs is the allowable peak rate for runoff generated from Lots 13A & 13B. The peak rate for existing uncontrolled runoff onto the site from I-25 ROW. As shown in the calcs, this amounts to 0.44 cfs, making a total of 1.24 cfs.

In the present plan, the existing building and the front part of the site continue to discharge directly to the street. The peak rate for this area is apx 0.45 cfs, leaving $1.24 - 0.45 = 0.79$ cfs as the allowable peak outflow from the rest of the site and the contributing part of I25 ROW. To achieve this rate, the pond will be enlarged upward (the walls will be extended) and there will be temporary ponding in the parking lot for the 100-year storm. The overflow spillway for the pond is actually a "sideways level" grade break in the newly paved area; the flow path is out the driveway.

Everyday outflow from the pond will be from a pair of 3-inch diameter holes to be cored in the driveway side of the existing concrete wall of the pond. This results in a peak outflow rate of 0.75 cfs at an elevation of 43.28, compared to an available (for the orifices analyzed) 0.78 cfs at the overflow elevation of 43.5. Thus the plan allows for additional runoff from future improvements not currently proposed, without further regrading the parking area..

The same AHYMO run also analyzed a single 4-inch diameter orifice. This would also work: peak outflow is 0.66 cfs at an elevation of 43.32, compared to an available 0.69 at 43.5. The pair of 3-inch orifices appears to be preferable because of having slightly more capacity to handle additional (future) development on site.

The new warehouse will primarily be a metal building, whereas the existing ESS building is CMU block construction. However, the east wall of the new building will be CMU designed by EAI (Engineering Associates, Inc.) to retain soil at the levels shown on the plan. The east end of the new structure will be open for the time being but is expected to be enclosed in the future. The retaining wall is not affected. The proposed wall extends past the end of the building, providing a notch for flow from the upper level and room for finished grade slopes to tie back to the foot of the wall.

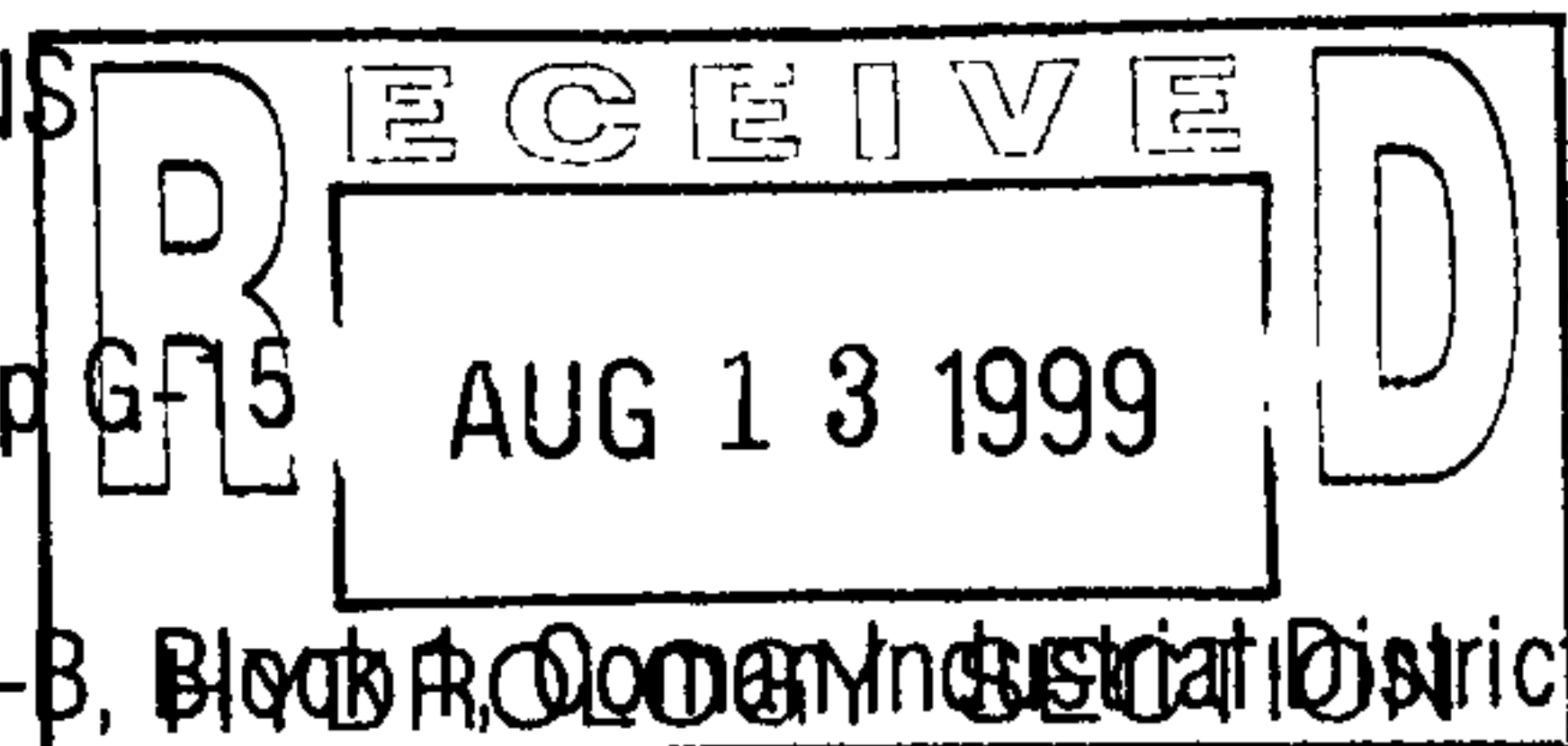
The "upper level" consists of the area between the buildings and a (2nd) new CMU wall to be built with this project (also designed by EAI). Actually, most of the ground slopes at 3H or 4H to 1V. Runoff from the embankment will pass over the wall without being concentrated and flow to a swale, which leads to the single notch in the lower wall, previously mentioned. The swale collects only runoff from the embankment and the "upper level" area; the new roof flows to the west, away from the swale.

A NOTE ON GRADING: Paving in the front part of the site will be moderately steep asphalt. To avoid visual clutter, per General Note 5, grading in this area is specified only by spot elevations. Grading elsewhere is specified by a combination of contour lines and spot elevations.

END OF REPORT



DRAINAGE REPORT and CALCULATIONS
ECONOMY SALES & SERVICE
821 Rankin Rd. NE Albuquerque NM Map G-15



LEGAL DESCRIPTION: ESS (Economy Sales & Service) is located on Lot 13-B, Block 1, Oldman Industrial District.

FLOOD ZONE: Per FEMA Panel 35001CO 351 D the site is not located in a 100-year flood zone.

SPECIAL NOTE: This plan actually addresses Lots 13A and 13B, even though it is prompted only by proposed changes to Lot 13B. The 1988 plat that created 13A & 13B from Lot 13 (Talos Log # 11-28-2161, Franklin Wilson, November 1988) contained a "reciprocal access easement for ingress and egress and drainage, parking, and refuse easements ..." (copy herewith). The approved drainage plan (G15/D10A, Marvin Kortum, March 1989) that went along with that plat action called for some (not all) of the flow from both lots to be directed to the EVEN-then-existing small concrete pond in the southwest corner of Lot 13A - the "other guy's" lot, not ESS's. The 1989 drainage plan referred to another approved plan from the early 1980's which established the allowable outflow rate for the site. The present design relies on that rate, which is 0.80 cfs peak.

EXISTING CONDITIONS: The site is located at the northeast end of the Rankin Rd. cul-de-sac. The east side of the site is actually part of the embankment for the on-ramp and frontage road for Interstate 25. The embankment continues up past the east property line and a small part of the I-25 ROW drains onto and through the site. Flow from the main part of I-25, and from the pavement of the frontage road, is diverted past the site in a bar ditch and does not reach the site. Generally the land slopes down from the east to the west, parallel to I-25. As a result, there is no flow onto the site from the north and south adjoining lots, nor to those lots from the site.

