E17/D5

1 PLAN

DRAINAGE REPORT

FOR

BORDER MACHINERY COMPANY

10.0 ACRE TRACT SITUATE IN PROTRACTED

SECTION 26, T11N, R3E, N.M.P.M.

APPROVED FOR DRAINAGE

22 July 76
DATE

Kleston H Lewis ACE Hyd
SIGNATURE TITLE

CONTINGENCIES: Building permit shall have detailed grading plan showing implementation of this report

DRAINAGE REPORT
FOR
BORDER MACHINERY COMPANY

SCOPE: This report presents a proposed drainage plan for the new business location of the Border Machinery Co.

LOCATION: The site is located between Interstate 25 and Kircher Blvd., N.E., approximately 1,000 ft. north of the Bear Canyon Arroyo.

EXISTING CONDITIONS: The site is presently raw land with sparse grass cover. The soil consists of decomposed granite granules with some silt and blowsand. The slope runs generally to the northwest at approximately 3% grade. Drainage onto the site from the east is blocked by the Interstate 25 embankment. The land immediately south of the site is presently undeveloped except for the Fraternal Order of Police Building and parking lot in the west half of this property. The F.O.P. site has been graded such that a heavy rainstorm would result in a small amount of runoff being diverted onto the southwestern corner of the Border Machinery Co. site. (See Exhibit A attached).

PROPOSED PLAN: It is proposed to divide the site into three drainage areas as shown on the attached Drainage Plan. Runoff from Area III will be discharged onto Kircher Blvd. via the access road. The runoff from a 100 year, 6 hour storm would be approximately the same as the runoff onto Kircher Blvd. from a like storm from the entire site in its present undeveloped condition.

Runoffs from Areas I and II will be collected in ponding areas at the west end of Areas I and II and left to dissipate by infiltration and evaporation. Overflow flumes discharging onto the access road will be provided for the ponding areas to act as spillways for runoff for storms exceeding the 100 year, 6 hour storm.

Arrangements should preferably be made to keep the runoff presently diverted from the Fraternal Order of Police property onto the Border Machinery Co. site, on the F.O.P. property. However, if the runoff from the F.O.P. property is accepted onto the Border Machinery Co. site, a 10" dia. pipe should be laid through the levee embankment of Ponding Area II with the inlet invert 6" above the bottom of the pond, and discharging onto Kircher Blvd. or the access road. This pipe would serve to pass the runoff from the F.O.P. property through the ponding area with a minimum of nuisance to the Border Machinery Co.

It is recommended that the levee embankments be grassed or covered with 4-6 inches of pitrun gravel in order to ensure the integrity of the embankments and reduce maintenance.

This proposed plan is based on the Owner's stated intention of using drainage areas Ia and IIa, including the ponding areas, for testing tractors and earth moving equipment. Such use should help maintain the infiltration rates in the ponding areas, and occasional ponding of water in the bottom end of the ponding areas should not be detrimental to such use of the areas.

COMPUTATIONS: The "rational formula" for runoff determination was used as follows:

$Q = C\ I\ A$ in which:

Q = runoff in cubic feet per second

I = rainfall intensity in inches per hour

A = watershed area in acres

The coefficient C was determined as follows:

Roofs and paved areas:	0.90 to 1.00
Bare earth in testing areas:	0.50
Existing ground with sparse grass cover:	0.25

The rainfall intensities were determined using the 100 year, 6 hour storm intensity-duration curve from Chart No. 1 of "Master Plan of Drainage, City of Albuquerque, New Mexico and Environs, 1963" by Gordon Herkenhoff & Associates.

The times of concentration, etc., for the purpose of determining rainfall intensities were obtained from D. L. Yarnell's nomograph for overland flowtime as published in Seelye's "Data Book for Civil Engineers", 1960 Edition.

Quantities of total rainfall expected were determined by computing Q for a 2 hour duration and dividing by 0.9, accepting the Master Plan's statement that 90% of a rainfall can be expected to occur in a two hour period.

Thus:

Runoff from site under existing conditions:

L = 900, S = 2½%, tc = 21 min., I = 4.1 in/hr.
Q_{100}= 0.25 x 4.1 x 10.65 = 10.9 c.f.s.

Runoff from Area III when developed:

Area	L	S	tc	C	I	A	Q
IIIb	400'	1%	7.7	0.95	5.8	1.19	6.6
IIIa	400'	4%	6.0	1.0	6.0	0.56	3.4
Total Runoff							10.0 c.f.s. ✓

Quantity to be ponded in Ponding Area I:

Q_{Ic}= 0.5 x 1.3 x 0.40 = 0.26
Q_{Ib}= 0.95 x 1.3 x 1.22 = 1.51
Q_{Ia}= 0.5 x 1.3 x 2.24 = 1.46

Ave. 2 hr. runoff: 3.23 c.f.s.

Quantity = 1/0.9 x 3.23 x 120 x 60 = 25,840 $ft.^3$ (0.59 ac. ft.)

