

A DRAINAGE STUDY
OF
MAVADO FREIGHT LINES' TERMINAL SITE
AT
SAN MATEO AND LINCOLN RDS., N. E.
ALBUQUERQUE, NEW MEXICO

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December 29, 1973
(revised January 29, 1974)

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A. DRAINAGE STUDY
NAVAJO FREIGHT LINES TERMINAL SITE
San Mateo and Lincoln Road, N. E.
Albuquerque, New Mexico

A. GENERAL INFORMATION

1. Legal Description: See Legal description on Plot Plan, (Exhibit "W").
 2. Location: The area concerned in this study is bordered on the east by San Mateo Blvd. NE. and on the north by Lincoln Rd. NE.
 3. Contributing Drainage Areas: Approximately 43 acres between San Mateo Dr., NE. and San Mateo Blvd., NE., contribute to the run-off through the subject property as indicated on the attached topo map. (Exhibit "W").
 4. Arroyo: A small arroyo flows through the site covered by this study.
 5. San Mateo Diversion Storm Sewer: The City of Albuquerque has designed a storm sewer along the west right-of-way of San Mateo to divert the arroyo flowing through this land to Bear Canyon Arroyo. This sewer will be constructed under the Cities Block-to-Block Contract. Navajo Freight Lines, Inc., is participating in the cost of this storm sewer.
- B. RUNOFF FORMULA
Runoff quantities are calculated by the rational formula - $Q = C I A$.
1. Coefficients (C):

a. Roof	.95
b. Paved Areas	.90
c. Developed Residential Areas	.65
d. Business Areas	.80
e. Drive-In Theater (Paved and Gravel)	.80
f. Undeveloped Areas	.30
 2. Intensity of Rainfall: $(I = 5.44/hour)$ $189 = 5.44/hour$.
For a 10 minutes duration $I = \frac{189}{.75} = 252$
- C. RUNOFF CALCULATIONS - See Sheets 3 and 4.
- D. RUNOFF CALCULATIONS AFTER CONSTRUCTION are based on Project Site Plans - See Exhibit "W".
- E. RUNOFF CALCULATIONS PRIOR TO CONSTRUCTION are based on a preliminary area topographical map prepared by Bohannan, Westman, Huston (See Exhibit "W").

(1)