Lot 13B, the site, occupies about 0.55 acres and Lot 13A occupies about 0.49; the combined total is 1.0317 acres per the plat. A significant portion of the combined site does not drain directly to the pond and/or Rankin Rd. but instead drains northwest to the Irrigation Supply company located on Lot 12. There is some question about how much of the site is affected. The topo for the 1989 drainage plan shows a high area in approximately the same place as the 1999 topo prepared for this project, and this is approximately the middle of the combined site (13A & 13B). A concrete-block retaining wall (partly hidden behind the honeysuckle) along the east edge of lot 12 raises up above grade keeps overland flow from 13A from sliding directly onto 12.

The 1989 plan indicates that a swale drained much of 13A to the pond but the evidence presented on the plan was not strong. The swale does not appear to exist today. The 1989 plan claimed only about 7200 sf of 13A was excluded from the pond. While this is obviously low, it is used in the present analysis: it's wrong, but it's consistent and it's conservative.

Current development on 13A and 13B is very much the same as for the 1989 plan, with the exception of 2 additional metal "ship's container" storage sheds on 13B, occupying about 160 sf each. Each site has a building and a concrete pad. 13B, the ESS site, has a small amount of landscaping. All parking areas are currently paved with gravel and/or crusher fines. The pond is not functional. It is filled with dirt, as it was at the time of the 1989 plan, and the drain hole called for by that plan was never built. At some time in the past, a shelf was cut into the bank east of the existing ESS building and an existing retaining wall extending north from the ESS building.

PROPOSED CONDITIONS: ESS proposes to add a new warehouse north of the existing one and contiguous to it. Largely in response to current criteria for parking and landscaping, the front part of the site is being revised, with some asphalt paving and probably some additional landscaping. Part of the landscaping may be in the ponding

area. However: the site has very little frontage, all in the southwest corner; and the site has existing landscaping along the south side; and there is extensive existing landscaping along the west side - it's just located on Lot 12. In short, the landscaping discussion is ongoing. Thus, while this plan shows proposed additional landscaping near the HC access path, the calculations do not rely on it: for calculation purposes that area is considered paved.

Total runoff as analyzed by this plan presumably represents an increase over the 1989 plan. Not only will more of the site be impervious but also the methods of calculating runoff have changed to ones that tend to yield higher peak runoff. The allowable peak rate has not changed, however; it is still at the 0.80 cfs set by the early 1980's drainage plan, based on then-acceptable formulas and criteria. A excerpt from that plan is included with this report; the copy quality is poor, but it's the best readily available. The 0.80 cfs is the allowable peak rate for runoff generated from Lots 13A & 13B. The peak rate for existing uncontrolled runoff onto the site from I-25 ROW. As shown in the calcs, this amounts to 0.44 cfs, making a total of 1.24 cfs.

In the present plan, the existing building and the front part of the site continue to discharge directly to the street. The peak rate for this area is apx 0.45 cfs, leaving $1.24 - 0.45 = 0.79$ cfs as the allowable peak outflow from the rest of the site and the contributing part of I25 ROW. To achieve this rate, the pond will be enlarged upward (the walls will be extended) and there will be temporary ponding in the parking lot for the 100-year storm. The overflow spillway for the pond is actually a "sideways level" grade break in the newly paved area; the flow path is out the driveway.

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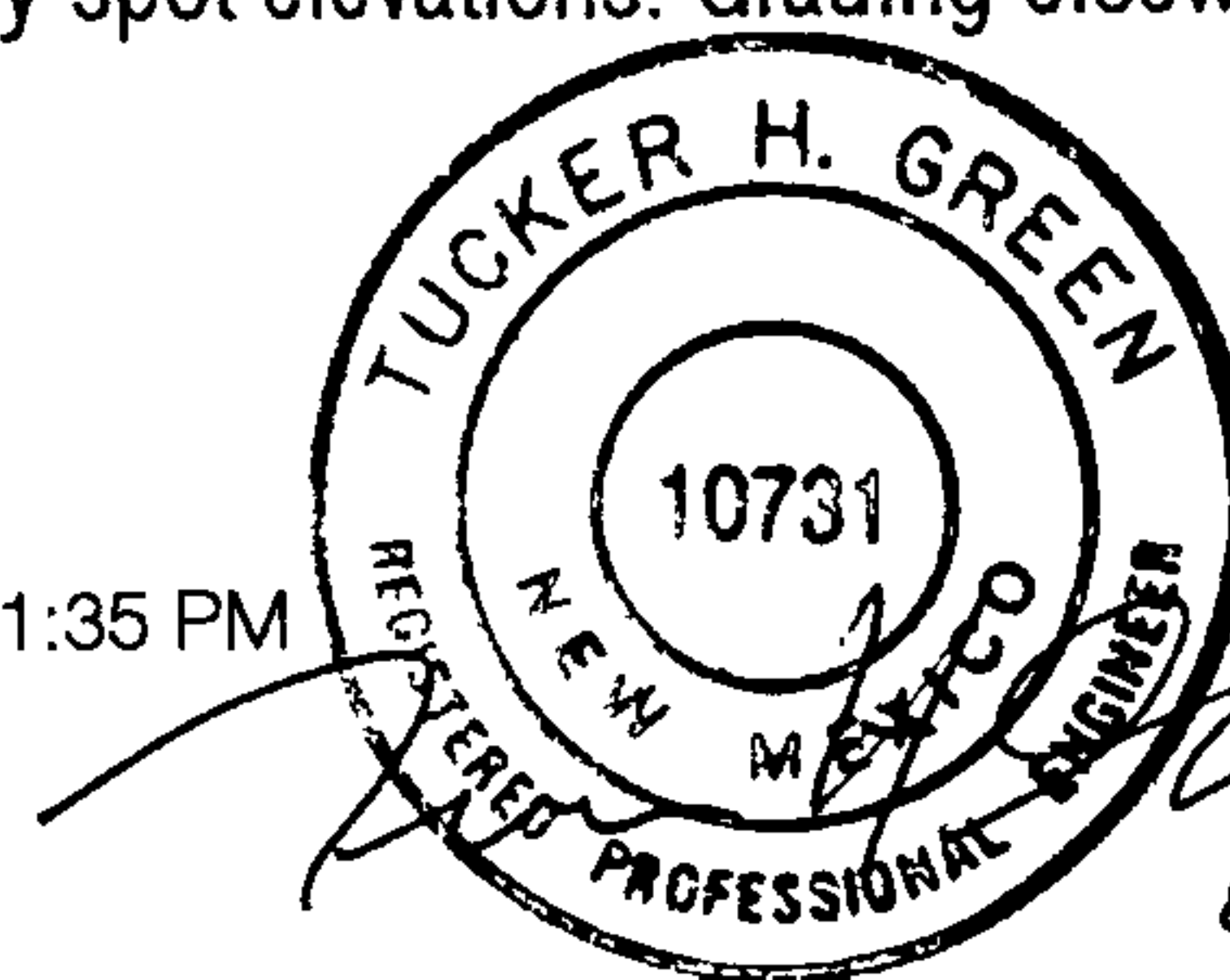
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The "upper level" consists of the area between the buildings and a (2nd) new CMU wall to be built with this project (also designed by EAI). Actually, most of the ground slopes at 3H or 4H to 1V. This wall has several notches (omitted blocks) in the top course to allow runoff from the embankment to pass over and flow to a swale, which leads to the single notch in the lower wall, previously mentioned. The swale collects only runoff from the embankment and the "upper level" area; the new roof flows to the west, away from the swale.

A NOTE ON GRADING: Paving in the front part of the site will be moderately steep asphalt. To avoid visual clutter, per General Note 5, grading in this area is specified only by spot elevations. Grading elsewhere is specified by a combination of contour lines and spot elevations.

