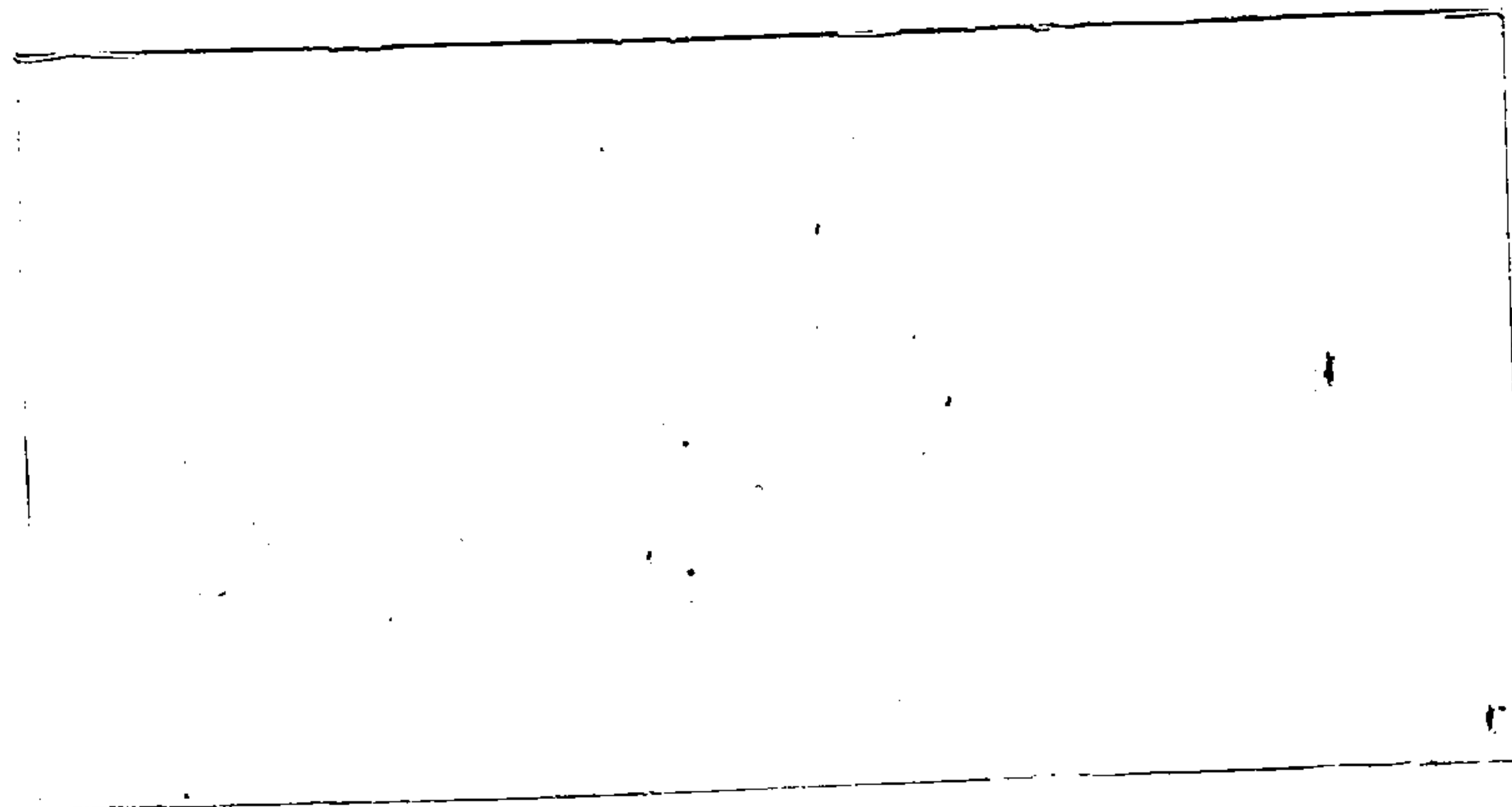


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MARK GOODWIN

& ASSOCIATES

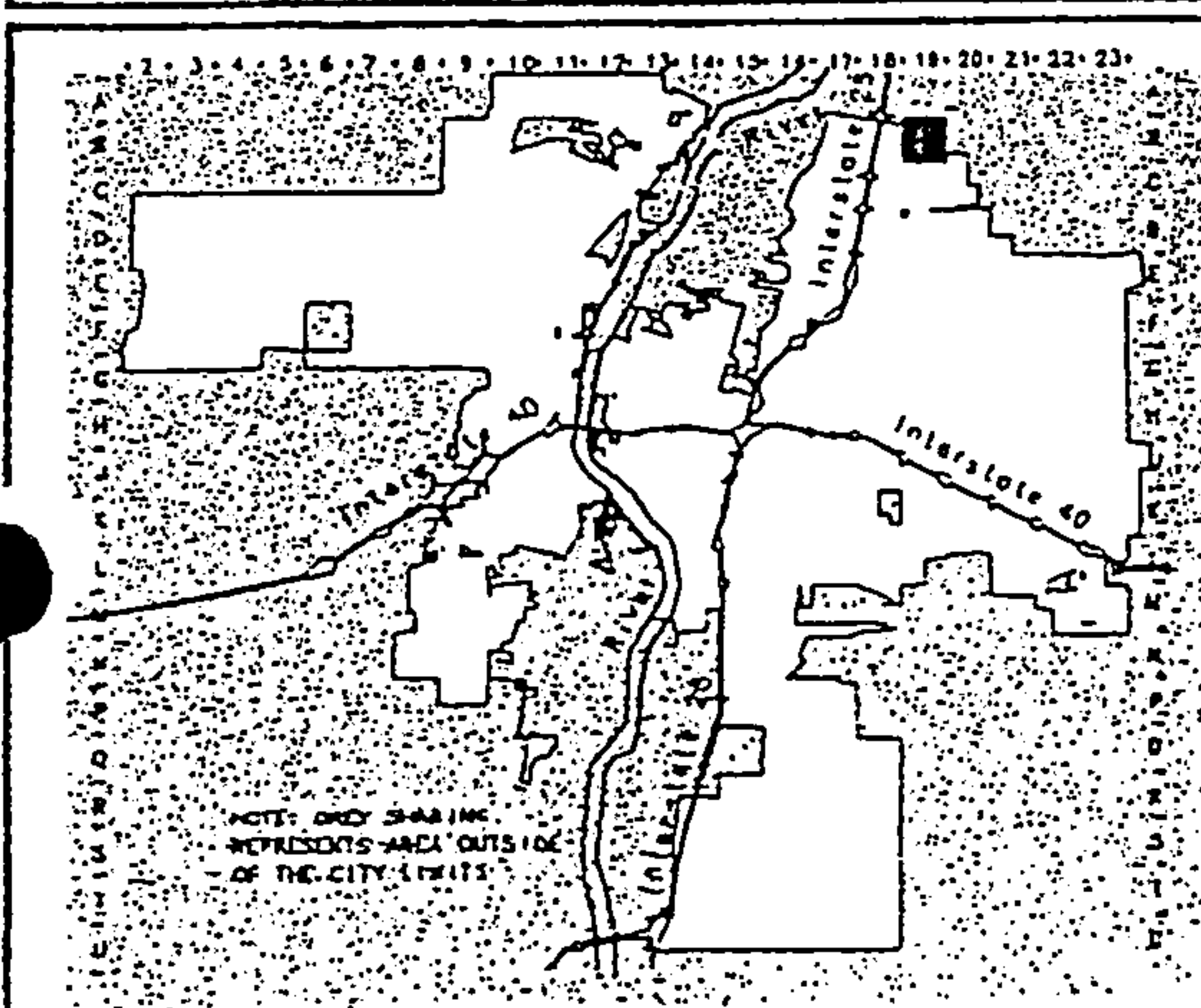
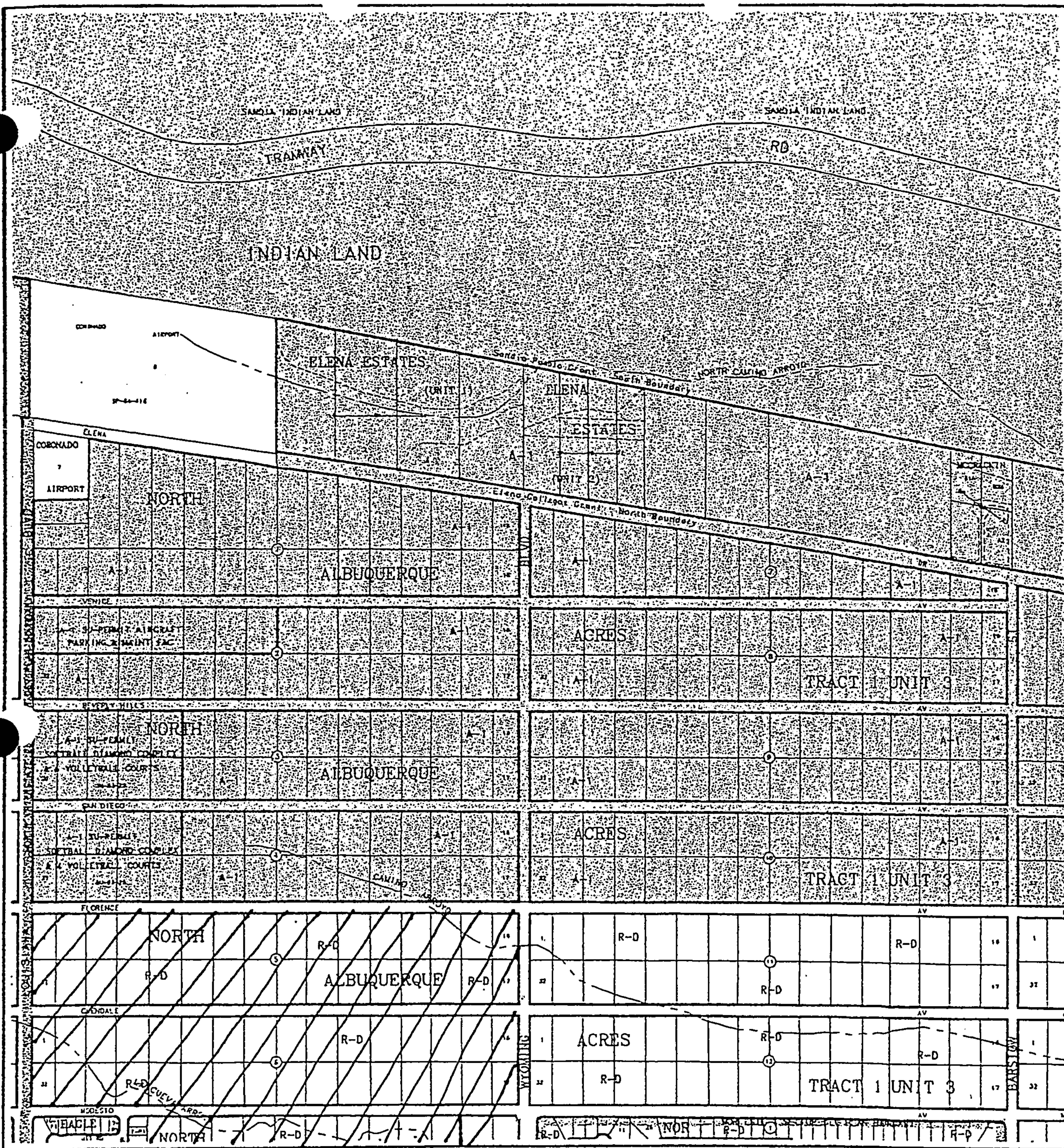
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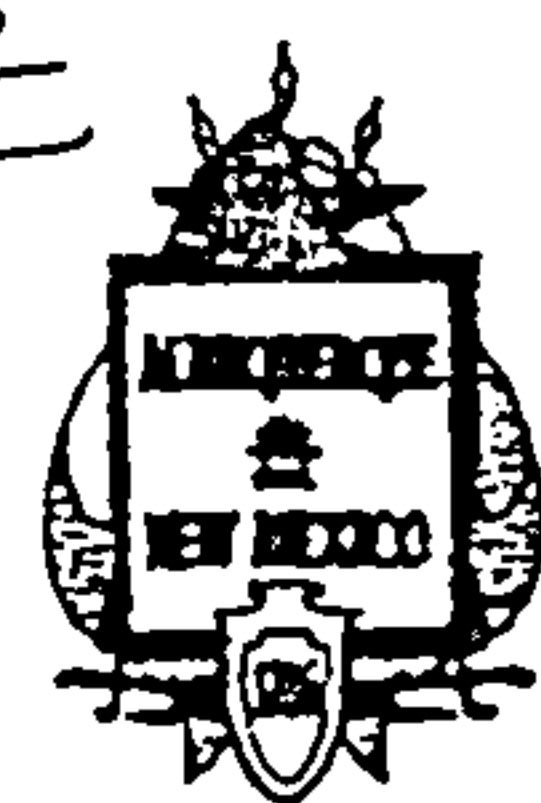
**DRAINAGE REPORT
for
DESERT RIDGE TRAILS**