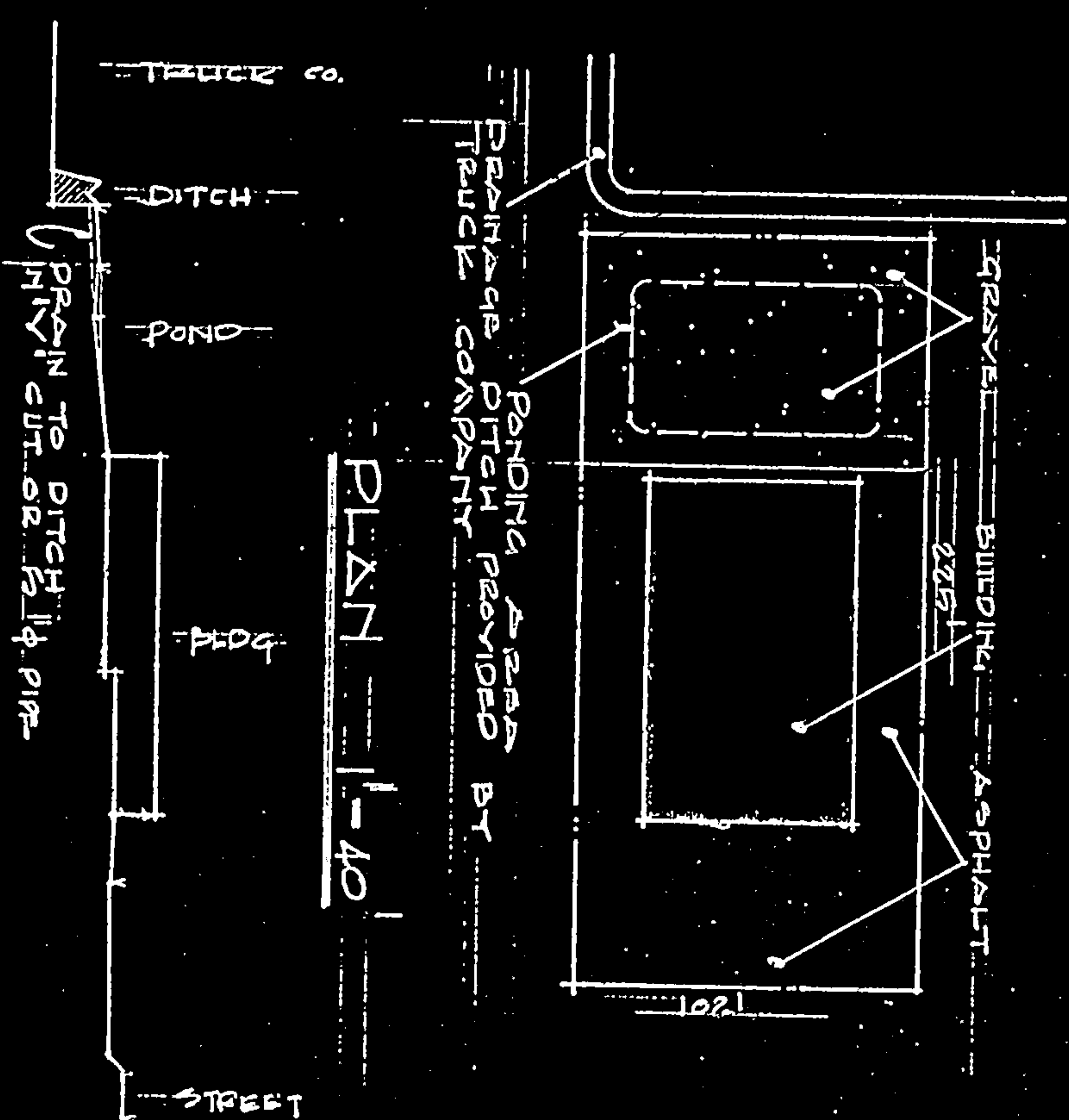
F. CONCLUSIONS

1. The quantity of runoff flow in the arroyo at point "W", the low point at the west end of the property has been reduced from 196.2 c.f.s., prior to construction, to 84.5 c.f.s. after construction is completed.
2. The quantity of flow on to Lincoln Road has been increased by only a fraction (.70 c.f.s.). When curb and gutter has been installed on San Mateo and a water stop constructed at San Mateo and Lincoln, the total flow in Lincoln Road will be less than at present. We feel that all requirements of the 1972-2 AMWCA Drainage Resolution have been met by our design.
- 3.

[Signature]
N. J. Kruger, President
KRUGER, LANE and ASSOCIATES
Architects and Engineers



(2)