Volume of proposed Ponding Area I:

Vol. = 1/2 x 120 x 3 x 150 = 27,000 $ft.^3$ (0.62 ac. ft.) ✓

Quantity to be ponded in Ponding Area II:

Q_{IIc} = 0.5 x 1.3 x 0.53 = 0.34
Q_{IIb} = 0.95 x 1.3 x 2.12 = 2.62
Q_{IIa} = 0.5 x 1.3 x 2.39 = 1.55

Ave. 2 hr. runoff: 4.51 c.f.s.

Quantity = 1/0.9 x 4.51 x 120 x 60 = 36,080 $ft.^3$ (0.83 ac. ft.)

Volume of proposed Ponding Area II:

Vol. = 1/2 x 120 x 3 x 200 = 36,000 $ft.^3$ (0.83 ac. ft.) ✓

CONCLUSIONS:

The computations indicate the proposed design as shown on the attached Drainage Plan is adequate to handle the runoff from a 100 year, 6 hour storm wit. no increase in the runoff going onto Kircher Blvd., N. E.

Albert D. Corbin, P.E.
Molzen-Corbin & Associates
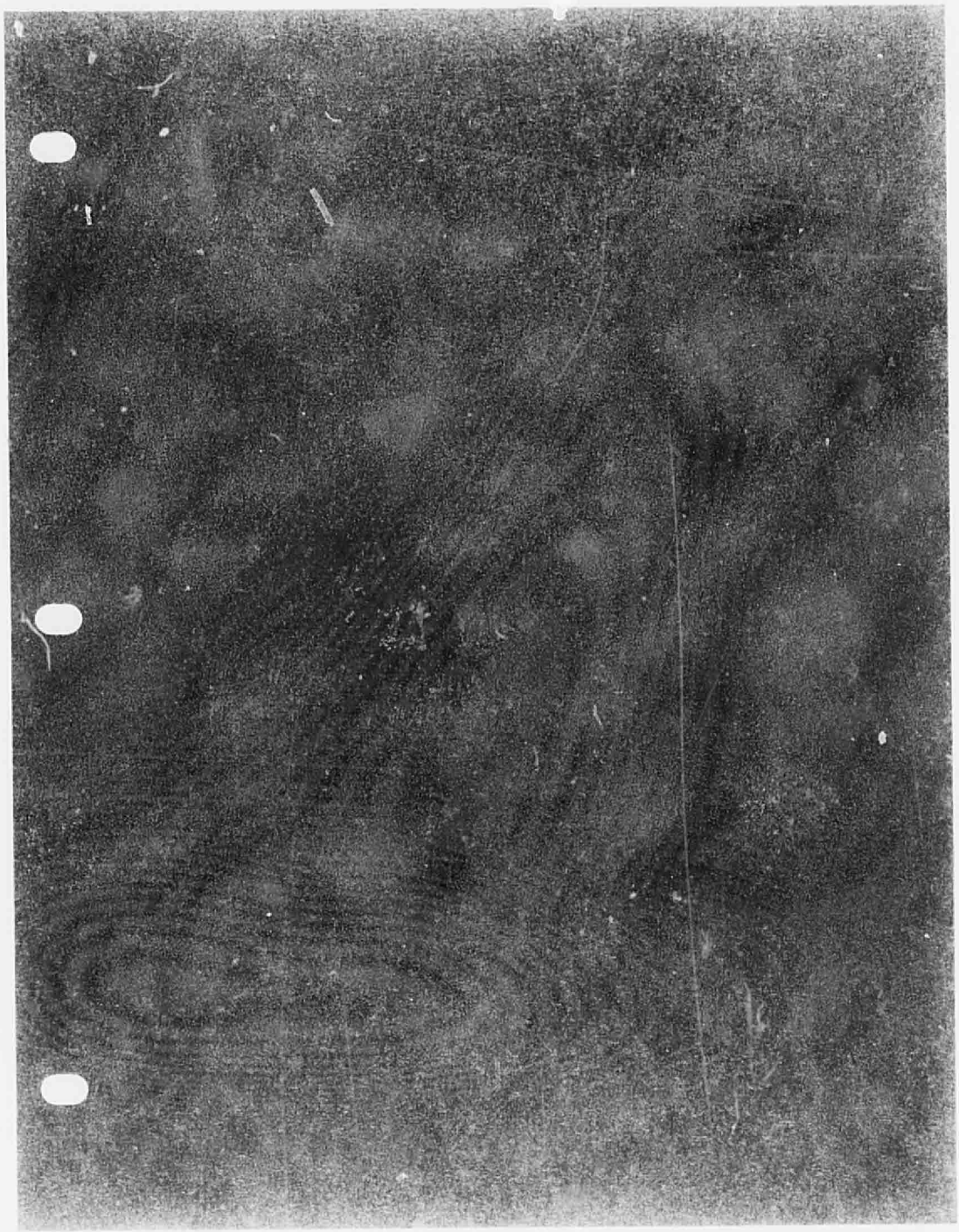
EXHIBIT "A"
EXISTING CONDITIONS
(AMAFCA AERIAL PHOTO E-17)