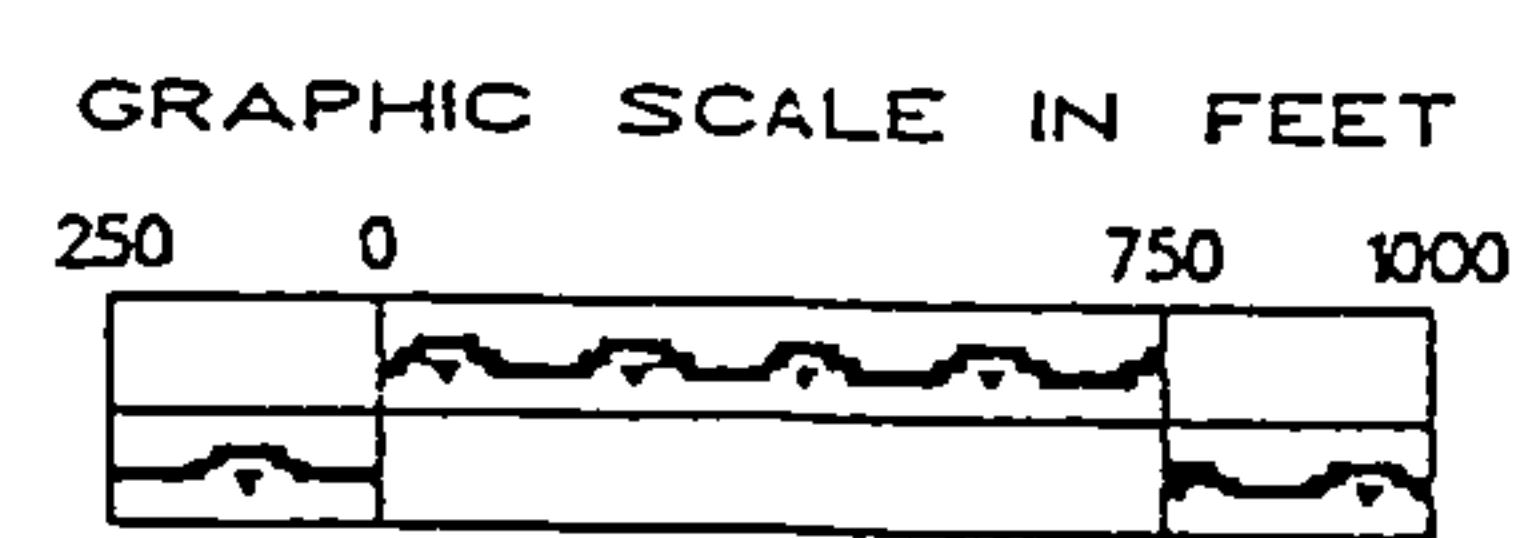
7-3-01
8-6-01
8-13-01



SITE



CITY OF
Albuquerque
Geographic Information System
PLANNING DEPARTMENT
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Zone Atlas Page
B-19-Z
Map Amended through July 27, 2000



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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GJK DATE 5-18-01
CHECKED _____ DATE _____
SHEET 1 OF _____

- THE SITE CONTAINS 63.0539 AC SITUATED BETWEEN LOUISIANA BLVD, FLORENCE AVE NE, WYOMING BLVD NE AND THE LA CUEVA CHANNEL
- THE SITE SLOPES FROM SE TO NW AT A 5% SLOPE
- THE SITE IS IN TWO FLOOD ZONES BUT THOSE ZONES WILL BE REMOVED AS PART OF THE AMAFCA CHANNEL PROJECT.

- THERE WILL BE 316 LOTS

- AREA OF R.O.W. = 14.1402 AC

11.1708 AC TYPE D

2.9694 AC TYPE C

- AREA OF PADS

50 x 30' x 60' = 90,000 SF 10.60 %

80 77 x 35' x 60' = 161,700 SF 19.04 %

75 76 x 40' x 60' = 182,400 SF 21.48 %

70 69 x 50' x 70' = 241,500 SF 28.44 %

29 32 x 55' x 70' = 123,200 SF 14.51 %

12 x 60' x 70' = 50,400 SF 5.93 %

316

849,200 SF = 19.4949 AC TYPE D

- AREA OF DRIVES

316 x 20' x 20' = 126,400 SF = 2.9017 AC TYPE D

- AREA OF PARK

2.0 AC

1.0 AC TYPE C

1.0 AC TYPE B

} THIS WILL BE CALCULATED
SEPARATELY Q=5.89 CFS
FROM HYMO SHEETS 18-20

- PERCENTAGES OF LAND TREATMENTS

TYPE D = 33.5674 AC 54.98 %

TYPE C = 2.9694 AC 4.86 %

TYPE B = 24.5171 AC 40.16 %

61.0539 AC

100 %

* FROM HYMO OUTPUT SHEETS 20-22

Q = 241.41 CFS

V = 8.4624 AC-FT



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PROJECT DESERT RIDGE TRAILS
SUBJECT G+D PLAN
BY GJK DATE 5-18-01
CHECKED _____ DATE _____
SHEET 2 OF _____

• FIND RUNOFF PER PAD SIZE

ASSUME TOTAL Q IS DIVIDED BY TOTAL NUMBER OF LOTS.

		Q(CFS)	Q PER LOT
(50)	30' x 60' PADS = 15.87%	25.59	0.5118
50 (77)	35' x 60' PADS = 24.44%	45.96	0.5969
75 (76)	40' x 60' PADS = 23.81%	51.85	0.6822
70 (69)	50' x 70' PADS = 21.59%	68.66	0.9951
29 (32)	55' x 70' PADS = 10.16%	35.03	1.0947
(12)	60' x 70' PADS = 4.13%	14.32	1.1933
		<u>241.41</u>	

