J11/023

Drainage Report
For
McDonald's Restaurant

NOTES:

1. The Site is the North-West Corner of Coors Rd & Hanover Rd

2. Existing Topo Shown on Architectural Survey

3. Proposed Street Improvements are taken from Plans Prepared By Leverton-Denney & Assoc.

4. Proposed Storm Drain System To Be Designed To Drain 100' LF Behind Property Line Along Coors Ave; For A 25 YR Frequency And A Runoff Factor Of 0.80 - Per Leverton Denney.

5 Lot Area = 0.846 Ac.

6 Ref: Master Plan of Drainage, City of Albuquerque, New Mexico & Environs 1963 Charts, Maps & Tables, Prepared By Gordon Herkenhoff & Assoc.

292-1936

DEVELOPED CONDITION

A = 0.71 Ac why not .846
C = 0.90 (PAVED PARKING LOT)

USING THE MODIFIED RATIONAL METHOD HYDROGRAPHS

$Q = C_A C i A$

FOR 100 YR RETURN FREQUENCY $C_A = 1.25$ $C \times C_A \times A = 0.8$

CA C max 1.0

STORM DURATION MIN.	RAINFALL INTENSITY "/HR	PEAK RUNOFF RATE cfs	STORM RUNOFF VOLUME	RELEASE VOLUME CU FT	STORAGE REQ'D. CU FT
	.846	3.83			
10	5.40	4.56 4.32	2592	1140	1452 800
		3.35			
15	4.72	3.99 3.78	3402	1710	1692 ~~1128~~ 1128
		2.98			Vol.
20	4.2	3.55 3.36	4032	2280	1752 ⇐ 1226 Req'd
30	3.44	2.91 2.75	4950	3420	1540 1173
40	2.90	2.45 2.32	5568	4560	1008
50	2.52	2.13 2.02	6060	5700	360
60	2.22	1.87 1.78	6408	6840	-432

LENGTH OF FLOW: 378 LF
HEIGHT: 1.7'
SLOPE 0.449 %
ASSUME V ≈ 38 FT/MIN ON ASPHALT
$T_c = 378'/38 \approx 10$ MIN.

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QUANTITY OF RUNOFF PERMITTED TO DRAIN TO PROPOSED CATCH BASIN

$A = 0.59$ Ac.
$T_c = 10$ MIN
$C = 0.80$
$i_{25} = 4.03$

$Q_{25} = 0.8 \times 4.03 \times 0.59 = 1.90$ cfs.

