HYDROLOGY G15/D2 ONE PLAN

G15-D2

1 PLAN

Drainage file

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 23, 1978

Jake Bordenave
T.T. Burnett Engineering, Inc.
120 Morningside Dr.,NE
Albuquerque, New Mexico 87105

RE: Coman Industrial District, Lot 17, Block 1

Dear Jake:

I have reviewed the drainage report for the above referenced property and I am in concurrence with the plan submitted.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; V.M. Kimmick
Drainage file

DRAINAGE REPORT

FOR

CLINTON SMITH DEVELOPMENT

LOT 17, BLOCK 1, COMAN INDUSTRIAL DISTRICT

February, 1978

Prepared By:

T.T. Burnett Engineering, Inc.
120 Morningside Dr. NE
Albuquerque, New Mexico 87108

Prepared For:

Clinton Smith
P.O. Box 12105
Albuquerque, New Mexico 87105

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
NO 5110
NEW MEXICO
JEAN J. BORDENAVE

Jean J. Bordenave, N.M.P.E. & L.S. 5110

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DRAINAGE REPORT

FOR

CLINTON SMITH DEVELOPMENT

LOT 17, BLOCK 1, COMAN INDUSTRIAL DISTRICT

PURPOSE

The purpose of this report is to present to governing agencies a reasonable method of complying with City Ordinance 59-1976 and thereby lessen runoff from the proposed development to an amount not in excess of the flow to be expected from the property in it's present state. The report is composed of a narrative of existing and proposed conditions and computations to determine recommended runoff control structures.

LOCATION AND TERRAIN

The proposed development is located on the south side of Rankin Road, just east of Rankin Lane, in the northeast quadrant of the city (see Plate I for the exact location).

The front two hundred (200) feet of the property slopes northwesterly at a rate of approximately two (2) percent and the rear one hundred (100) feet slopes northerly at approximately two (2) horizontal to one (1) vertical. Universal Construction Co. is located at the top of the slope and they have constructed a swale along the top of the slope directing runoff flows westerly.

The soil is composed of silty sand with some gravel with no vegetative cover. Due to the lack of vegetative cover and the frequent use of the property by vehicles the infiltration rate is quite low.

PROPOSED DEVELOPMENT

It is proposed to construct a metal building of five thousand (5,000) square feet, a gravel surfaced parking area and rear yard access within the front ninety feet of the lot. The middle one hundred feet of the lot is to be used for storage and the remaining portion of the lot will be unused.

No landscaping of any type is proposed at this time.

UPLAND DRAINAGE

Drainage from the south (at the top of the slope is intercepted by a swale along the top of the slope and diverted westerly beyond the property in question. Drainage from the lots east of the development will be intercepted by a dike along the east property line of the development and diverted to Rankin Rd. At the time the lots east of the proposed development are improved this flow will be stored on site and the dike will no longer be of use. Interstate 25 intercepts flows beyond lot 14 thus limiting the basin to approximately five hundred (500) feet to the east.

INTERNAL DRAINAGE

A portion of the flows developed within the front ninety (90) feet of the lot will be stored on site in a retention pond within the graveled parking area. All of the flows developed within the remaining two hundred (200) feet will be stored in a retention pond located along the west property line within the middle one hundred (100) foot portion of the lot. The runoff stored within these ponds will be dissipated through infiltration and evaporation.

CONCLUSIONS

Flows now entering the property from the east will be diverted to Rankin Rd. at the east property line. This will move their point of entry to the road approximately two hundred (200) feet east of their point of entry.

Flows generated on site will be partially stored on site through two (2) retention ponds. These ponds will reduce the peak downstream contribution by approximately seventy five (75) percent in terms of flow rate and a reduction of eighty (80) percent in terms of total flow.

Flows to downstream properties will be essentially eliminated and flow to streets will be significantly reduced.