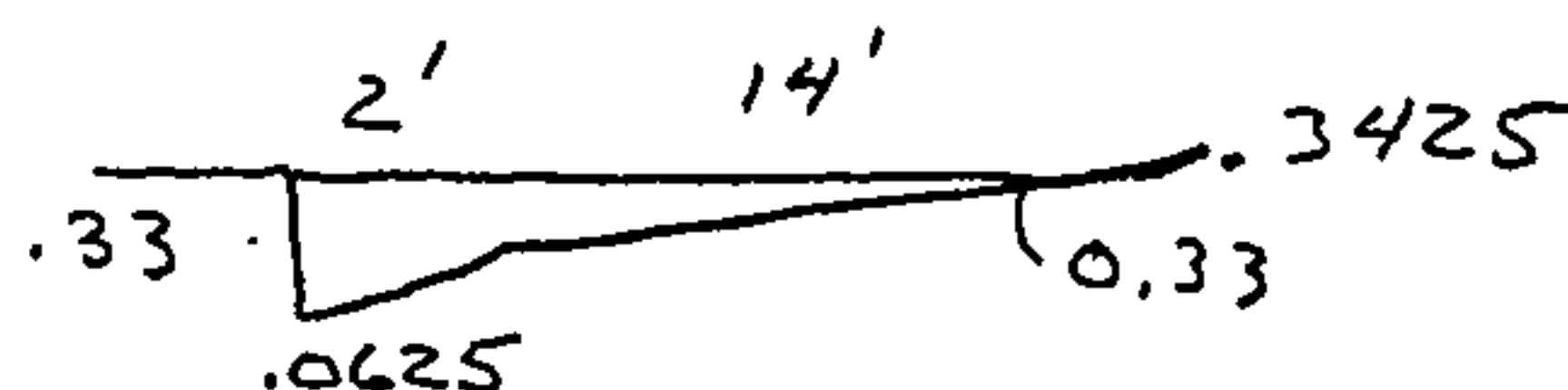
• FIND STREET CAPACITY

FIND MOUNTABLE CURB CAPACITY FOR 2%, 3.75%, 3.77% + 4.7%

S = 2% 32' F-F n = 0.017

d = 0.33
WP = 15.705
A = 2.3864
V_{1/2} = 3.52 F/s
Q_{1/2} = 8.4 CFS

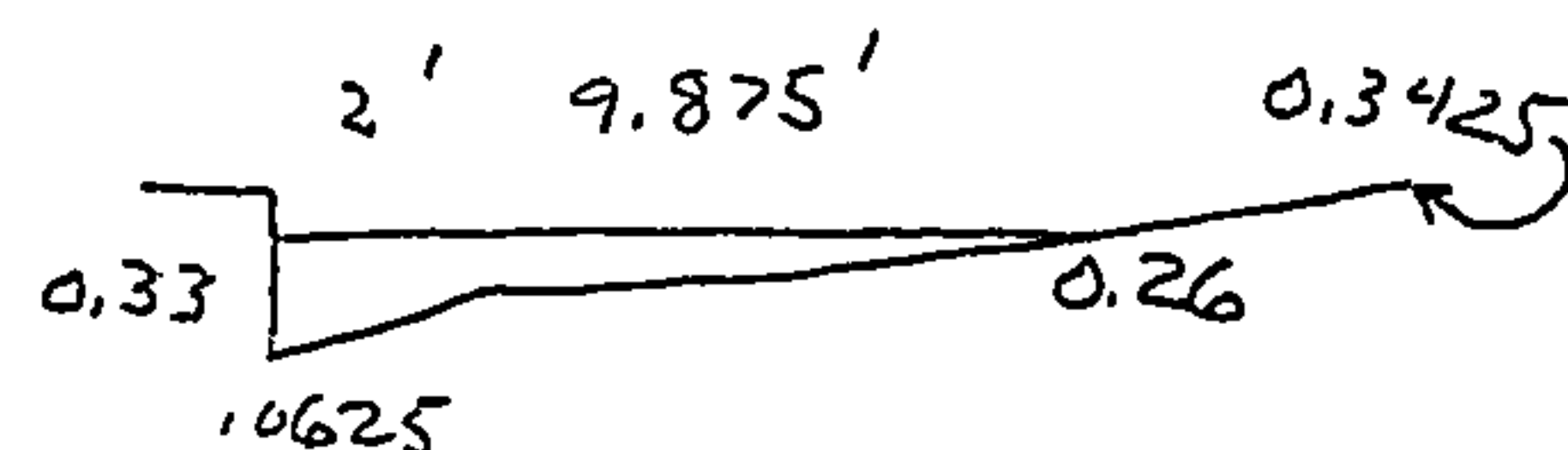
$$d + \frac{V^2}{2g} = 0.52 \approx 0.51$$



S = 3.75% + S = 3.77% 32' FF n = 0.017

d = 0.26
WP = 12.135
A = 1.43
V_{1/2} = 4.07 F/s
Q_{1/2} = 5.83 CFS

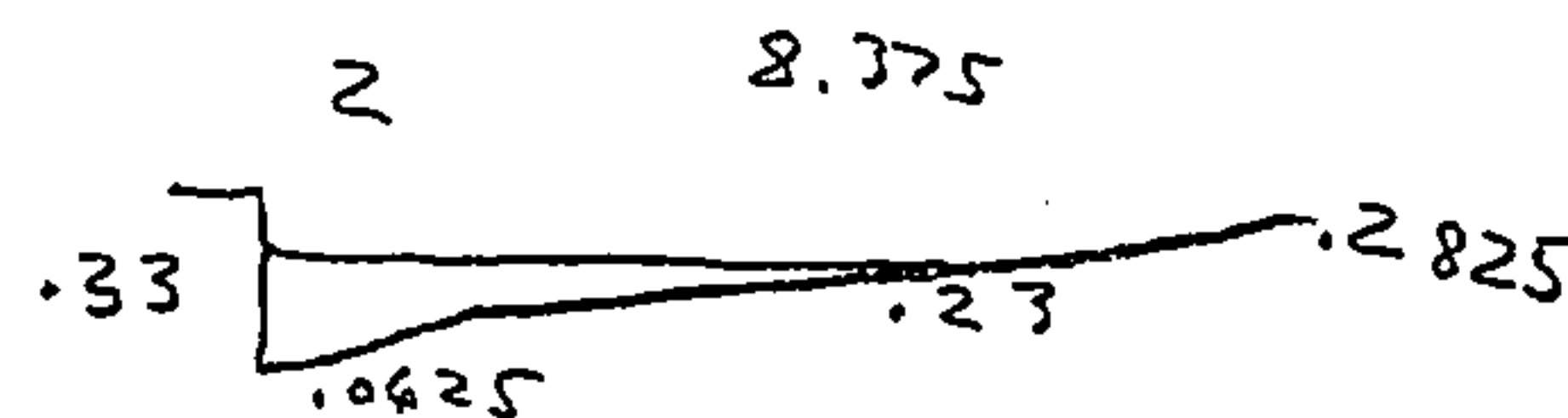
$$d + \frac{V^2}{2g} = 0.52 \approx 0.51$$



S = 4.7% 26' FF n = 0.017

d = 0.23
WP = 10.605
A = 1.0989
V_{1/2} = 4.1808 F/s
Q_{1/2} = 4.59 CFS

$$d + \frac{V^2}{2g} = 0.50 < 0.51 \quad \text{OK}$$



S = 2% 28' F-F n = 0.017

d = 0.3025
WP = 28.605
A = 3.965
V = 3.3109 F/s
Q = 13.13 CFS

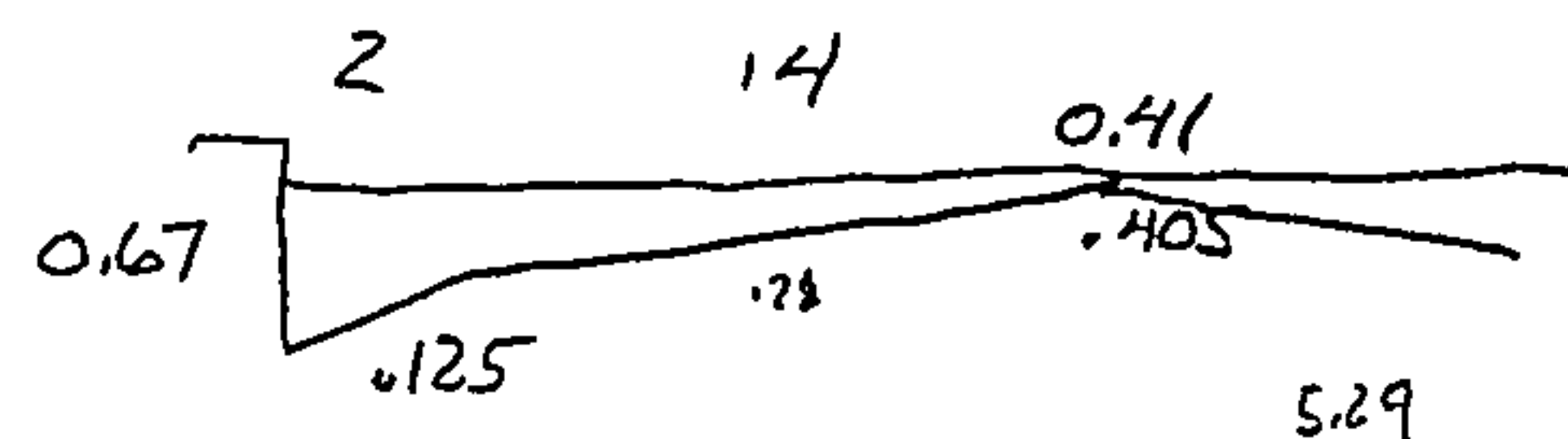
$$d + \frac{V^2}{2g} = 0.47 < 0.51 \quad \text{OK}$$

REVISED 8-6-01

FIND STD C+G CAPACITY FOR 3.75%, 3.26%, 3.33%, 4.17%.

$$S = 3.75\% \quad 32' F - F \quad n = 0.017$$
$$d = 0.41$$
$$wP = 32.82$$
$$A = 5.45$$
$$V = 5.11 \text{ F/s}$$
$$Q = 27.87 \text{ CF}$$

$$d + \frac{v^2}{2g} = 0.82 < 0.85 \text{ OK}$$


$$s = 4.17\% \quad 32' \text{ FF} \quad n = 0.017$$
$$d = 0.405$$

WP = 32.81

$$A = 5.29$$
$$V = 5.29 \text{ F/s}$$
$$Q = 27.97 \text{ CFs}$$

$$d + \frac{v^2}{2g} = 0.84 < 0.85 \frac{\text{OK}}{2}$$

- FIND RUNOFF FROM WEST HALF OF WYOMING THAT ENTERS THE SITE AT BLUE CYPRESS AVE.

- TOTAL AREA . . .

$$-R/w = 1.4067 \text{ AC}$$

LOTS $15 + 16 = 0,9002 \text{ AC}$

TOTAL = 2.3069 AC

TYPE "D" = 1.0353 AC = 44,889.

$$\text{TYPE B} = 1,2716 \text{ AC} = 55,12\%$$

FROM A44MO OUTPUT SHEETS 23-25

$$Q = 8.44 \text{ CF5}$$

- FIND FLOW IN BLUE CYPRESS AVE JUST WEST OF AUTUMN ROSE DR.

$$Q = (\underset{\text{LOTS}}{9} \times 0.6822) + (\underset{\text{LOTS}}{2} \times 0.9951) + 8.44 = 16.57 \text{ cfs} \approx 2 \times 8.4 = 16.8 \text{ cfs}$$

STREET CAPACITY AT THIS POINT

REQUIRES STD C+G AFTER THE RETURNS

- FIND FLOW ON BLUE CYPRESS AT CANYON SAGE DR.