END OF REPORT





821
Pan kein

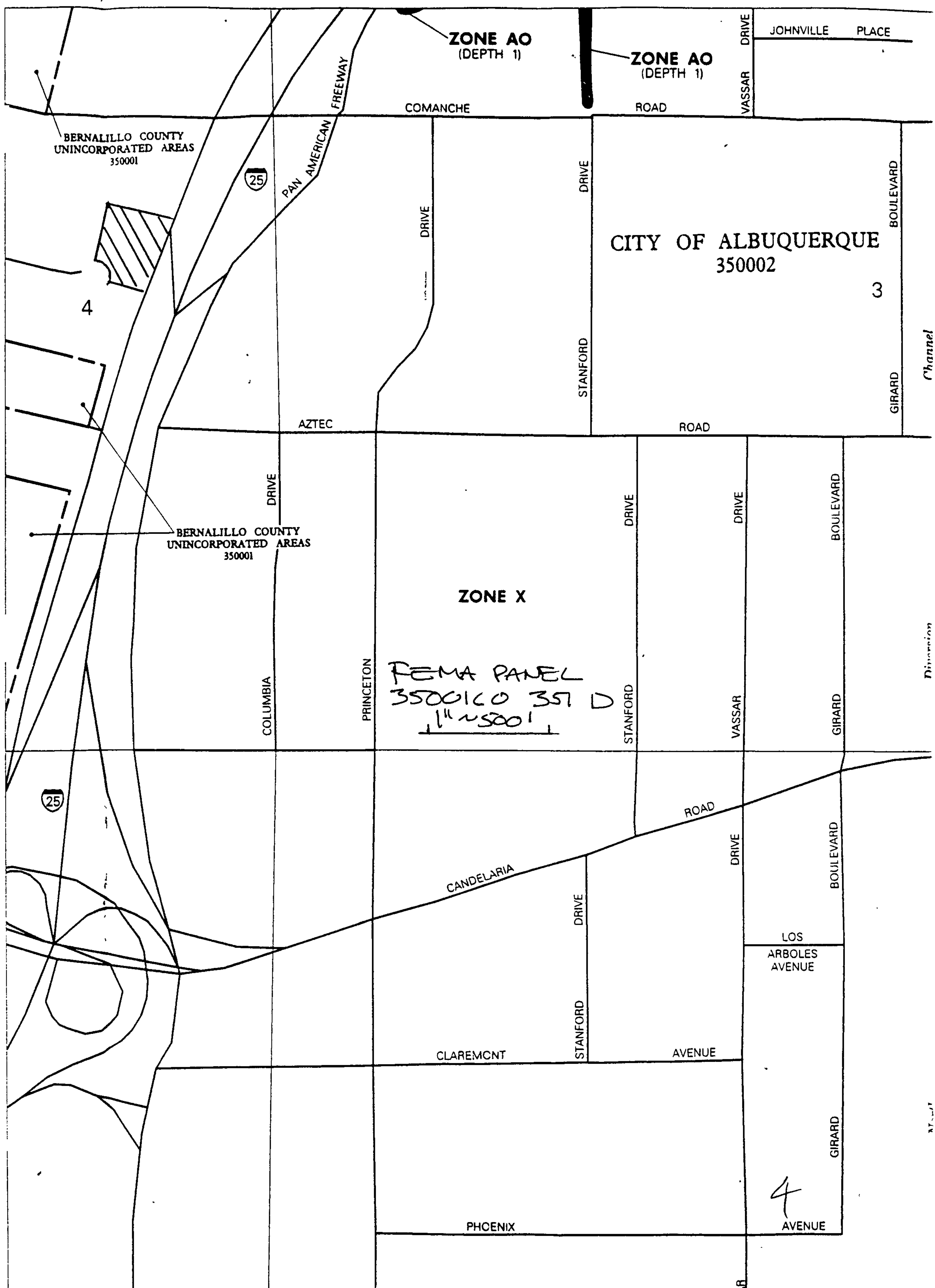
LOCAL DESCRIPTION	RECORD MAP 33
1. 10. 10	
2. 10. 10	
3. 10. 10	
4. 10. 10	
5. 10. 10	
6. 10. 10	
7. 10. 10	
8. 10. 10	
9. 10. 10	
10. 10. 10	

1987

G-15-Z

ALL RIGHTS RESERVED

30"



Notes

1. Legal: Lot 13, Replat of Coman Industrial District, Albuquerque, New Mexico (Area = 1.03 Acres)
2. Surveyor: Way John Surveying Co., April, 1982
3. Bench Mark: NMSHC Brass Cap No. I-25-21, Elev. 5079.47
4. TBM: I.C. at South Lot Line Projection, Elev. 5041.38
5. Zoning: M-1
6. SCS Soil Type A (BKD)

Drainage Criteria

The site is located in the valley area, but not in a flood hazard area. In a pre-design meeting with Mr. Fred Aguirre, City Hydrology Department, it was determined that the site would be subject to Valley Criteria, i.e., pond Q_{50} with a Q_1 release rate onto public streets.

The offsite drainage is limited to a portion of the frontage road adjacent to the east side of the site. The areas north and south of the site drain in a parallel pattern to the site. Runoff from these two areas do not affect this site.

Offsite Area = 7500 ft.² draining to and across site.

Q_{50} offsite = $(0.65)(4.87)(0.17 \text{ Ac.}) = 0.5 \text{ cfs}$

Vol.₅₀ offsite = $(0.65)(2.0/12)(7500) = 813 \text{ ft.}^3$

An equivalent on-site volume will be discharged directly to the site drivepad. The remaining site, plus the offsite drainage area along I-25 will be captured or controlled release from a pond at the SW corner of the site.

On-Site Drainage

- Equivalent free discharge area to account for offsite flows

$$813 \text{ ft.}^3 = (0.70)(2.0/12)(x) = 7000 \text{ ft.}^2$$

- On-Site drainage to pond, plus offsite drainage area = 1.04 Ac.

$$\text{Vol.}_{50} \text{ to pond} = (0.47)(2.0/12)(45,302 \text{ ft.}^2) = 3549 \text{ ft.}^3$$

$$Q_{50} \text{ to pond} = (0.47)(4.87)(1.04) = 2 \text{ cfs}$$

$$\rightarrow Q_1 \text{ outflow rate} = (0.47)(1.62)(1.04) = 0.8 \text{ cfs}$$

- Peak vol. stored while simultaneously outflowing Q_1 of 0.8 cfs = 2131 ft.³ at a time of 41 min. from start of condition (programmable calculator)

- Pipe size for a head of 1.5' while outflowing 0.8 cfs = 0.10 ft.², use 1-4" diameter pipe.