Per Drainage Report Prepared By Leverton-Denny - Conversation with Mr Lou Gross

Storage

$(4.56 - 1.9)\ 60\ \frac{11}{2} = 878$

$(3.99 - 1.9)\ 60\ (10) = 1254$

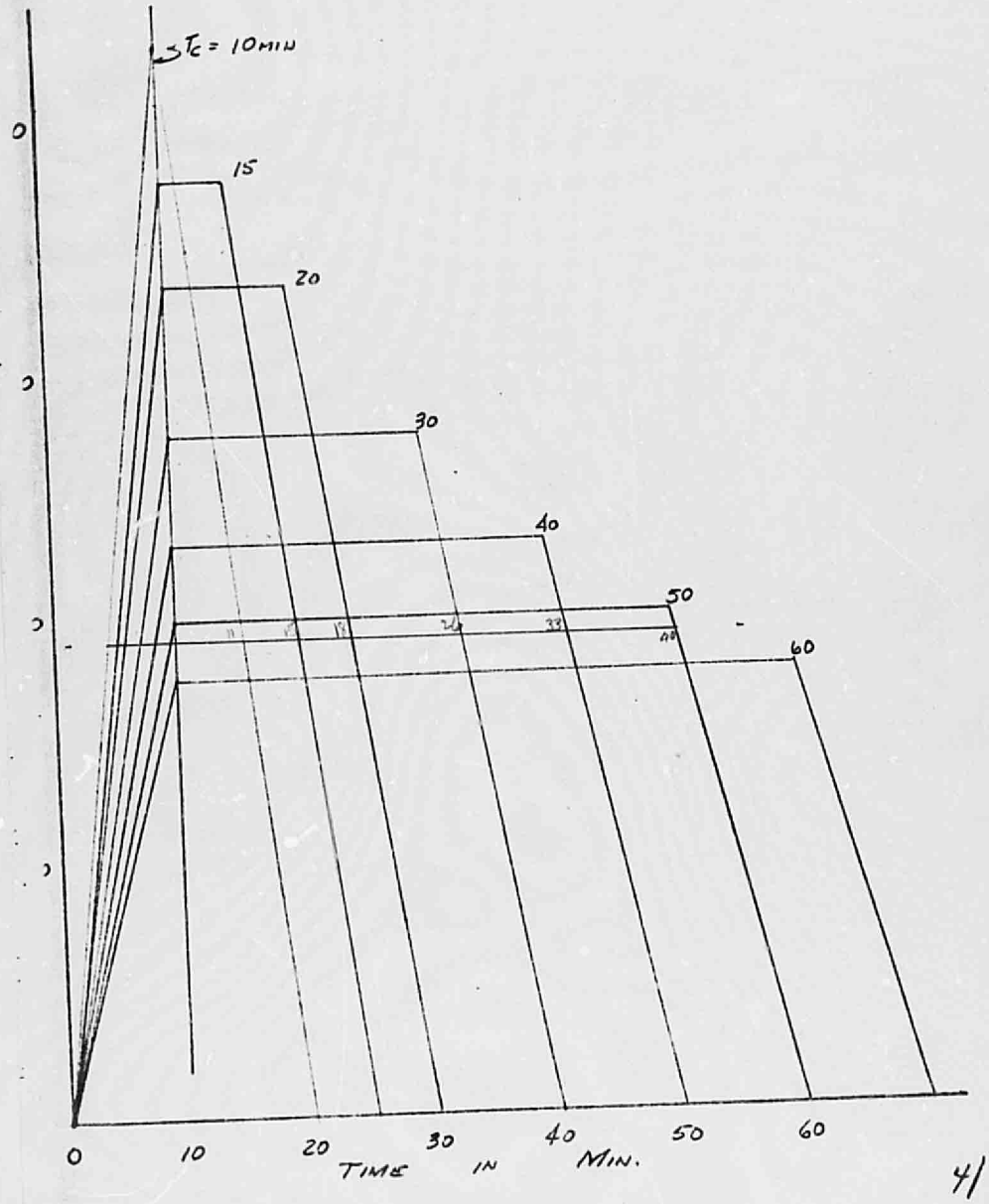
$(3.55 - 1.9)(60)(14) = 1386$

$(2.91 - 1.9)(60)(23) = 1394$

$(2.45 - 1.9)(60)(31.5) = 1040$

$(2.13 - 1.9)(60)(40.5) = 559$

Modified Rational Method Hydrograph.



Storm Runoff Volume Calculation

10 min

$$2\left[\frac{4.32 \times 10}{2}\right] \times 60 = 2592$$

15 min

$$3.78 \times 5 \times 60 + 2\left[\frac{3.78 \times 10}{2}\right] 60 = 3402$$

$$= 1134 + 2268$$

20 min

$$3.36 \times 10 \times 60 + 2\left[\frac{3.36 \times 10}{2}\right] 60 = 4032$$

$$= 2016 + 2016$$

30 min

$$2.75 \times 20 \times 60 + 2\left[\frac{2.75 \times 10}{2}\right] 60 = 4950$$

$$= 3300 + 1650$$

40 min

$$2.32 \times 30 \times 60 + 2\left[\frac{2.32 \times 10}{2}\right] 60 = 5568$$

$$= 4176 + 1392$$

50 min

$$2.02 \times 40 \times 60 + 2\left[\frac{2.02 \times 10}{2}\right] 60 = 6060$$

$$4848 \qquad 1212$$

60 min

$$1.78 \times 50 \times 60 + 2\left[\frac{1.78 \times 10}{2}\right] 60 = 6408$$

$$5340$$

Wier Calculation

$Q = CLH^{3/2}$

$Q \leq 1.9$ cfs

$Q = 2.8 \times 2 \times 0.5^{3/2} = 1.98$ cfs

$C = 2.8$ (King's Handbk)
$L = 2.0'$
$H = 0.5'$ (6" Curb)

OK. Use 2' curb opening.