Q: 7 Lots $\times 0.6822 + 16.57 = 27.35$ ≤ 27.97 OK
FROM THIS SHEET



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SUBJECT DRAINAGE CALCS
BY GSK DATE 5-18-01
CHECKED _____ DATE _____
SHEET 4 OF _____
REVISED 8-6-01

- FIND FLOW ON BLUE CYPRESS AVE JUST WEST OF BLUE MESA DR.

$$Q = 5 \text{ LOTS} \times 0.9951 + 21.35 = 26.33 \text{ CFS} < 27.97 \text{ OK}$$

FROM SHEET 3

- INSTALL 2 SGL "A" INLETS AT THIS POINT ONE BETWEEN LOTS 14+15 BLOCK 4 AND ONE AT THE RETURN

FROM NCMG SHEET 26

$$Q_{\text{INLET}} = 7.0 \text{ CFS}$$

$$\begin{aligned} Q_{\text{PAST INLETS}} &= 26.33 - 14 \\ &= 12.33 \text{ CFS} \end{aligned}$$

- FIND FLOW ON BLUE CYPRESS AVE JUST EAST OF PARRIE VISTA DR.

$$Q = 7 \times 0.9951 + 12.33 + 5.89 = 25.19 \text{ CFS} < 27.97 \text{ OK}$$

$S = 4.17\%$ 32' FF PARK

$$d = 0.40$$

$$W_P = 16.15$$

$$A = 2.5656$$

$$V_{1/2} = 5.236 \text{ F/S}$$

$$Q_{1/2} = 13.43 \text{ CFS} \times 2 = 26.86 \text{ CFS} \approx 25.19 \text{ CFS OK}$$

$$d + \frac{V^2}{2g} = 0.83 < 0.85 \text{ OK}$$

- INSTALL 2 SGL "A" INLETS AT RETURNS ON BLUE CYPRESS

FROM NCMG SHEET 26

$$Q_{\text{INLET}} = 6.8 \text{ CFS}$$

$$Q_{\text{PAST INLETS INTO PARRIE VISTA DR.}}$$

$$= 25.19 - 2(6.8)$$

$$= 11.59 \text{ CFS}$$

- FIND Q ON PARRIE VISTA DR. AT WILD OLIVE AVE

$$Q = 7 \times 0.9951 + (1 \times 1.0947) + 11.59 = 19.65 \text{ CFS}$$

- FIND Q ON WILD OLIVE AVE JUST EAST OF PARRIE VISTA DR

$$Q = 24 \times 0.5969 + (4 \times 0.9951) = 18.31 \text{ CFS}$$



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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GJK DATE 5-18-01
CHECKED _____ DATE _____

SHEET 5 OF _____
REVISED 8-6-01

- FIND WHERE TRANSITION FROM MOUNTABLE
TO STD C+G OCCURS ON WILD OLIVE AVE

$$\begin{aligned}d &= 1.21 \\WP &= 9.585 \\A &= 1.9014 \\V_{1/2} &= 4.428 \text{ F/S} \\Q_{1/2} &= 3.99 \text{ CFS} \\d + V^2/2g &= .51 \text{ OK}\end{aligned}$$

$$Q = 4 \sqrt{0.9951} = 3.98 \text{ CFS NO TRANSITION WILL OCCUR ON WILD OLIVE}$$

- FIND ^Q JUST PAST INTERSECTION OF WILD OLIVE AVE
AND PRAIRIE VISTA DR

$$Q = 19.65 + 18.31 = 37.96 \text{ CFS}$$

GRADE CHANGES TO 4.24%

FIND CAPACITY 32' FF STD C+G $N = 0.017$

$$\begin{aligned}d &= 0.4 \\WP &= 16.15 \\A &= 2.5656 \\V_{1/2} &= 5.28 \text{ F/S} \\Q_{1/2} &= 13.55 \text{ CFS} \\d + V^2/2g &= 0.83 < 0.85 \text{ OK}\end{aligned}$$

Q AT INTERSECTION IS TOO MUCH INLETS REQD.

ADD TWO 36" A" INLETS ON WILD OLIVE AVE
ONE BETWEEN LOTS 38+39 BLK 2
AND ONE AT THE RETURN

$$\begin{aligned}d &= 0.36 \\WP &= 14.11 \\A &= 1.98 \\V_{1/2} &= 4.85 \text{ F/S} \\Q_{1/2} &= 9.59 \text{ CFS} \times 2 = 19.18 \text{ CFS} \approx 18.31 \text{ OK}\end{aligned}$$

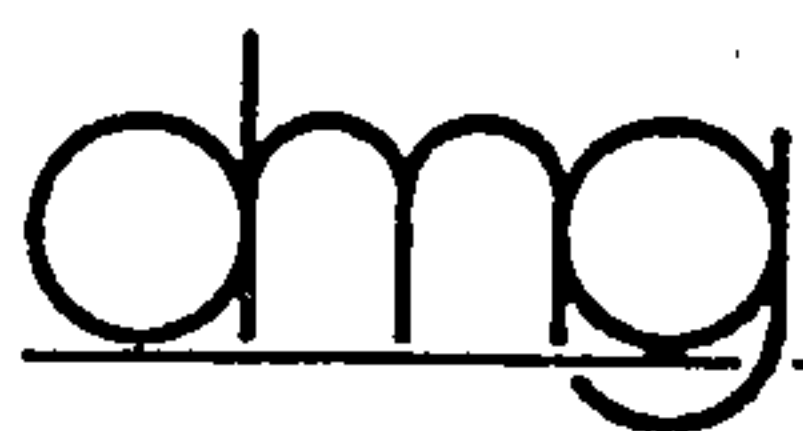
$S = 4.24\% \quad 32' \text{ FF}$

$$d + V^2/2g = 0.73' < 0.85 \text{ OK}$$

FROM NOMO SHEET 26

$$Q_{\text{GATE}} = 5.7 \text{ CFS}$$

$$\begin{aligned}Q_{\text{PAST INLETS AND PAST PRAIRIE VISTA DR}} &= 18.31 - 2(5.7) \\&= 6.91 \text{ CFS}\end{aligned}$$



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CHECKED _____ DATE _____
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REVISED 8-6-01

ADD TWO SGL "A" INLETS ON MARIE VISTA DR
JUST SOUTH OF WILD OLIVE AVE

$$d = 0.40 \quad S = 2\% \quad 28' \text{ FF}$$

$$WP = 28.80$$

$$A = 5.07$$

$$V = 3.88 \text{ F/S}$$

$$d + \frac{V^2}{2g} = 0.66' < 0.85' \text{ OK}$$

$$Q = 19.69 \text{ CFS} \approx 19.65 \text{ CFS} \text{ OK}$$

FROM NOMO SHEET 26

$$Q_{\text{GRATE}} = 5.5 \text{ CFS}$$

Q PAST INLETS INTO WILD OLIVE AVE

$$= 19.65 - 2(5.5) \\ = 8.65 \text{ CFS}$$

- FIND Q IN WILD OLIVE AVE JUST WEST OF MARIE VISTA DR

$$Q = 6.91 + 8.65 = 15.56$$

- FIND Q ON WILD OLIVE AVE JUST EAST OF PALM YUCCA DRIVE

$$Q = (11 \times 0.5969) + 15.56 = 22.13 \text{ CFS}$$

CAPACITY AT THIS POINT (SEE SHEET 5)

$$Q_{1/2} = 13.55 \text{ CFS} \times 2 = 27.10 \text{ CFS} > 22.13 \text{ CFS} \text{ OK}$$

- CURB TRANSITION ON AUTUMN ROSE DR AND BLUE HOLLY CT

- FIND FLOW ON BLUE HOLLY CT

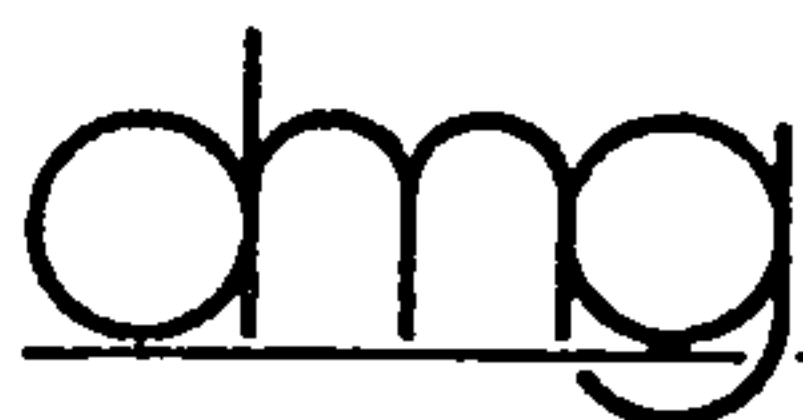
$$Q = 4 \times 1.1933 + (4 \times 1.0947) = 9.15 \text{ CFS}$$

THIS FLOW WILL ENTER CHANNEL

$$Q = 11.54 \text{ CFS}$$

$$Q = 2.95 L H^{1.5} \quad H = 8''$$

$$L = 5.78' \text{ USE } 6' \text{ OPENING}$$



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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GJK DATE 5-18-01
CHECKED _____ DATE _____
SHEET 2 OF _____

• SIZE CHANNEL FROM BLUE HOLLY CT TO BOXWOOD AVE

$S = 11\%$ $n = 0.013$ 4' WIDE

$$\begin{aligned} d &= 0.16 \\ WP &= 4.32 \\ A &= 0.64 \\ V &= 10.61 \text{ F/S} \\ Q &= 6.79 \text{ CFS} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 1.91'$$

$S = 10\%$ $n = 0.013$ 9' WIDE

$$\begin{aligned} d &= 0.10 \\ WP &= 9.20 \\ A &= 0.9 \\ V &= 7.67 \text{ F/S} \\ Q &= 6.91 \text{ CFS} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 1.01'$$

$S = 0.5\%$ $n = 0.013$ 5' WIDE

$$\begin{aligned} d &= 0.35 \\ WP &= 5.7 \\ A &= 1.75 \\ V &= 3.68 \text{ F/S} \\ Q &= 6.44 \text{ CFS} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.56' \text{ USE } 0.60'$$

$S = 1.0\%$ $n = 0.013$ 4' WIDE

$$\begin{aligned} d &= 0.32 \\ WP &= 4.62 \\ A &= 1.28 \\ V &= 4.86 \text{ F/S} \\ Q &= 6.22 \text{ CFS} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.69'$$