- Pond Size = 10' wide x 1.5' deep x 145' long

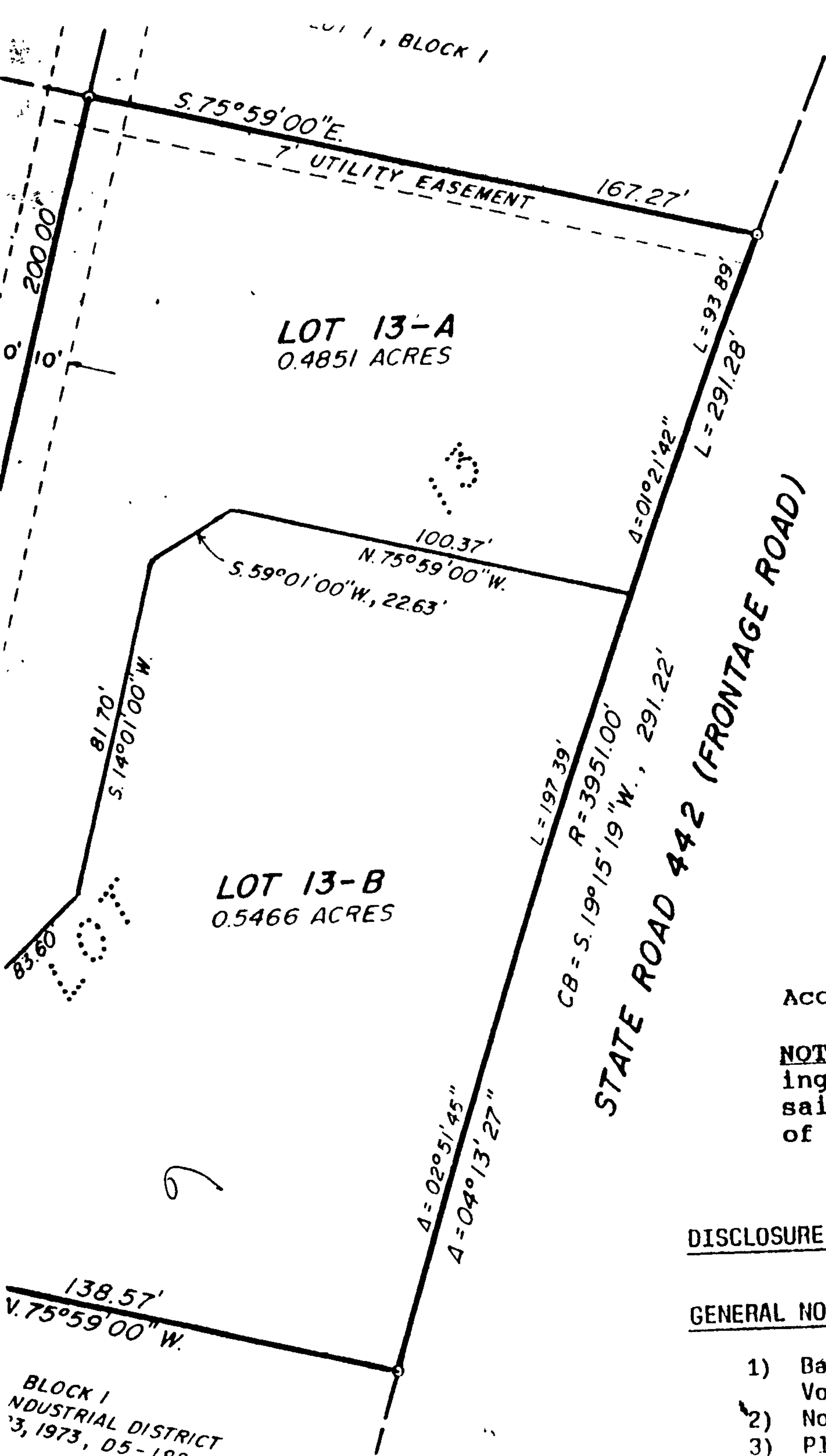
- Spillway capacity, based on $Q_{100} = (0.47)(5.4)(1.04) = 2.6 \text{ cfs}$.

Broad crested wier = CLH 3/2 - available head = 0.2'

Breadth = 12' to be discharged over drivepad.

- S.O. #19 submitted to City Design for outflow drain of pond to Rankin Rd.

5



Access is controlled to State Road 442 (frontage road).

NOTE: - Property is subject to a reciprocal access easement for ingress and egress and drainage, parking, and refuse easements and said easements are for the benefit and use by and for the owners of Lots 13-A and 13-B and are to be maintained by said owners.

DISCLOSURE STATEMENT: The purpose of this plat is to make 2 lots from 1 existing lot.

GENERAL NOTES:

- 1) Basis of Bearings = COMAN INDUSTRIAL DISTRICT filed October 23, 1973
Vol. D5, folio 188
- 2) No field work performed.
- 3) Plat shows all easements of record.

E-2-99

OFFSITE FLOW - PASS THROUGH

NMSHTD ROW FOR W I 25 FRONTAGE
RD #
ON-RAMP

NATIVE, STEEP

TREAT AS CLASS "C" - $Q_{p100/6} = 3.14 \text{ CFS/Ac}$ ZONE 2
AREAS BY AUTOCAD POLYLINE

OPP SITE - LOT 13-B

4659 SF

OPP 13-A

1498 SF

6157 SF

$$\frac{6157}{43560} \times 3.14 = 0.4438 \text{ } 20.44 \text{ CFS}$$

EXIST OFFSITE

8299

MEASURED OUT FLOW

FROM 13-13 (SIDE) + 13-A

0.80 CFS 1982 PLAINKE ROAD

PASS THROUGH FROM NASHD ROAD

0.44 CFS

1.24 TOTAL CFS

B

8-2-99

TOTAL AREA OF SITE + LOT 13-A
FROM FRANK WILSON 1988 PLAT

$$1.5466 \text{ AC} + .4851 \text{ AC} = 1.0317 \text{ AC}$$
$$\sim 23,810 \text{ SF} + \sim 21,131 \text{ SF} \quad \sim 44,941 \text{ SF}$$

SITE = 13-B 13-A

LOT 13-A CONTRIBUTING

PER MARVIN KURTUM 1989 DRAINAGE PLAN
APX 7200 SF OF 13-A FLOWS OFFSITE OR
TO A SUMP ON SITE @ 13-A. IN ANY CASE,
DOES NOT CONTRIBUTE TO 13-B OR RANKIN RD.

→ * TO ADJACENT PROPERTY, NW CORNER

THIS PLAN REPRESENTED THEN-EXISTING
CONDITIONS, ESSENTIALLY THE SAME STRUCTURES
AS EXIST NOW.

7200 SF CORRESPONDS CLOSELY TO THE WEST
HALF OF 13-A NORTH OF THE PANHANDLE ROAD 13-B
SUPPOSEDLY. A SWALE EAST OF THE BLDGS &
CONC PAD TOOK EAST FLOW TOWARD RANKIN
VIA A SWALE.

ACTUALLY, THE HIGH POINT, THEN & NOW, WAS
APX 80 FT S OF THE START OF THE PANHANDLE.
SO ACTUALLY MOST OF 13-A & SOME OF 13-B DRAINS
OFFSITE TO NW.

FOR PRESENT PURPOSES ASSUME

ALL OF 13-A EXCEPT 7200 SF CONTRIBUTES
ALL EXISTING AS TRMT "C", EITHER
GRAVEL PARKING OR STEEP NATIVE ON
THE FRONTAGE RD EMBANKMENT.

ESS

8-10-99

UNCONTROLLED RUNOFF - DIRECTLY TO STREET

1ST LIST AREAS - VARIOUS COMBINATIONS POSSIBLE

LANDSCAPING, SQ FT

616 S OF EX BLDG

43 S PLANTER, W END

140 ~~SA~~ ADD'L POSSIBLE, S OF HC ACCESS WALK

80 N " " " N OF HC ACCESS

IMPERVIOUS

2174 EXISTING BLDG

1915 NEW ASPHALT

(LESS AMT OF TOTE LS NEAR TOTE
HC ACCESS WALK EG 140+80=220)

1ST ASSUME

NEGLECT LS NEAR HC ACCESS WALK

ASSUME THIS 140+80=220 SF PAVED

Q_{PEAK} 100 YR 6 IN DPM 22.2 RAIN ZONE 2
LS 2.28 CFS/AC IMPV 4.37 CFS/AC

$$\frac{(616+43)(2.28)}{43560} + \frac{(2174+1915)(4.37)}{43560}$$
$$= \frac{659(2.28)}{43560} + \frac{(4089)(4.37)}{43560} = 0.034 + 0.410 = 0.445$$