COMPUTATIONS

DETENTION/RETENTION REQUIREMENTS

DRAINAGE REPORT JJB 2/16/78

RUNOFF SOURCE (front pond)

		Area	C
½ Building (Metal)	(½)(100)(50)	2,500	1.00
front pond	(20)(80)	1,600	1.00
remainder of front	(20)(70)+(20)(150)	4,400	0.40
east side	(20)(50)	1,000	0.40

RUNOFF (front pond)

runoff = [4100 + 5400(.40)] × rainfall/12 = 522 × rainfall

Storm Duration	Rainfall	Runoff Volume	Ave. Pond Surface		Increm. Infiltration	Accum. Infiltration	Storage Volume
10	0.90	470	3 / 9.24	467	13.24	3	467
30	1.72	898	1230	1107	15.36	19	640 239
60	2.22	1159	1230	1230	17.78	42	640 244
90	2.47	1289	1230	1230	17.78	54	640 112
120	2.61	1362	1230	1230	17.78	72	640 55
150	2.70	1409	1230	1230	17.78	89	640 30
180	2.766	1444	1230	1230	17.78	107	640 17
185	2.775	1449	1230	1230	4.44	112	640 5
190	2.784	1453	1230	1230	4.44	116	640 0

Pond Volume = 1600 cf d = vol/1600 d max = 0.4'

Surface Area = 3200 sf S.A. max = 1280 sf

Use infiltration rate of ½"/hour, sandy soil, no veg. cover, compacted.

Total Runoff Developed (24hr) = 467 + (2.10)(40)(1600)/12 = 852 cu.ft.

Total Runoff Existing (24hr) = (2.10)(40)(150)(200)/12 = 4,550 cu.ft.

Max Runoff Rate Developed = (ignoring pond infiltration)

overflow @ 17 min = 25.55

@ 18 min = 43.21

Q = 22.70/30 = 0.4 cfs

Max Runoff Rate Existing (t_c = 12 min)

Q = (0.40)(135/(12+26))(1[illegible])/1[illegible]

= 2.1 cfs

DRAINAGE [illegible] 2/16/[illegible]

RUNOFF SOURCE (Rear Pond)

		Area	C
1/2 Building (Metal)	(1/2)(100)(50)	2500	1.00
Rear Pond (assume all drain)		6,825	1.00
Remainder of rear	(210)(150) − 6825	24,835	0.40

RUNOFF (Front pond)

runoff = [9165 + 24,835(0.40)] × rainfall/12 = 1.592 × rainfall

rainfall = [(180)/(t+25)] ± 60

Storm Duration	Rainfall	Runoff Volume	Avg. Pond Surface		Increm. Infiltration	Accum. Infiltration	Storage Volume
min.	in.	ft³	ft²		ft³	ft³	ft³
10	0.99	1432	4795	2398	17	17	1416
20	1.72	2723	5902	5340	74	91	2647
30	2.22	3524	6423	6162	128	219	3315
40	2.47	3932	6616	6520	136	355	3577
120	2.61	4155	6678	6647	138	493	3662
130	2.64	4202	6681	6680	46	539	3667
135	2.67	4251	6683	6682	23	562	3669
140	2.69	4255	6684	6684	23	585	3670
145	2.69	4277	6683	6684	23	608	3669
150	2.710	4298					
155	2.716	4319					
160	2.724	4337					

Use infiltration rate of 1 ft³/hour, sandy soil, no veg. cover, compacted.

Surface Area	Elev
1 ft²	100.0
4492 ft²	100.5
6896 ft²	101.0

Volume 2 max = 1123 ft³

Volume 3 max = 3970 ft³

This will provide a freeboard of 0.5'

Volume 2, 0 ≤ Vol. ≤ 1123, = 1d, + 4491 d², ft³ [illegible] 17,964 V/[illegible]

1123 ≤ Vol. ≤ 3970, = 2104 d, + 4492 d² + 1123 ft³, d = [illegible] + 0.00048(V−1123)^1/2

Surface Area 0 ≤ Vol. ≤ 1123, = 1 + 3583 d ft²

1123 ≤ Vol. ≤ 3970 = 4492 + 8896 d

PLEASANT
ACRES
OUTLOOK
RANCH
M-2
M-1
M-1 COMM
INDUSTRIAL
DISTRICT
GIRLS WELFARE HOME
STATE OF NEW MEXICO
GRACELAND
ACRES
SCHNEIDER
INDUSTRIAL
PARCEL
AREA
G-15-Z