$S = 1.0\%$ $n = 0.013$ 5' WIDE

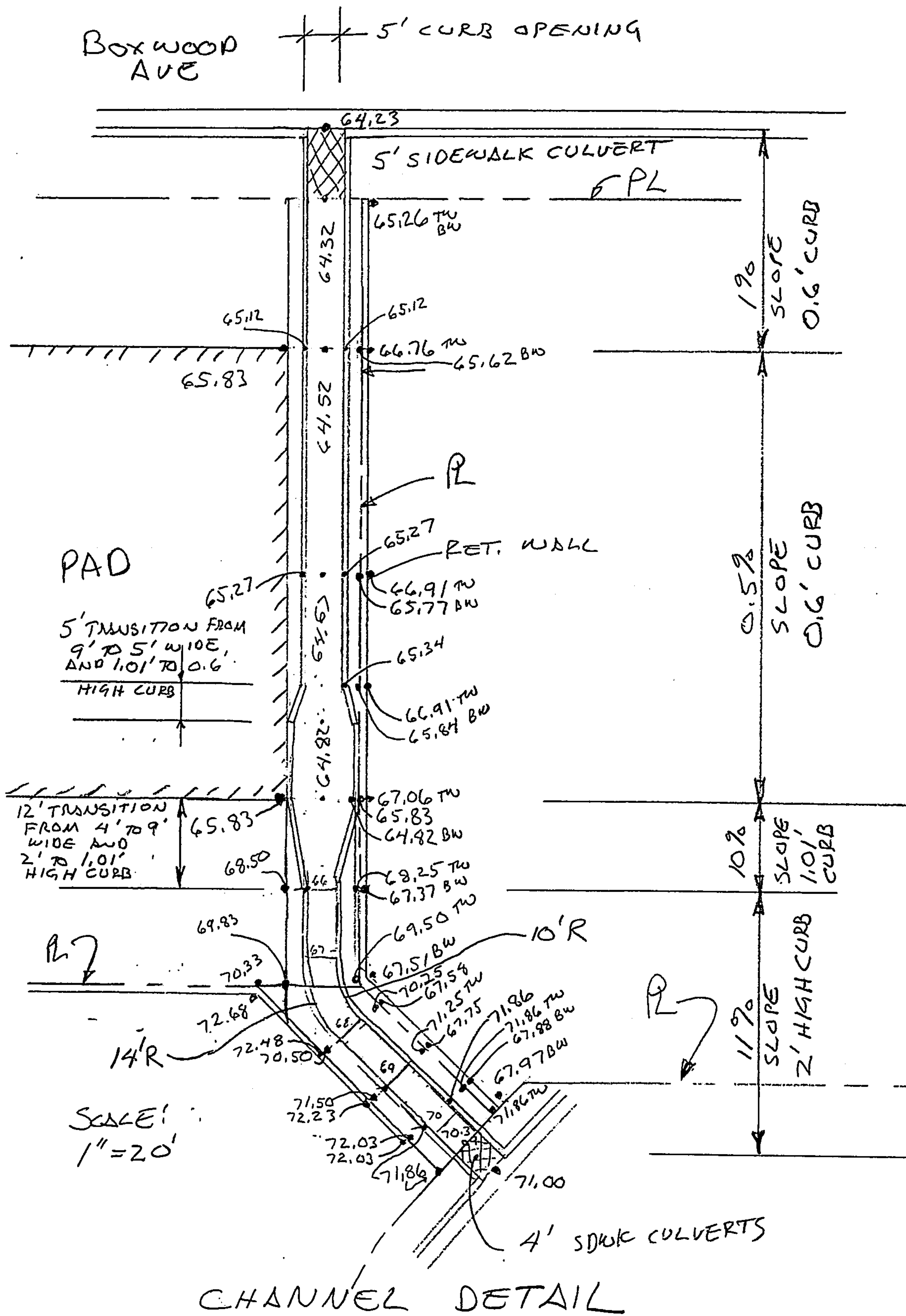
$$\begin{aligned} d &= 0.28 \\ WP &= 5.56 \\ A &= 1.4 \\ V &= 4.56 \text{ F/S} \\ Q &= 6.38 \text{ CFS} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.60'$$



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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GSK DATE 5-18-01
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SHEET 9 OF _____
REVISED 8-6-01

- FIND TRANSITION FROM MOUNTABLE TO
STD C+G ON BOXWOOD AVE

$$S = 3.0\% \quad n = 0.017 \quad 28' \text{ FF}$$

$$\begin{aligned} d &= 0.28 \\ \text{WP} &= 13.16 \\ A &= 1.68 \\ V_{1/2} &= 3.84 \text{ F/S} \\ Q_{1/2} &= 6.45 \text{ CFS} \end{aligned} \quad d + \frac{V^2}{2g} = 0.51' = 0.51' \text{ OK}$$

FIND Q AT CHANNEL ON BOXWOOD

$$Q = 5 \times 1.0947 + (5 \times 1.1933) + 7.15' = 20.59 \text{ CFS} > 2 \times 6.45 = 12.90$$

TOO MUCH

MOUNTABLE CURB UP TO CHANNEL
AND BETWEEN LOTS 4+5 BLOCK 13

- FIND FLOW JUST PAST CANYON SAGE DR ON BOXWOOD AVE

$$\begin{aligned} Q &= 1 \times 1.0947 + (4 \times 0.9951) + (1 \times 1.1933) + 3 \times 0.6822 + 20.59 \\ &= 28.91 \text{ CFS} \end{aligned}$$

CAPACITY OF 3.35% 28' FF $n = 0.017$ STD C+G

$$\begin{aligned} d &= 0.41 \\ \text{WP} &= 28.82 \\ A &= 5.35 \\ V &= 5.21 \text{ F/S} \\ Q &= 27.85 \text{ CFS} \end{aligned} \quad d + \frac{V^2}{2g} = 0.83 < 0.85 \text{ OK}$$

CAPACITY OF 3.35% 32' FF $n = 0.017$ STD C+G

$$\begin{aligned} d &= 0.43 \\ \text{WP} &= 32.86 \\ A &= 6.09 \\ V &= 5.20 \text{ F/S} \\ Q &= 31.67 \text{ CFS} > 28.91 \text{ CFS OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.85' \approx 0.85' \text{ OK}$$

- INSTALL TWO SGL "A" INLETS ON BOXWOOD AVE
JUST PAST CANYON SAGE DR.

ONE BETWEEN LOT 24+25 BLOCK 2 AND
BETWEEN LOT 24+25 BLOCK 1

$$\begin{aligned} Q &= 28.91 + 2(0.5118) + 1(1.5969) + 1(1.6822) \\ &= 31.21 \text{ CFS} > 31.67 \text{ CFS OK} \end{aligned}$$



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REVISED 8-6-01 SHEET 16 OF _____

FROM NOMO SHEET 26

$$d = 0.42 \quad Q_{\text{GRATE}} = 7.2 \text{ CFS}$$

Q PAST INLETS

$$Q = 31.21 - 2(7.2) = 16.81 \text{ CFS CONTINUES DOWN BOXWOOD}$$

• FIND FLOW ON BOXWOOD JUST WEST OF 20' PED TRAIL

$$Q = (22 \times 0.5118) + (2 \times 0.6822) + 16.81 = 29.43 \text{ CFS}$$

FIND CAPACITY OF 3.46% 32' FF $n = 0.017$

$$d = 0.42$$

$$WP = 32.84$$

$$A = 5.77$$

$$V = 5.10 \text{ F/S}$$

$$Q = 29.43 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.82 = 0.85 \text{ OK}$$

THE 29.43 CFS = 29.43 CFS OK

• FIND CAPACITY OF 3.33% 32' FF $n = 0.017$

$$d = 0.43$$

$$W = 32.86$$

$$A = 6.09$$

$$V = 5.19 \text{ F/S}$$

$$Q = 31.58 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.85 = 0.85 \text{ OK}$$

• INSTALL TWO DBL 'A' INLETS ON BOXWOOD
ONE BETWEEN LOTS 13+14 BLOCK 1 AND
BETWEEN LOTS 12+13 BLOCK 2

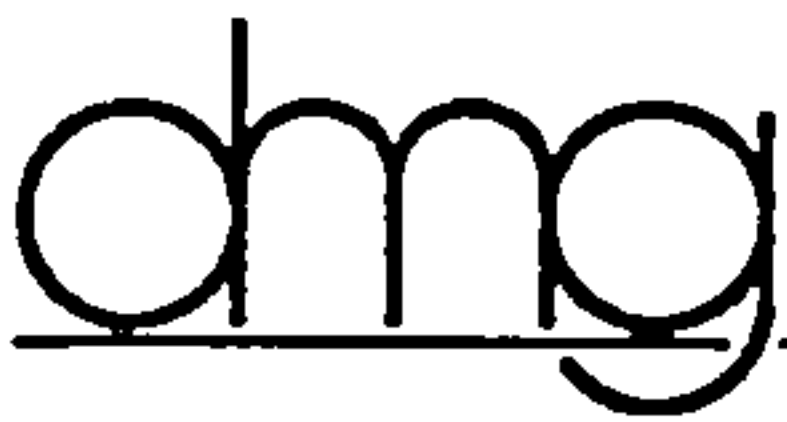
FROM NOMO SHEET 27

$$Q_{\text{grate}} = 7.6 \text{ CFS}$$

Q PAST INLETS

$$= 29.43 - 2(7.6)$$

$$= 14.23 \text{ CFS}$$



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PROJECT DESERT RIDGE TRAILS
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BY GSK DATE 5-18-01
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SHEET 11 OF _____

REVISED 8-6-01

— THE NEXT INLETS ARE TWO DBL "A"'S
ONE IS LOCATED AT THE RETURN AND
THE OTHER IS BETWEEN LOTS 63+64 BLOCK 8
THESE ARE ON BOXWOOD

FROM NMD SHEET 27

$$Q_{\text{gate}} = 8.0 \text{ cfs}$$

Q PAST INLETS ON BOXWOOD AVE

$$= 31.20 - 2(8) \\ = 15.20 \text{ cfs}$$

• FIND Q JUST WEST OF PALM YUCCA DR ON BOXWOOD AVE

$$Q = (23 \times 0.5118) + (5 \times 0.6822) + 3 \times 0.5969 + 14.23 \\ = 31.20 < 31.58 \text{ cfs (SEE SH 10 OF 2)}$$

• FIND Q ON BOXWOOD WHERE 3.33% SLOPE
CHANGES TO 1% SLOPE

$$Q = (6 \times 0.5969) + (6 \times 0.5118) + (1 \times 0.6822) + 13.49 \\ = 20.82 \text{ cfs} < 31.58 \text{ cfs}$$

• FIND CAPACITY OF

32' FF $S = 1.0\%$

$$d = 0.57$$

$$WP = 33.14$$

$$A = 11.21$$

$$V = 4.24 \text{ F/S}$$

$$Q = 47.57 \text{ cfs}$$

$$d + \frac{V^2}{2g} = 0.85 = 0.85 \text{ OF 2}$$

• FIND Q ON BOXWOOD BT SILVER WOOD

$$Q = (.8 \times 0.5969) + (6 \times 0.6822) + 15.20 + (4 \times 0.5118) \\ = 26.12 \text{ cfs} < 47.57 \text{ OF 2}$$



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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS

BY GJK DATE 5-18-01

CHECKED _____ DATE _____

REvised 8-6-01 SHEET 12 OF _____

- FIND FLOW ON PALM YUCCA DR JUST SOUTH OF WILD OLIVE AVE

$$Q = (11 \times 0.9951) + (2 \times 1.0947) + (2 \times 1.1933) + (7 \times 0.6822) \\ = 20.30 \text{ CFS}$$

$$d = 1.37 \quad S = 2.39\% \quad 28' \text{ FF}$$

$$WP = 28.74$$

$$A = 4.23$$

$$V = 3.77 \text{ F/S}$$

$$Q = 15.93 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.59' < 0.85' \text{ OK}$$

- FIND FLOW ON PALM YUCCA DR JUST NORTH OF WILD OLIVE AVE

$$Q = 2 \times 0.5969 = 1.19 \text{ CFS}$$

- FIND TOTAL FLOW ON WILD OLIVE AVE JUST PAST PALM YUCCA DR.