~ 0.45 CFS

ESS

8-10-99

ALLOWABLE OUTFLOW RATE FROM POND

$$\text{OUT}_{\text{ALLOW POND}} = (\text{ALLOW OUT, SITE}) + (\text{PASS THROUGH}) \\ - (\text{UNCONTROLLED TO STREET})$$

$$= 0.80 + 0.44 - 0.45$$

Ⓢ HISTORICAL BY SENSE OF PREVIOUS
DRAINAGE PLANS FOR THE SITE

$$\text{OUT}_{\text{POND ALLOWED}} = 0.79 \text{ CPS PEAK}$$

ESS

8-10-99

AREA TO DETENTION/DELAY PONDING

LOTS (13A + 13-B) + OFFSITE ROW

- 13A NON CONTRIB

- 13B DIRECTLY TO STREET

13A 13B 13A-ROW 13B-ROW
21 126 + 23 808 + (4659 + 1498)

- 7200 - (616 + 43 + 2174 + 1915)

> ~~6618744~~

(44934 + 6157) - (7200 + 4748)

= 51091 - 11948 = 39,143 SF

ESS

8-11-99

WEIR CAPACITY - 16" CMU OMITTED

$$Q = C L H^{3/2}$$

$$C \sim 3, \text{ say } 2.75$$

$$Q = 2.75 \left(\frac{16}{12} \right) \left(\frac{e}{12} \right)^{3/2}$$
$$= 1.9959$$
$$\sim 2.00 \text{ cfs}$$

AREA DRAINING TO CUT OUT

AREA BY AUTOCAD POLYLINE

EAST OF BLDG & WALL (ALONG NEW RIDGE)

UP TO TOP OF DRAINAGE @ F25 ROW.

$$A = 11032 \text{ SF}$$

ALL STEEP NATURAL - RAIN ZONE 2
LND RT A \rightarrow RT 2'

DPM TABLE A-9

$$\frac{11032 \text{ SF}}{43560 \text{ SF/Ac}} \cdot \frac{3.14 \text{ CFS}}{\text{Ac}} = .2533 \text{ Ac} \cdot \frac{3.14 \text{ CFS}}{1 \text{ Ac}}$$

$$\sim 0.7952 \sim 0.80 \text{ CFS}$$

$$0.80 \ll 2.00 \Rightarrow 1 \text{ CMU CUT OUT OK}$$

OK ALL FLOW

SINCE 1 CUTOUT HAS ADEQUATE CAPACITY (WEST WALL)

SEVERAL WILL HAVE MORE THAN ENOUGH (EAST WALL)

NOTE: ACTUAL NOTCH WIDTH = 24" > 16" OK

ESS

E-11-99

Flows / Treatment Areas to Pond

TOTAL = 39143 SF ± - PREVIOUS SHEET

- ALL "LANDSCAPE" AREAS EXCEPT 142 SF PLANTER + POND SO STEEP AS TO BE CONSIDERED AS TREATMENT 'C'
- ALL NATIVE AREAS STEEP → TREATMENT 'C'

'A'	NATURAL MILD SLOPE	0
'B'	MILD SLOPE LS PLANTER + POND	421367 = 409
'D'	IMPERVIOUS	
	NEW BLDG, NEW PAVE	2546
	CONC PAD, + 2 SHEDS	+1772
		+2(149)
		<u>4616</u>
		5025

$$C = \text{ALL ELSE} = 39143 - 5025 = 34,118 \text{ SF} \times$$

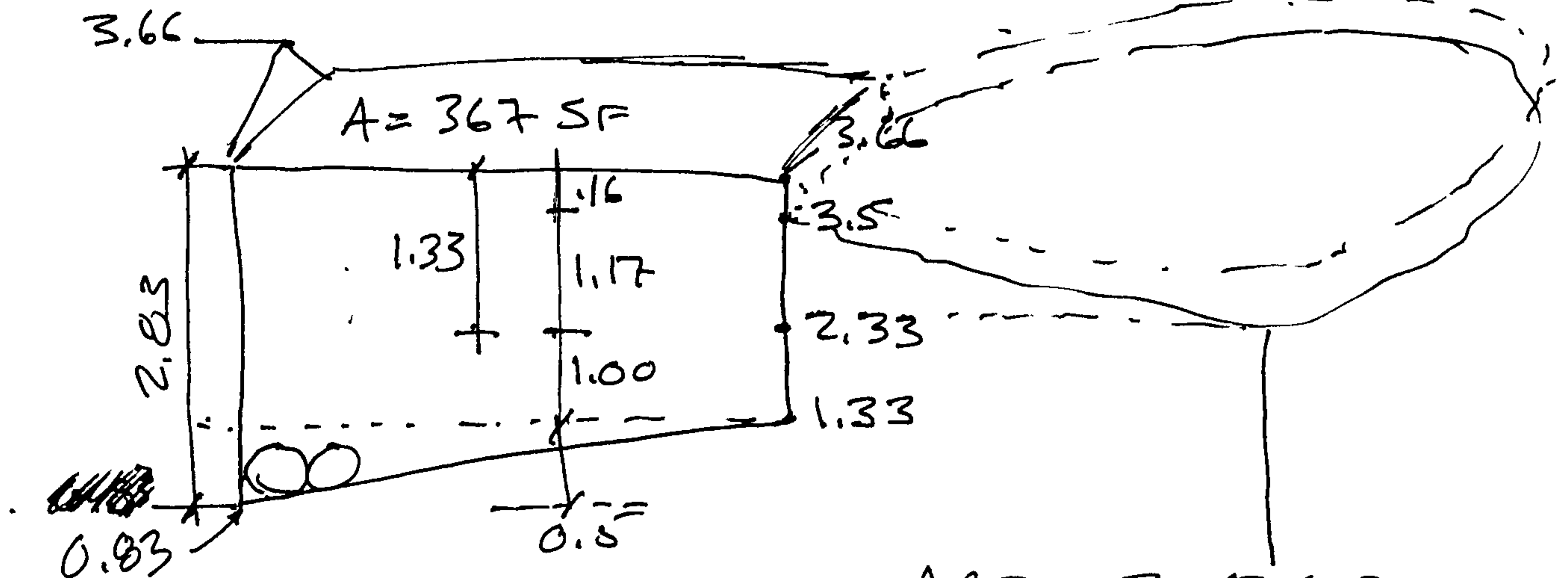
$$\sim 0.7832 \text{ AC} \times$$

* THIS INCLUDES NMHSTD ROW CONTRIBUTING FLOW TO THE SITE.

AS %'S	A	B	D	C
	0	1.04	11.79	27.16

$$39143 \text{ SF} \sim 0.8986 \text{ AC} \sim 1.0014041 \text{ SQ MI.}$$

1ST APPROXIMATION
PARKING LOT AREA AT
3.66 SAME AS AT 35.5



AREA 3.5 ~~CONTOUR~~ CONTOUR
IN PARKING AREA
4812 SF

AREA 3.0 CONTOUR
IN PARKING
1447 SF

FILE=ESSVOL.WQ1 08/13/99 11:34 AM

ECONOMY SALES AND SERVICE - 421 RANKIN RD. NE
SMALL RECTANGULAR POND W/ VERICAL WALLS AS AVERAGE END AREA,
PLUS PARKING LOT PONDING AS "PYRAMID", ELEV 2.33 AND UP

RECTANGULAR POND IN CORNER

ELEV FT	AREA	PYRAMID			AV END AREA			
		DVOL CONE	VOL FT ^ 3	VOL AC-FT	DVOL AV	AREA	VOL FT ^ 3	VOL AC-FT
3.66	367	59	916	0.0210	59		947	0.0217
3.5	367	184	858	0.0197	184		888	0.0204
3	367	246	674	0.0155	246		705	0.0162
2.33	367	367	428	0.0098	367		459	0.0105
1.33	367	61	61	0.0014	92		92	0.0021
0.83	0		0	0.0000			0	0.0000