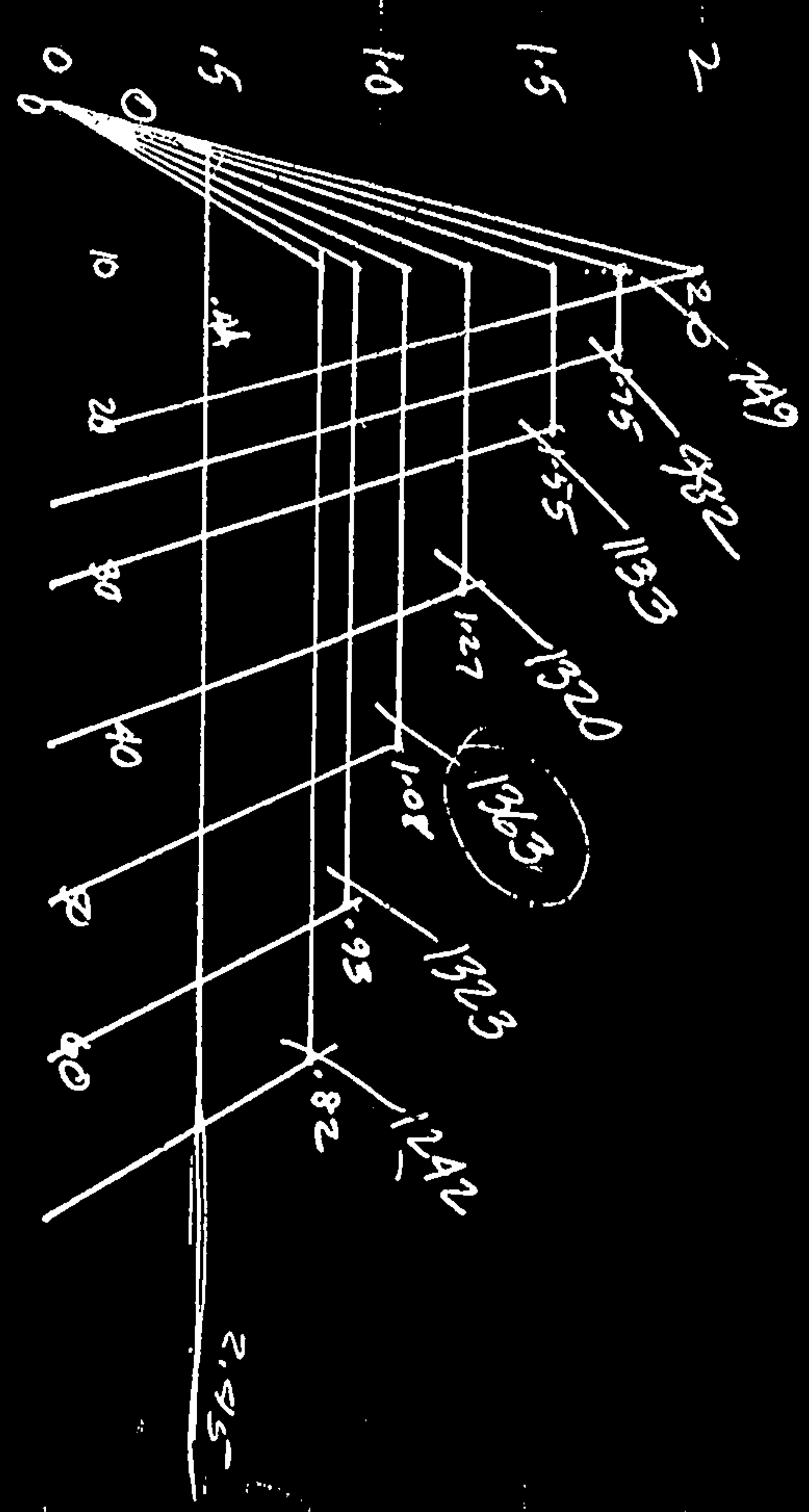


PLAN 1'-40'

SECTION

21st CENTURY SOUND 10/12/70

T	S
10	2
15	1.75
30	1.55
30	1.27
40	1.08
50	.93
60	.82



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January 30, 1976

Mr. John Robert
Albuquerque Metropolitan Arroyo
Flood Control Authority
2112 Grand Blvd. NE
Albuquerque, NM 87107

Subject: Navajo Freight Lines Terminal
Albuquerque, New Mexico (7215)

Dear Sir:

We are enclosing herewith a Drainage Study of the Navajo Freight Lines Terminal site revised in accordance with our recent conversation. We trust that with the changes made, and the grading, etc., the project now meets with your approval.

Very truly yours

ROBERT LAKE and ASSOCIATES
Architects and Engineers

M. J. Kruger, President

Enclosure

cc: Mr. Q. R. Kallick, City Engineer &

22 OCTOBER 1976

ADDENDUM: 21ST CENTURY SOUND BUILDING-ALBUQUERQUE NEW MEXICO

This addendum is issued to clarify the originally submitted plans and shall supersede the original plan in cases of discrepancy.

1. The lot shall drain into a drainage ditch (or canal) located just beyond the rear (west) property boundary. This ditch is owned and maintained by the Navajo Truck Company, and use of the ditch was given to 21ST Century Sound when they purchased the lot from the Navajo Truck Company.

2. DRAINAGE CALCULATIONS:

PARAMETERS: $t_c = 10$ minutes (assumed)

$I = 189/(4 \times 25) = 5.4$ inches/hour
 $C = 0.50$ before building on land
 $= 0.25$ for roof and asphalt areas
 $= 0.30$ for gravel and landscaped areas

$A = 0.53$ acres total & 0.35 acres for roof & asphalt
 0.18 acres for gravel & landscp.

THEN:

$C = 0.73$ as an average value for the entire piece of land after building on it (a weighted average)

$Q_o = CIA = (0.30)(5.4)(0.53) = 0.86$ cfs which is the natural runoff and the quantity that may be used after construction.

$T = -25 + \frac{7087.5CA/C_o}{(7087.5)(0.73)(0.53)/(0.86)}$
 $= 32$ minutes

$V_s = 60CA(189/(T \times 25))(T) - 40Q_o T$
 $= 60(0.73)(0.53)(189/(32 \times 25))(32) - 40(0.86)(32)$
 $= 1375$ cf

A $40' \times 70' \times 6'$ pond will hold 1375 cf.

A $5' \times 4'$ pipe at about a 12" head will carry the required flow; a small 1/2" cut should be on the opposite alternative.

2-6" deep 1/2" cut.

**NOTE: Basic equation derived from WATER & SEWAGE WORKS MAGAZINE Dec. 1973 issue

F 17-D 17

2 Plans

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RECEIVED
JAN 9 1974
CITY ENGINEERS

Mr. Verne Kimmick
Chief Engineer
City of Albuquerque
4th Floor, City Hall
POB 1233
Albuquerque, NM 87103

Subject: Navajo Freight Lines Terminal (7312)

Dear Sir:

We are enclosing herewith copy of the drainage study of the Navajo Freight Lines Terminal site at San Mateo Blvd., and Lincoln Road, NE. This study is for your review and approval.

Very truly yours

KRUGER, LAKE and ASSOCIATES
Architects and Engineers

N. J. Kruger, President



Enclosure

cc: Mr. L. F. Mattingley