$$Q = 22.13 + 20.30 + 1.19 \\ = 43.62 \text{ CFS TOO MUCH}$$

ADD 2 DRA INLETS ON WILD OLIVE AVE JUST EAST OF PALM YUCCA DR

$$Q = 22.13 \text{ CFS} \quad S = 4.24\% \quad 32' \text{ FF}$$

$$d = 0.39$$

$$WP = 15.46$$

$$A = 2.41$$

$$V_{1/2} = 5.10 \text{ F/S}$$

$$Q_{1/2} = 12.28 \text{ CFS} \times 2 = 24.56 \text{ CFS} > 22.13' \text{ OK}$$

FROM NOMO SHEET 27

$$Q_{gate} = 7.2 \text{ CFS}$$

Q THRU PALM YUCCA DR

$$= 22.13 - 2(7.2) \\ = 7.73 \text{ CFS}$$

Q JUST WEST OF PALM YUCCA DR

$$= 7.73 + 20.30 + 1.19 \\ = 29.22 \text{ CFS}$$



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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS

BY GJK DATE 5-18-01
CHECKED _____ DATE _____

SHEET 13 OF _____
REVISED 8-6-01

- FIND FLOW JUST WEST OF PALM YUCCA
ON WILD OLIVE AVE

$$Q = 29.22 + 0.6822 \\ = 29.90 \text{ CFS}$$

- FIND CAPACITY OF WILD OLIVE 3,263 32' FF

$$d = 0.43$$

$$WP = 32.86$$

$$A = 6.09$$

$$V = 5.13 \text{ F/S}$$

$$Q = 31.24 \text{ CFS} \approx 29.90 \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.84' < 0.85 \text{ OK}$$

- INSTALL 2 "B" INLETS ON WILD AVE
ONE BETWEEN LOTS 11+12 BLOCK 9
AND ONE AT THE RETURN

FROM NMD SHEET 28

$$Q_{\text{INLET}} = 11.5 \text{ CFS}$$

$$Q_{\text{PAST INLETS}}$$

$$= 29.90 - 2(11.5)$$

$$= 6.90 \text{ CFS}$$

- FIND FLOW ON SILVER SAGE DR
JUST SOUTH OF WILD OLIVE AVE

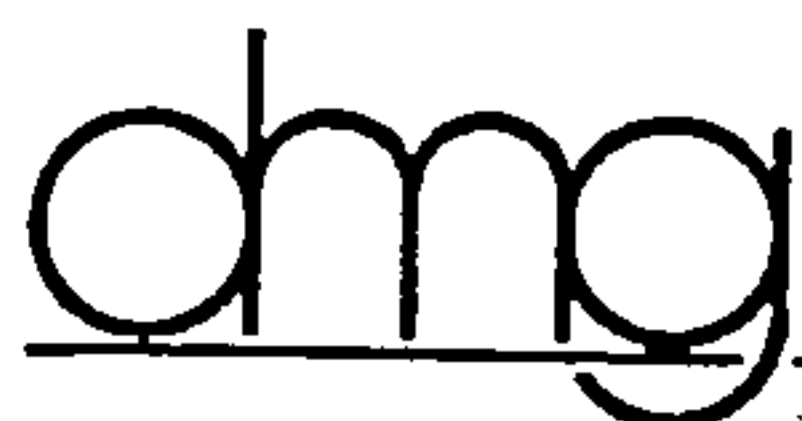
$$Q = 14 \times 0.6822 = 9.55 \text{ CFS}$$

- FIND FLOW ON WILD OLIVE AVE AT SILVERWOOD DR

$$Q = 9 \times 0.5969 + 6.90 + 9.55 \\ = 21.82 \text{ CFS}$$

- FIND FLOW ON SILVERWOOD JUST NORTH
OF WILD OLIVE AVE

$$Q = 26.12 + (6 \times 0.5969) = 29.70 \text{ CFS}$$



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PROJECT DESERT RIDGE TRAILS
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REVISED 8-6-01 SHEET 14 OF _____

- FIND FLOW IN HAWTHORN AVE AT BLUE MESA DR

$$Q = (7 \times 0.6822) + (4 \times 1.0947) + (1 \times 0.9951) \\ = 10.75 \text{ CFS}$$

- FIND FLOW IN HAWTHORN AVE AT PRAIRIE VISTA DR

$$Q = (8 \times 1.0947) + (7 \times 0.9951) + 10.15 \\ = 25.87 \text{ CFS}$$

FIND CAPACITY OF HAWTHORN AVE

$$S = 2.86 \quad 32' \text{ FF}$$

$$d = 0.44$$

$$WP = 32.88$$

$$A = 6.41$$

$$V = 4.97 \text{ F/S}$$

$$Q = 31.86 \text{ CFS} > 25.87 \text{ OK}$$

$$d + V^2/2g = 0.82 = 0.85 \text{ OK}$$

- ADD 2 DBL "A" INLETS ON HAWTHORN NE

ONE AT THE RETURN OF PRAIRIE VISTA DR
AND ONE EAST OF THE 20' EASEMENT

$$d = 0.40$$

$$S = 3.75 \quad 32' \text{ FF}$$

$$WP = 16.15$$

$$A = 2.57$$

$$V_{1/2} = 4.97 \text{ F/S}$$

$$Q_{1/2} = 12.74 \text{ CFS} \times 2 = 25.48 \text{ CFS} \approx 25.87 \text{ CFS OK}$$

FROM NOMO SHEET 27

$$Q_{\text{GRATE}} = 7.4 \text{ CFS}$$

$$Q_{\text{PAST INLETS}} = 25.87 - 2(7.4) \\ = 11.07 \text{ CFS}$$

- FIND FLOW IN HAWTHORN AT PALM YUCCA DR.

$$S = 4.58\%$$

$$d = 0.39$$

$$WP = 15.64$$

$$A = 2.41$$

$$V_{1/2} = 5.38 \text{ F/S}$$

$$Q_{1/2} = 12.96 \text{ CFS}$$

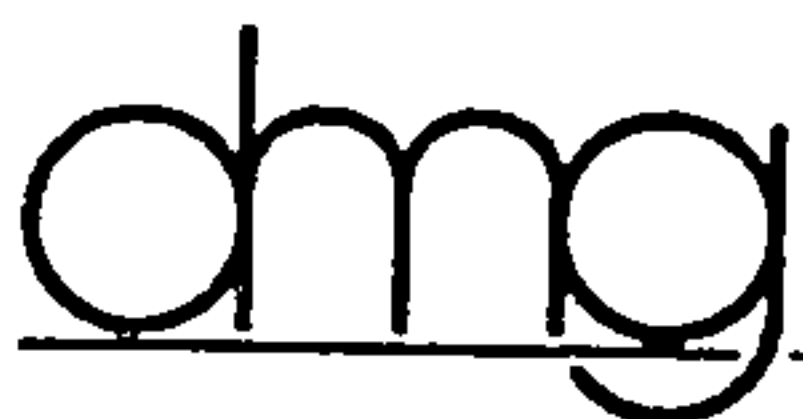
$$d + V^2/2g = 0.84 < 0.85 \text{ OK}$$

$$Q = 4 \times 1.0947 + 10 \times 0.9951 + 2 \times 0.6822 + 11.07 \\ = 26.76 \text{ CFS} \approx 2 \times 12.96 = 25.92$$

USE 2 DBL A INLETS ON HAWTHORN

ONE AT THE RETURN OF PALM YUCCA DR

AND ONE EAST OF THE 20' EASEMENT



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BY GJK DATE 5-18-01

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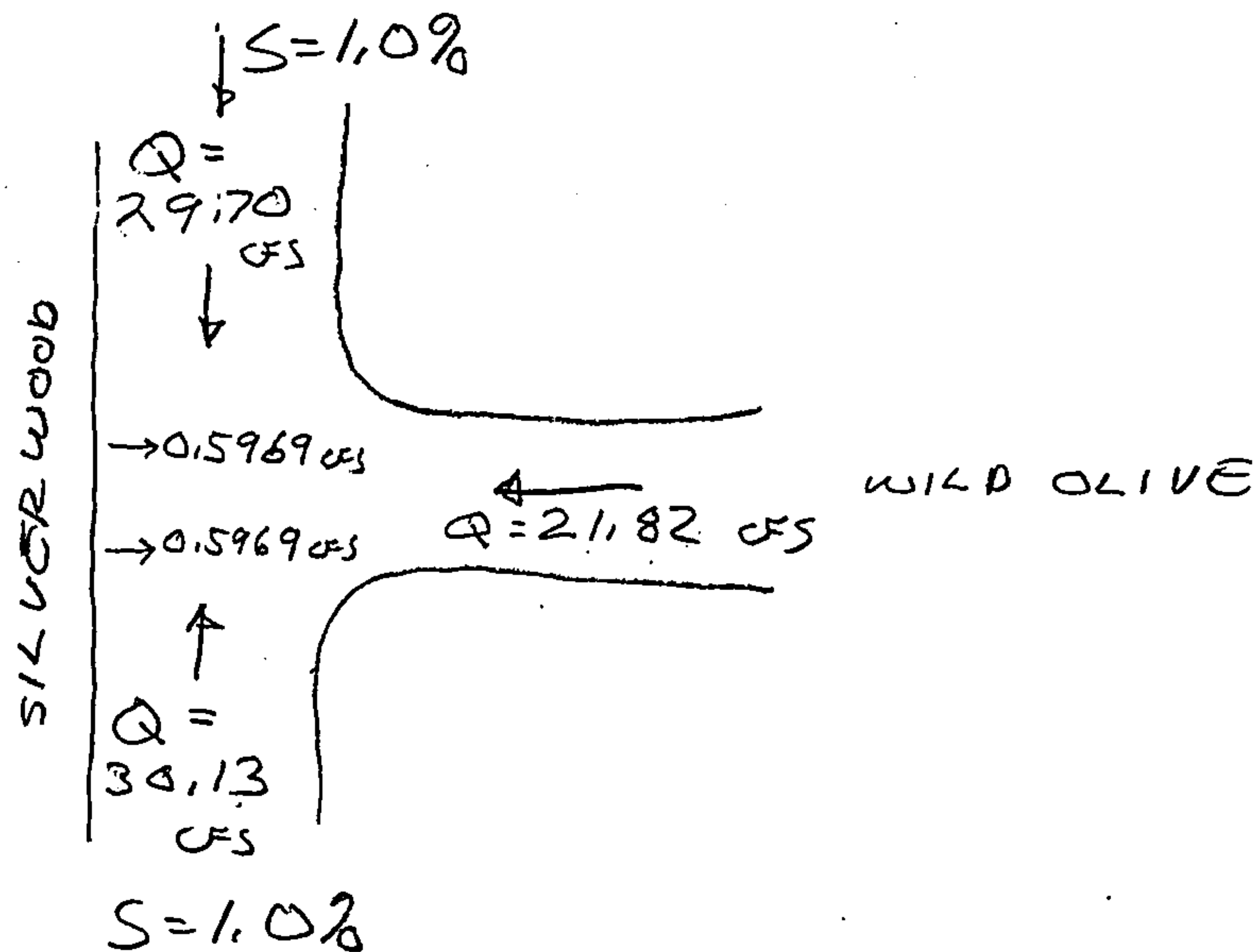
$$\begin{aligned} Q \text{ PAST INLETS IN HAWTHORN} \\ &= 26.76 - 2(7.4) \\ &= 11.96 \text{ CFS} \end{aligned}$$