PARKING AREA PONDING

ELEV FT	AREA	PYRAMID				AV END AREA			
		DVOL CONE	VOL FT ^ 3	VOL AC-FT	DVOL	AV AREA	VOL FT ^ 3	VOL AC-FT	
3.66	4812	770	2576	0.0591	770		2819	0.0647	
3.5	4812	1483	1806	0.0415	1565		2049	0.0470	
3	1447	323	323	0.0074	485		485	0.0111	
2.33	0		0	0.0000			0	0.0000	

ELEV =	H =	TOTAL VOLUME =	TOTAL VOLUME =
3.66	2.83	3,523 CU FT, OR	0.0809 AC FT
3.5	2.67	2,694 CU FT, OR	0.0619 AC FT
3	2.17	1,028 CU FT, OR	0.0236 AC FT
2.33	1.5	459 CU FT, OR	0.0105 AC FT
1.33	0.5	92 CU FT, OR	0.0021 AC FT
0.83	0	0 CU FT, OR	0.0000 AC FT

FILE = ESorifice2.123

08/13/99

09:48 AM

ORIFICES FOR POND ROUTING

HEAD MATCH ELEVS FOR POND VOULUMES

FREE DISCHARGE FLOW THROUGH ORFICE: $Q = C \cdot A \cdot \sqrt{2 \cdot g \cdot h}$

C=COEFFICIENT, APX 5/8; A= FLOW AREA, SF; g=GRAVITY=32.17 FT/SEC ^ 2

h=HT OF WATER SURFACE ABOVE *CENTROID* OF FLOW AREA, FT

H=HT OF WATER ABOVE BOTTOM OF ORIFICE, = CENTROID + h)

C*SQRT(2*g) OFTEN TAKEN AS 5.0, ==> C=0.623346

MATHEMATICALLY NOT VALID FOR WATER SURFACE BELOW CENTROID OF ORIFICE!

==> ENTER THIS NUMBER

CIRCULAR

5*A*SQRT(h)

# H, FT	0.200	0.500	1.500	2.170	2.670	2.830	3.000
# DIAM,FT	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
h, FT	0.075	0.375	1.375	2.045	2.545	2.705	2.875
AREA, SF	0.049	0.049	0.049	0.049	0.049	0.049	0.049
Q, CFS	0.067	0.150	0.288	0.351	0.392	0.404	0.416
V, FPS	1.369	3.062	5.863	7.150	7.977	8.223	8.478
Q * 2 (2 ORIFICES)	0.134	0.301	0.576	0.702	0.783	0.807	0.832

CIRCULAR

5*A*SQRT(h)

# H, FT	0.200	0.500	1.500	2.170	2.670	2.830	3.000	3.200	3.400
# DIAM,FT	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333
h, FT	0.033	0.333	1.333	2.003	2.503	2.663	2.833	3.033	3.233
AREA, SF	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
Q, CFS	0.080	0.252	0.504	0.618	0.690	0.712	0.734	0.760	0.785
V, FPS	0.913	2.887	5.774	7.077	7.911	8.160	8.416	8.708	8.991

17

AHYMD PROGRAM (AHYMD194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 08/13/1999
 START TIME (HR:MIN:SEC) = 11:48:15 USER NO.= PERSEENG.194
 INPUT FILE = ESS600A.dta

*
 *C PRINT CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; 3,5,10,20 SIMILAR
 *C RATING CURVE ID NEGATIVE => COMPUTE BUT NOT PRINT RATING CURVE
 *C RATING CURVE n NEGATIVE => FLOODPLAIN SLOPE, n POSITIVE => CHANNEL SLOPE
 *S
 *S FILE ESS600a - Economy Sales & Service, 6-hour, 100 year storm
 *S 421 Rankin Rd NE at I-25 west frontage road
 *S OUTFLOW LIMITED TO 0.79cfs so entire (site + offsite) matches exist allowable
 *S
 *S FLOW IS **NOT** BULKED FOR SEDIMENT
 *C RAINFALL ESTIMATED FROM CITY OF ALBUQUERQUE D.P.M. FIGURES C-1, C-2, & C-3
 *C hr => 1.95 INCHES; 6hrs => 2.3 INCHES; 24 hrs => 2.6 INCHES
 *C
 *C BASIN & CHANNEL ROUTING PARAMETERS REFLECT THE JUDGMENT OF THE ENGINEER,
 *C AND MAY DIFFER FROM OTHER STUDIES IN THE AREA.
 *C
 *C REVISION NOTES: ORIGINAL FILE CREATED 8-11-99 BY TUCKER GREEN P.E.
 *C
 *C

 * RAINFALLS PER ALBUQUERQUE NM DPM - COMMENT OUT THOSE THAT DON'T APPLY
 * TYPE 1 IS 6-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C5)
 * FOR 6-HR USE DT = 0.033333 HR = 2 MINUTES
 * TYPE 2 IS 24-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C6)
 * FOR 24-HR USE DT = 0.0500 HR = 5 MINUTES
 * RAIN QUARTER = 0.0 EXCEPT FOR TYPE 3 (6-HR PMP: SEE AHYMD MANUAL)
 * FOR 10-YR STORM, USE 0.667 * 100-YR VALUES (PER DPM 22.2 TABLE A-3, JAN 1993)
 *

 * RAINFALL AMOUNTS, INCHES
 * RAINFALL HUNDRED TYPE= 2 RAIN QUARTER= 0.0 RAIN ONE= 1.97
 RAIN SIX= 2.31 RAIN DAY= 2.7 DT= .05 HR
 RAINFALL HUNDRED TYPE= 1 0.0 1.95 2.3 2.6 0.033333

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033333 HOURS		END TIME = 5.999940 HOURS	
.0000	.0018	.0035	.0054
.0072	.0092	.0111	.0131
.0152	.0173	.0194	.0216
.0239	.0262	.0286	.0311
.0336	.0363	.0390	.0418
.0447	.0477	.0508	.0541
.0575	.0610	.0648	.0686
.0727	.0771	.0816	.0870
.0928	.0989	.1122	.1418
.1874	.2529	.3423	.4597
.6095	.7959	1.0234	1.2339
1.3220	1.3963	1.4625	1.5227
1.5781	1.6295	1.6776	1.7227
1.7651	1.8051	1.8429	1.8787
1.9126	1.9447	1.9752	2.0041
2.0316	2.0380	2.0441	2.0498
2.0553	2.0605	2.0655	2.0703
2.0749	2.0794	2.0837	2.0879
2.0919	2.0958	2.0996	2.1033
2.1070	2.1105	2.1139	2.1172
2.1205	2.1237	2.1268	2.1299
2.1329	2.1358	2.1387	2.1416
2.1443	2.1471	2.1497	2.1524
2.1550	2.1575	2.1600	2.1625
2.1649	2.1673	2.1697	2.1720
2.1743	2.1765	2.1788	2.1810
2.1831	2.1853	2.1874	2.1895
2.1916	2.1936	2.1956	2.1976

18

2000

*

TP= -0.13333 HRS RAIN= -1

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

HYDROGRAPH FROM AREA WEST

✱

[illegible]

2. Punkt 0

19

0.000	0.000	0.83
0.301	0.0021	1.33
0.576	0.0105	2.33
0.702	0.0236	3.0
0.783	0.0619	3.5
0.807	0.0809	3.66

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.83	.000	.00
.17	.00	.83	.000	.00
.33	.00	.83	.000	.00
.50	.00	.83	.000	.00
.67	.00	.83	.000	.00
.83	.00	.83	.000	.00
1.00	.00	.83	.000	.00
1.17	.00	.83	.000	.00
1.33	.35	1.02	.001	.11
1.50	2.90	2.72	.018	.65
1.67	1.54	3.21	.040	.74
1.83	.78	3.28	.045	.75
2.00	.44	3.25	.043	.74
2.17	.20	3.18	.037	.73
2.33	.10	3.07	.029	.71
2.50	.06	2.84	.021	.67
2.67	.04	2.43	.012	.60
2.83	.02	1.77	.006	.42
3.00	.01	1.16	.001	.20
3.17	.01	.89	.000	.03
3.33	.00	.84	.000	.01
3.50	.00	.84	.000	.00

PEAK DISCHARGE = .747 CFS - PEAK OCCURS AT HOUR 1.83

MAXIMUM WATER SURFACE ELEVATION = 3.278

MAXIMUM STORAGE = .0449 AC-FT INCREMENTAL TIME= .033333HRS

2 3/4" DIAM
ORIFICES

*S HYD PONDOUT.1D3 IS FOR 1 4-INCH DIAMETER ORIFICE

ROUTE RESERVOIR ID=4 HYD=PONDOUT.1D4 INFLOW ID=1 CODE=5.