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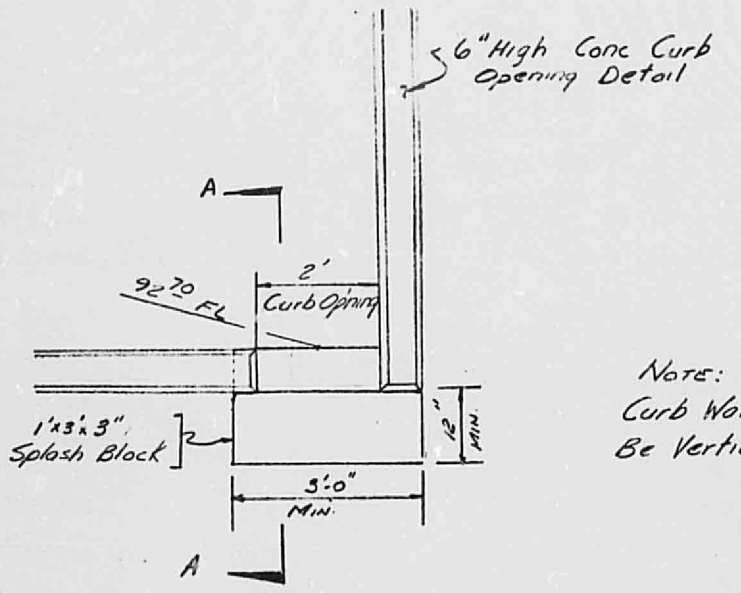
STORAGE VOLUME CALCULATION

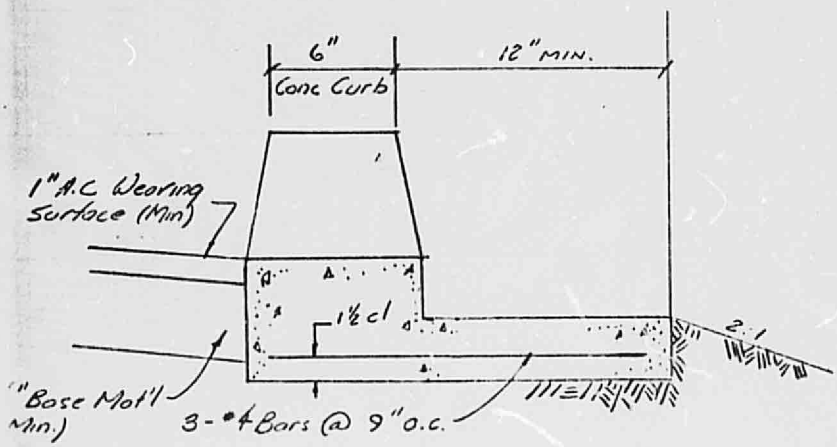
AREA BEHIND CURB OPENING,
BUT NOT OVER TOP OF CURB ELEVATION

AREA = 14.5 IN. SQ = 5800 SQ FT
AVERAGE DEPTH = 0.3'
VOLUME = 1740 CU. FT.
VOLUME REQ'D = 1752 CU FT. (SEE HYDROGRAPH TABLE)

FOR ADDED PROTECTION, CONST
POND AFTER CURB OPENING.
VOLUME = 15'x15'x2' = 450 CU FT. ∴ OK.



NOTE:
Curb Walls May
Be Vertical



SECTION "A-A"