• FIND FLOW ON HAWTHORN AT SILVERWOOD

$$\begin{aligned} Q &= 9 \times 0.9951 + 11.96 \\ &= 20.92 \text{ CFS} \end{aligned}$$

• FIND FLOW JUST SOUTH OF WILD OLIVE
ON SILVERWOOD

$$\begin{aligned} Q &= (3 \times 0.6822) + (12 \times 0.5969) + 20.92 \\ &= 30.13 \text{ CFS} \end{aligned}$$



ADD FOUR DBL "A" INLETS ON SILVERWOOD
ONE BETWEEN LOTS 45 + 46 BLOCK 8
ONE BETWEEN LOTS 47 + 48 BLOCK 8
ONE EACH AT THE RETURNS

• FIND d. ON SILVERWOOD NORTH OF WILD OLIVE

$$Q = 30.20 \text{ CFS } S = 1\% \quad 32' \text{ FF}$$

$$d = 0.51$$

$$WP = 33.02$$

$$A = 8.65$$

$$V = 3.58 \text{ F/S}$$

$$Q = 30.96 \text{ CFS} \approx 29.70 \text{ CFS OK}$$

$$d + \frac{V^2}{2g} = 0.71' < 0.85' \text{ OK}$$



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REVISED 8-6-01 SHEET 16 OF _____

FROM NOMO SHEET 27

$$Q_{\text{grate}} = 7.4 \text{ cfs}$$

$$\begin{aligned} Q_{\text{past inlets to wild olive}} &= 29.70 - 2(7.4) \\ &= 14.90 \text{ cfs} \end{aligned}$$

• FIND d ON SILVERWOOD SOUTH OF WILD OLIVE

$$Q = 30.13 \text{ cfs } S = 1\% \quad 32' \text{ FF}$$

$$\begin{aligned} d &= 0.50 \\ \text{WP} &= 33.00 \\ A &= 8.33 \\ V &= 3.49 \text{ F/S} \\ Q &= 29.08 \approx 30.13 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.67' < 0.85' \text{ OK}$$

FROM NOMO SHEET 27

$$Q_{\text{grate}} = 7.0 \text{ cfs}$$

$$\begin{aligned} Q_{\text{past inlets to wild olive}} &= 30.13 - 2(7.0) \\ &= 16.13 \text{ cfs} \end{aligned}$$

• FIND Q IN SUMP CONDITION IN WILD OLIVE

$$\begin{aligned} &= 14.90 + 16.13 + 2(1.81) + 2 \times 0.5969 \\ &= 54.04 \text{ cfs} \quad \text{TOO MUCH} \end{aligned}$$

ADD 2 "B" INLETS ON WILD OLIVE BEFORE THE
2 DBL "A" DBL THROAT INLETS AT THE
INTERSECTION OF SILVERWOOD

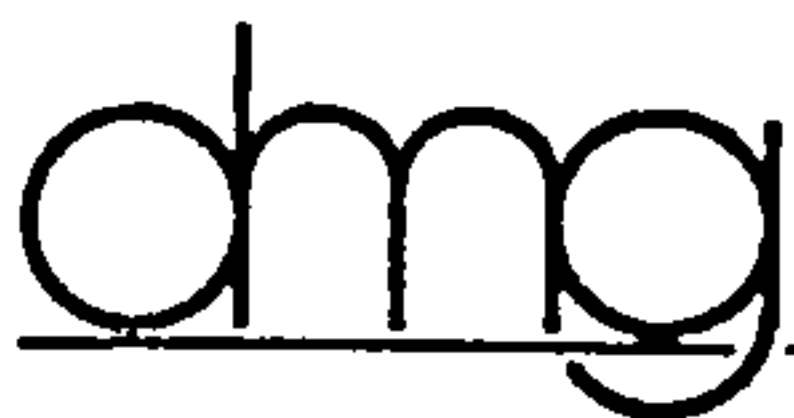
$$S = 3.2\% \quad 32' \text{ FF} \quad Q = 22.81 \text{ cfs}$$

$$\begin{aligned} d &= 0.40 \\ \text{WP} &= 76.15 \\ A &= 2.57 \\ V &= 4.59 \text{ F/S} \\ Q &= 23.54 \text{ cfs} \approx 21.82 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.73' < 0.85' \text{ OK}$$

FROM NOMO SHEET 28

$$Q_{\text{grate}} = 9.8 \text{ cfs}$$

$$\begin{aligned} Q_{\text{past onto the DBL "A" DBL THROATS}} &= 21.82 - 2(9.8) = 2.22 \text{ cfs} \end{aligned}$$



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REVISED 8-6-01 SHEET 17 OF _____

• EVALUATE SUMP INLETS

- 2 DBL "A" DBL THROAT INLETS

$$\text{TOTAL } Q = 14.90 + 16.13 + 2.22 + 2 \times 0.5969 \\ = 33.25 \text{ cfs}$$

$$Q/P = 3.0 \text{ H}^{1.5}$$

$$P = 17 \times 2 = 34$$

$$H = 0.49' < 0.67' \text{ OK}_2$$

ASSUME 50% CLOGGED

$$P = 17$$

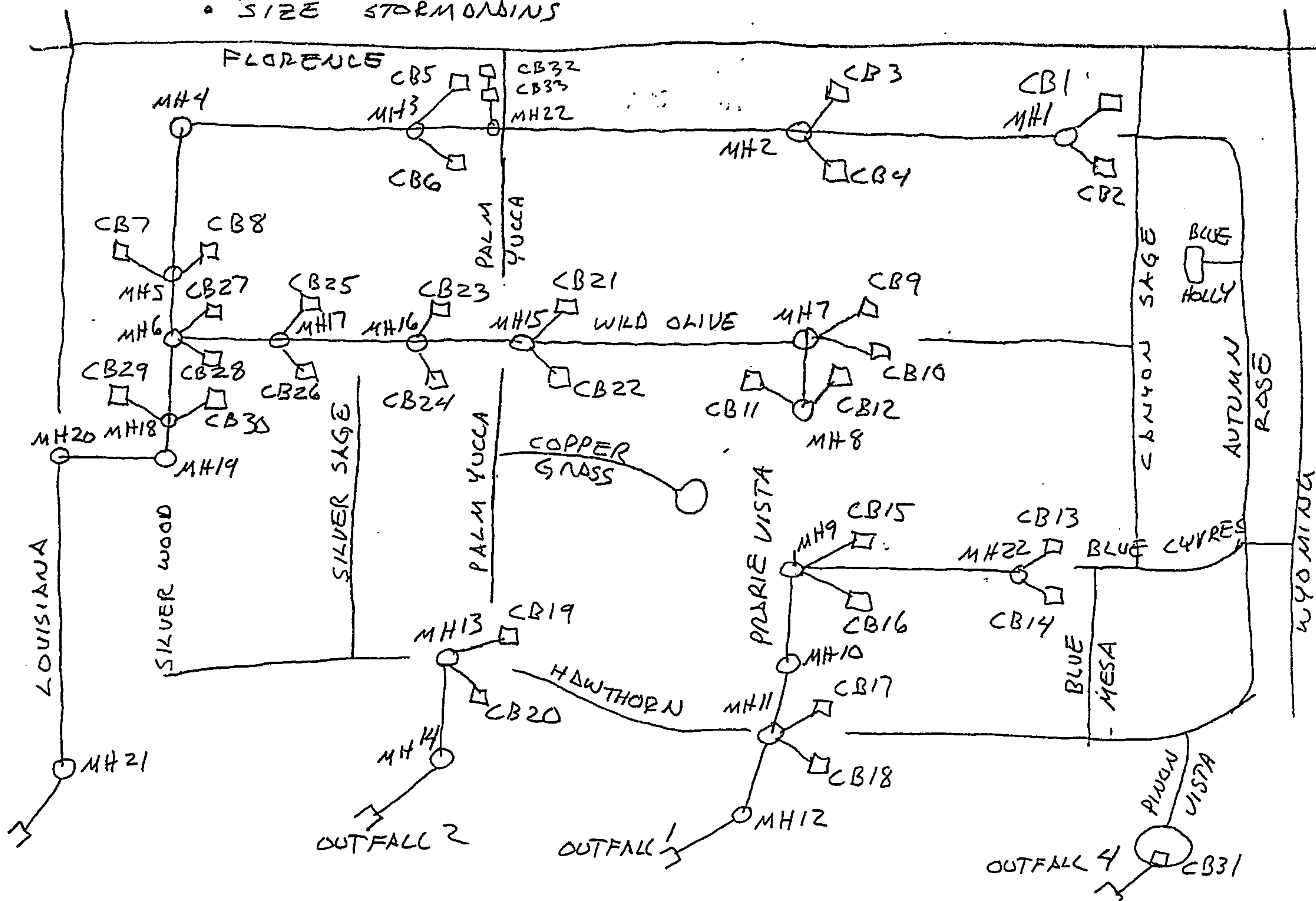
$$H = 0.78' < 0.85' \text{ OK}_2$$

• FIND FLOW IN PINON VISTA CT.

$$Q = 10 \times 0.6822 + 3 \times 0.9951 \\ = 9.81 \text{ cfs}$$

THIS FLOW WILL DISCHARGE TO THE CHANNEL

• SIZE STORMDRAINS





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BY GSK DATE 5-18-01

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REVISED 8-6-01, 8-10-01, 8-14-01 SHEET 18 OF _____