OUTFLOW CFS	STORAGE AC-FT	ELEVATION FT
0.000	0.000	0.83
0.252	0.0021	1.33
0.504	0.0105	2.33
0.618	0.0236	3.0
0.690	0.0619	3.5
0.712	0.0809	3.66

1 4" DIAM ORIFICE

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.83	.000	.00
.17	.00	.83	.000	.00
.33	.00	.83	.000	.00
.50	.00	.83	.000	.00

20

.67	.00	.83	.000	.00
.83	.00	.83	.000	.00
1.00	.00	.83	.000	.00
1.17	.00	.83	.000	.00
1.33	.35	1.03	.001	.10
1.50	2.90	2.76	.019	.58
1.67	1.54	3.24	.042	.65
1.83	.78	3.32	.048	.66
2.00	.44	3.31	.047	.66
2.17	.20	3.24	.042	.65
2.33	.10	3.15	.035	.64
2.50	.06	3.05	.028	.63
2.67	.04	2.81	.020	.59
2.83	.02	2.44	.013	.52
3.00	.01	1.86	.007	.39
3.17	.01	1.35	.002	.26
3.33	.00	.94	.000	.06
3.50	.00	.86	.000	.01
3.67	.00	.84	.000	.01
3.83	.00	.84	.000	.00

PEAK DISCHARGE = .664 CFS - PEAK OCCURS AT HOUR 1.90
 MAXIMUM WATER SURFACE ELEVATION = 3.320
 MAXIMUM STORAGE = .0481 AC-FT INCREMENTAL TIME= .033333HRS

1 $\phi 4''$

*

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:48:15



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

NOTICE

all applications for BUILDING PERMITS and/or SITE PLAN APPROVALS

now require a **DUAL** submittal: the standard grading and drainage plan for Hydrology plus the site plan for the traffic circulation layout (TCL) for Transportation. The following also are needed for the TCL:

- ~~A. Building elevations showing all entrances and overhead doors including dimensions of overhead doors.~~
- ~~B. Landscape plan unless all landscaped areas are clearly called out on the Site Plan.~~
- ~~C. Include the estimated value of project to be constructed.~~

*******EFFECTIVE APRIL 15, 1999*******

-See Asst. PWD Director Letter of April 15, 1999-



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 15, 1999

SUPERCEDES LETTER DATED MARCH 15, 1999

TO: Distribution

FROM: John R. Castillo, Acting City Engineer, and Public Works Department 

SUBJECT: MODIFICATION OF REVIEW AND APPROVAL PROCESS FOR ALL COMMERCIAL BUILDING PERMIT AND SITE PLAN APPLICATIONS WITHIN THE TRANSPORTATION AND HYDROLOGY SECTIONS AT ONE-STOP SHOP

In an effort to continue to streamline the One-Stop Shop process, we will be combining the reviews and approvals of all commercial building permit and site plan applications submitted to the Transportation and Hydrology Sections, **effective immediately**. The intent of the modified process is to minimize the time needed for the approvals of building permits and site plans by allowing the applicant to make a submittal in advance of their building permit/site plan application.

The new procedure will be accomplished by requiring that transportation design elements per the DPM be addressed in combination with the drainage plan submittal. The transportation design elements can either be:

- illustrated on the drainage plan, or
- **the engineer or the architect can provide a separate plan showing the parking layout and the circulation with an engineer and/or architect signature, stamp and date.**

All applications for building permit and site plan approvals will require two copies of the submittal. These copies will be routed to the Transportation staff and to the Hydrology staff for their review and approval. A combined response will be issued to the applicant either approving the plans or addressing deficiencies on the application. All response from the City will reference an engineer's dated stamp.

An engineer's certification of the approved drainage/transportation plan will be required for approval of the CERTIFICATE OF OCCUPANCY (CO). The Hydrology Section will be responsible for releasing all building permits and issue CO's once the certification has been accepted by the City. This new process will eliminate the need for individual site inspections by the Transportation Section.

If you have any questions regarding the above, please feel free to contact me or my staff (Fred J. Aguirre/Richard Dourte) at 924-3979.

2/3 delivery receipt



shipped to PLAZA DEL SOL

EILEEN OR MARGARET

date 6/23/99 project name _____ purchase order number _____ contact PER SE

quantity	service	description
<u>2X</u>	<u>originals</u>	<u>DRB 88-621 18x24</u>
	<u>large documents</u>	<u>G15/D10-A 24x36</u>
	<u>small documents</u>	
	<u>drafting/plotting supplies</u>	
	<u>miscellaneous</u>	

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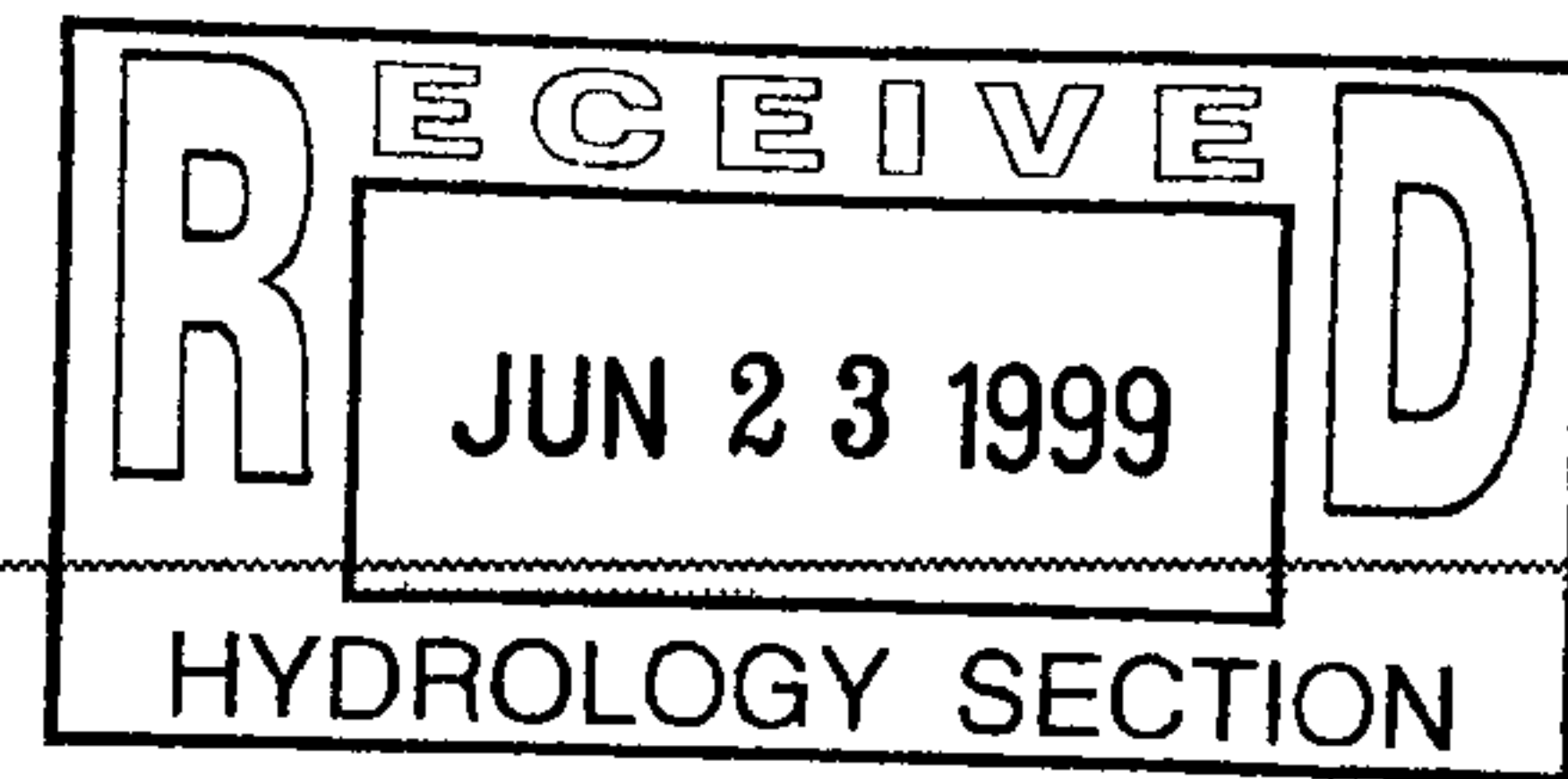
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KEN SCHULTZ
MAYOR

