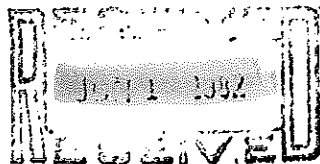DRAINAGE REPORT
FOR
HAMILTON TEST FACILITY
1500 BROADWAY N.E.
ALBUQUERQUE, NEW MEXICO

ARMSTRONG ENGINEERING, INC.
2709 A PAN AMERICAN N.E.
ALBUQUERQUE, NEW MEXICO
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JUNE 1982

DISCUSS.ON

This report addresses the grading and drainage for the proposed Hamilton Test Facility located at 1500 Broadway NE.

From the Master Drainage Report Sheet J-14 it can be seen that drainage from offsite is small and should not be a problem on this site.

To meet the Valley Interim Drainage Guidelines this plan proposes to pond the entire 50 year developed run-off with controlled release to an existing 48" diameter storm drain in Broadway Blvd.

The controlled release for Valley requirements is the one year undeveloped run-off which is 1.77 cfs which would result in a velocity of 1.0 feet/sec. in the 18" diameter CMP (se attached plan). This would only occur at full flow and the low flows of the average storm probably would not keep this pipe clean. It is therefore proposed that the project be allowed to release at least at the Heights controlle. discharge rate of 5 year undeveloped rate and, preferably, no controlled release at all. This could be justified by the fact that the storm drain in Broadway Blvd. is probably full in the large storm situation and would not allow much in-flow anyway.

The property is zoned M-1 and there was no special planning history discovered which would affect this plan.

Erosion control should not be needed as there will not be a long period of time from initial grading to paving and landscaping and there are no offsite flows.

CALCULATIONS

Drainage Area = 2.63 Acres = 114373 ft^2
Existing Coefficient of run-off= 0.35

Proposed Coefficient of run-off:

Paving & Roof,   55600 ft^2 @ 0.9 = 50040
Landscaped area, 58773 ft^2 @ 0.3 = 17632

Composite,   114373 ft^2 @ 0.59= 67672

Time of concentration = 7.5 min

50 year - 6 hour precipitation = 2.1 inches

POND VOLUME

V= (0.59)(2.1/12)(114373) = 11809 ft^2

Pond Volume as shown on drawing is in excess of this quantity.

POSITIVE DISCHARGE

Q_1 undeveloped:
1 year- 7.5 min p= 0.24 inches
i_1= (0.24)(60/7.5) = 1.92 in/hr
Q= ciA= (0.35)(1.92)(2.63)= 1.77 cfs

Q_5 undeveloped:
5 year- 7.5 min p= 0.41 inches
i_5= (0.41)(60/7.5) = 3.28 in/hr

Control Orfice (round hole cut in steel plate over inlet
of 12 inch RCP):

Max head= 5.77 ft
C_d= 0.63
Q= (0.63) A_o (2 x 32.2 x 5.77)= 12.14 A_o

for Q_1:
12.14 A_o= 1.77 cfs
A_o= 0.15 ft= PI d^2/4
d= 0.43 ft= $5\frac{3}{16}$ inches

for Q_5:
12.14 A_o= 3.02 cfs
A_o= 0.25 ft= PI d^2/4
d= 0.56 ft= $6\frac{3}{4}$ inches

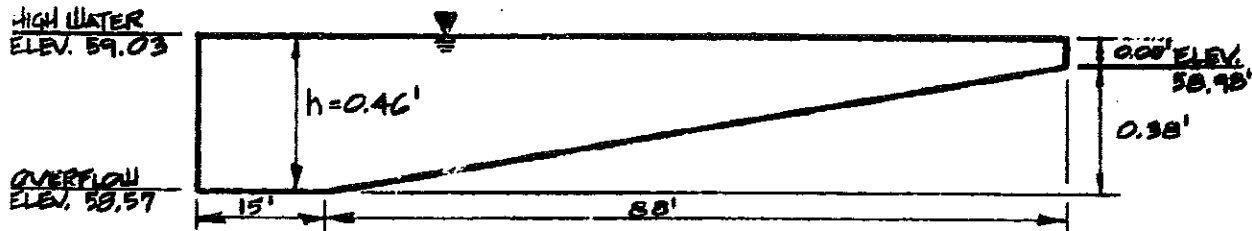## POND EMERGENCY OVERFLOW

Q_{100} developed:

i= 6.2 inches/hour

Q_{100}= ciA= (0.59)(6.2)(2.63)= 9.62 cfs

Overflow Weir (along Broadway between driveways):

HIGH WATER
ELEV. 59.03

h=0.46'

OVERFLOW
ELEV. 58.57

15'

88'

0.08' ELEV. 58.98'

0.38'

$$Q= (0.577)(15 [0.46]^{1.5} + 88 [0.54/2]^{1.5})$$

Q= 9.82 cfs 9.62 cfs ok