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 31, 1989

Marvin R. Kortum, P.E.
1605 Speakman Drive, SE
Albuquerque, New Mexico 87123

RE: DRAINAGE PLAN FOR LOT 13A & 13B OF COMAN INDUSTRIAL DISTRICT
(G-15/D10) ENGINEER'S STAMP DATED MARCH 20, 1989

Dear Mr. Kortum:

Based on the information provided on your submittal of March 21, 1989, the referenced drainage plan is approved for Final Plat.

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

Bernie J. Montoya, C.E.
Engineering Assistant

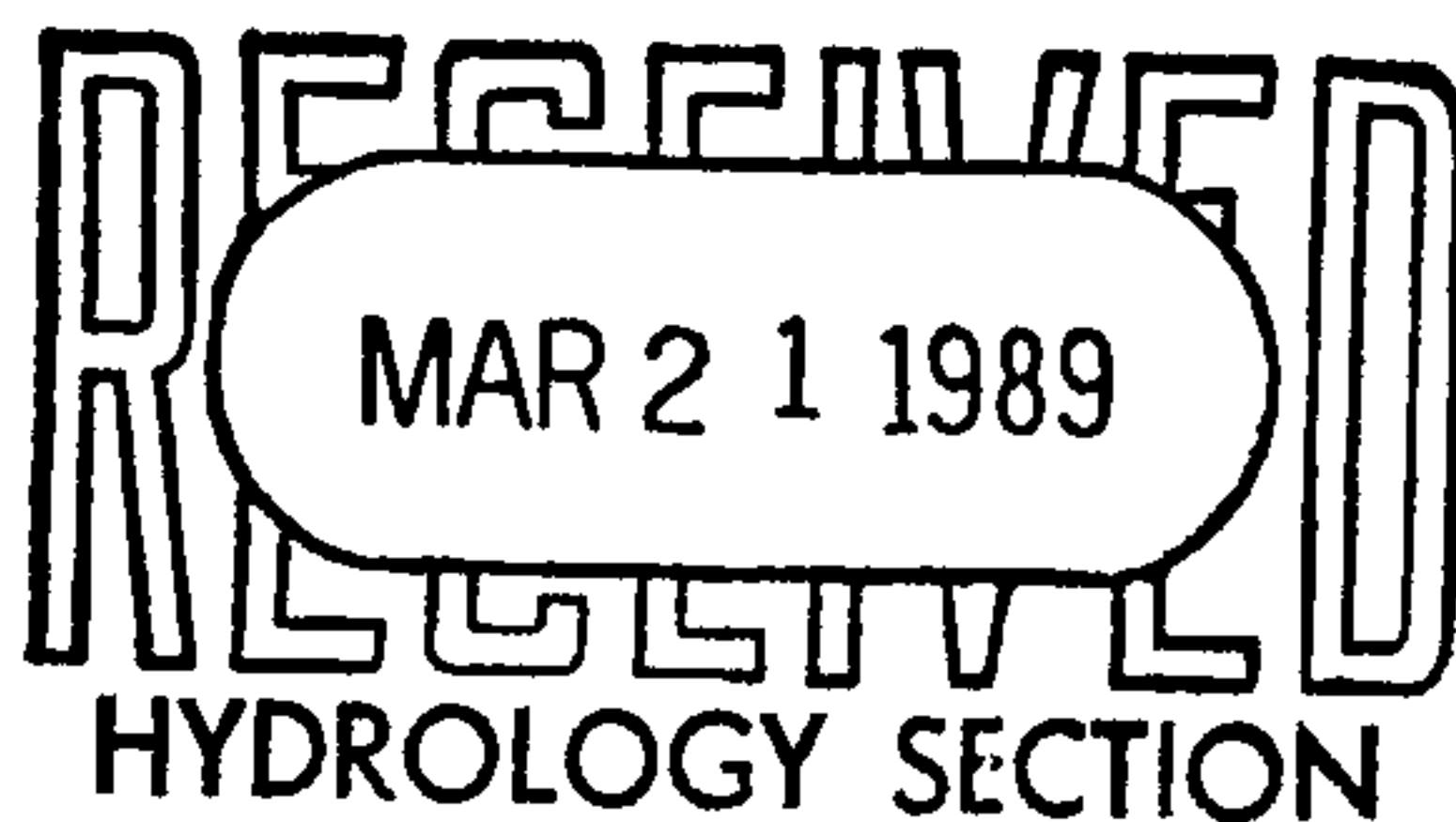
BJM/bsj
(WP+1060)

PROJECT TITLE: Lot 1 and 13-B
Coman Industrial District ZONE ATLAS/DRNG. FILE #: G-15/10 (REVISION)
 LEGAL DESCRIPTION: Lot 13-A and 13-B, Coman Industrial District
 CITY ADDRESS: 821 Rankin Road NE
 ENGINEERING FIRM: Marvin R Kortum CONTACT: Marvin R Kortum
1605 Speakman Drive, SE
 ADDRESS: Albuquerque, New Mexico 87123 PHONE: (505) 299-0774
 OWNER: New Mexico Millwright CONTACT: _____
 ADDRESS: 821 RANKIN RD NE PHONE: _____
 ARCHITECT: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____
 SURVEYOR: Southwest Survey Co. Inc. CONTACT: Dan Graney
333 Lomas Blvd NE
 ADDRESS: Albuquerque, New Mexico PHONE: 247-4444
 CONTRACTOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

☐ YES☒ NO

☐ COPY OF CONFERENCE RECAP
☐ SHEET PROVIDED

DRB NO. 88-621

EPC NO. _____

PROJ. NO. _____

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT☒ DRAINAGE PLAN Revision☐ CONCEPTUAL GRADING & DRAINAGE PLAN☒ GRADING PLAN Revision☐ EROSION CONTROL PLAN☐ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL☐ PRELIMINARY PLAT APPROVAL☐ SITE DEVELOPMENT PLAN APPROVAL☒ FINAL PLAT APPROVAL☐ BUILDING PERMIT APPROVAL☐ FOUNDATION PERMIT APPROVAL☐ CERTIFICATE OF OCCUPANCY APPROVAL☐ ROUGH GRADING PERMIT APPROVAL☐ GRADING/PAVING PERMIT APPROVAL☒ OTHER Subdivision (SPECIFY)DATE SUBMITTED: March 21, 1989BY: Marvin R Kortum



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 31, 1989

Marvin R. Kortum, P.E.
1605 Speakman Drive, SE
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(WP+1060)