STRUCTURE	TYPE	GRATE/RIM	INV	FLOW LEAVING	SLOPE LEAVING	PIPE LEAVING
CB1	SGLA	50.10	46.10	7.2	1.0	18"
CB2	SGLA	51.50	47.50	7.2	5.89	18"
MH1		50.20	45.85	14.4	4.05	18"
CB3	DBLA	30.50	26.50	7.6	1.0	18"
CB4	DBLA	30.81	26.81	7.6	3.93	18"
MH2		30.43	26.22	29.60	3.48	24"
CB5	DBLA	06.55	02.55	8.0	1.8	18"
CB6	DBLA	06.15	02.15	8.0	1.92	18"
MH3		05.92	01.92	54.65	2.06	30"
MH4		97.98	93.98	54.65	1.0	36"
CB7	DBLA	95.87	91.87	7.4	1.0	18"
CB8	DBLA	95.90	91.90	7.4	1.32	18"
MH5		95.90	91.57	69.45	3.1	36"
MH6		95.40	90.64	181.44	1.0	54"
CB9	SGLA	37.42	33.42	5.7	2.67	18"
CB10	SGLA	37.38	33.38	5.7	3.31	18"
MH7		36.22	32.22	20.06	4.29	18"
CB11	SGLA	34.63	30.63	5.5	1.0	18"
CB12	SGLA	35.60	31.60	5.5	6.35	18"
MH8		36.17	30.33	11.4	3.44	18"
CB13	SGLA	56.94	52.94	7	1.63	18"
CB14	SGLA	56.77	52.77	7	2.13	18"
MH22		56.45	52.45	14	4.27	18"
CB15	SGLA	39.23	35.23	6.8	2.31	18"
CB16	SGLA	39.42	35.42	6.8	2.9	18"
MH9		38.26	34.26	27.6	1.0	24"
MH10		43.32	31.71	27.6	1.0	30"
CB17	DBLA	44.90	40.90	7.4	20.34	18"
CB18	DBLA	44.40	40.40	7.4	7.4	18"
MH11		44.44	30.73	42.4	2.59	30"
MH12		36.60	24.08	42.4	2.59	30"
OUTFALL 1	—	—	—	—	—	—
CB19	DBLA	20.45	16.45	7.4	3.21	18"
CB20	DBLA	18.76	14.76	7.4	2.08	18"
MH13		18.49	13.51	57.2	2.0	30"
MH14		21.38	11.01	57.2	2.0	30"
OUTFALL 2	—	—	09.71	57.2	—	—
CB21	DBLA	11.07	07.07	7.2	1.17	18"
CB22	DBLA	11.30	07.30	7.2	2.32	18"
MH15		10.72	06.72	34.46	3.26	24"
CB23	B	06.78	02.78	11.5	1.0	18"
CB24	B	06.78	02.78	11.5	2.0	18"
MH16		06.55	02.48	57.46	3.39	30"



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PROJECT DESERT RIDGE TRAILS
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REvised 8-6-01, 8-10-01, 8-14-01 SHEET 19 OF

STRUCTURE	TYPE	GRADE/RIM	INV	FLOW LEAVING	SLOPE LEAVING	PIPE LEAVING
CB25	B	96.45	92.45	9.8	1.0	18"
CB26	B	96.83	92.83	9.8	2.86	18"
MH17		96.23	92.20	77.06	1.51	36"
CB27	DBL A/DBL TH	95.09	91.09	17.46	1.0	24"
CB28	DBL A/DBL TH	95.09	91.09	17.47	1.18	24"
CB29	DBL A	96.00	92.00	7.0	6.09	18"
CB30	DBL A	95.90	91.90	7.0	7.64	18"
MH18		97.05	89.99	195.44	0.4	60"
MH19		96.70	89.84	195.44	0.4	60"
MH20		96.38	89.06	195.44	0.4	60"
MH21		02.38	87.26	195.44	0.4	60"
CB31	SGLA/DBL TH	73.90	69.90	9.81	2.0	18"
OUTFALL 4	—	—	68.60	9.81	—	—
CB32	DBL A	10.43	06.43	6.2	1.0	18"
CB33	TYPE B	10.03	06.03	9.05	1.0	18"
MH22		10.00	05.53	38.65	2.78	24"



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PROJECT DESERT RIDGE TRAILS
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SHEET 19A OF _____

- WE WILL CHANGE THE FLOW IN WYOMING ON SHEET 3
 - THE ADJACENT LOTS TO THE WEST WILL DRAIN TO THE WEST INTO A SWALE IN THE 20' DRAINAGE ROW.
 - ONLY THE WYOMING ROW WILL BE CALCULATED AS FLOW.

FROM SHEET 3

$$R/W = 1,4067 \text{ AC}$$

$$\begin{aligned} \text{TYPE D} &= 0.5424 + 0.4664 \\ &= 1.0088 \text{ AC} = 71.71\% \end{aligned}$$

$$\text{TYPE B} = 0.3979 \text{ AC} = 28.29\%$$

THIS ENTERS THE SUBDIVISION AT BLUE CYPRESS AVE

FROM AHYMO OUTPUT SHEETS 29-31

$$Q = 6,110 \text{ CFS} \quad \text{THIS IS 2,34 CFS LESS THAN SHEET 3}$$

- FLOW FROM WYOMING FROM BLUE CYPRESS TO FLORENCE

$$A = 0.7881 \text{ AC}$$

$$\begin{aligned} \text{TYPE D} &= 68.46\% \quad 0.5396 \text{ AC} \\ \text{TYPE B} &= 31.54\% \end{aligned}$$

THIS FLOW ENTERS FLORENCE AVE

FROM AHYMO OUTPUT SHEETS 32-34

$$Q = 3.36 \text{ CFS}$$

- FLOW ON FLORENCE FROM WYOMING TO LOUISIANA

$$A = 3.6431 \text{ AC}$$

$$\begin{aligned} 80\% \text{ D} \\ 20\% \text{ B} \end{aligned}$$

FROM AHYMO OUTPUT SHEETS 35-37

$$Q = 16.52 \text{ CFS}$$

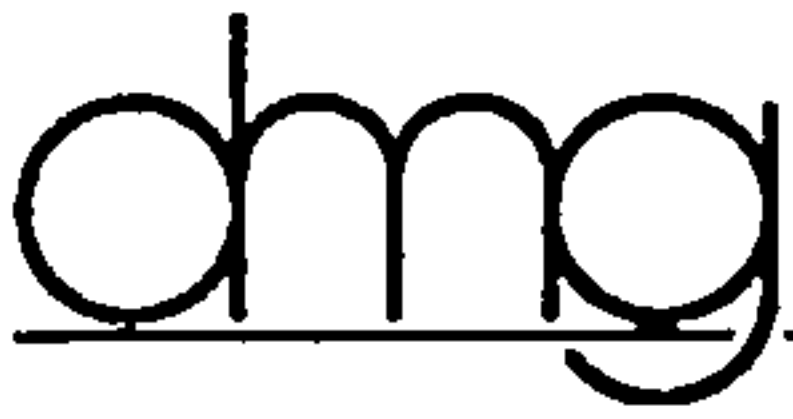
$$= 8,26 \text{ CFS PER SIDE}$$

WE WILL TURN RUNOFF INTO PALM YUCCA DRIVE.

THIS CONSISTS OF 73% OF $Q + Q$ FROM WYOMING

$$\begin{aligned} Q_m &= 6.03 \text{ CFS} + 3.36 \text{ CFS} \\ &= 9.39 \text{ CFS} \end{aligned}$$

- 2.23 CFS CONTINUES DOWN FLORENCE TO LOUISIANA



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BY GSK DATE 8-10-01
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SHEET 19B OF _____

FROM SHEET 11

- Q JUST WEST PALM YUCCA ON BOXWOOD AVE
= 31,20 CFS

THIS IS RIGHT AT CAPACITY.

- INLETS WILL NEED TO BE ADDED ON PALM YUCCA
NORTH OF BOXWOOD AVE
- FIND d ON FLORENCE AT PALM YUCCA

$$S = 3.50\% \quad \text{STD C+G} \quad n = 0.017$$

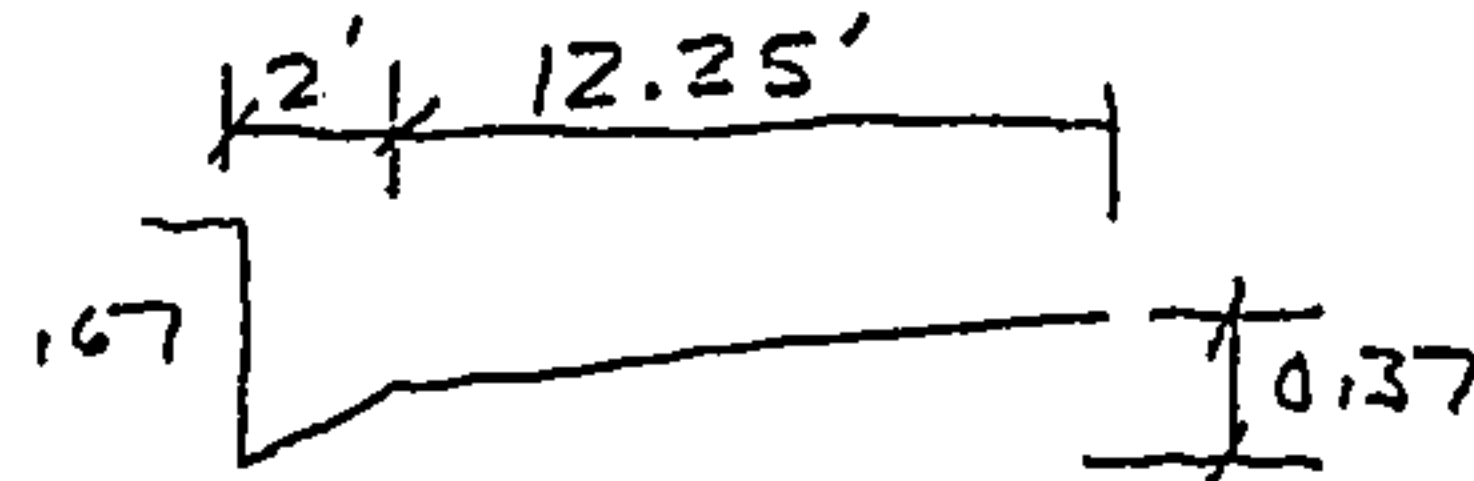
$$d = 0.37$$

$$WP = 14.62$$

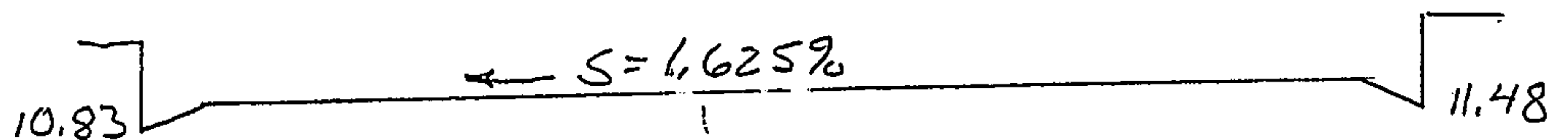
$$A = 2.1156$$

$$U = 4.507 \text{ F/S}$$

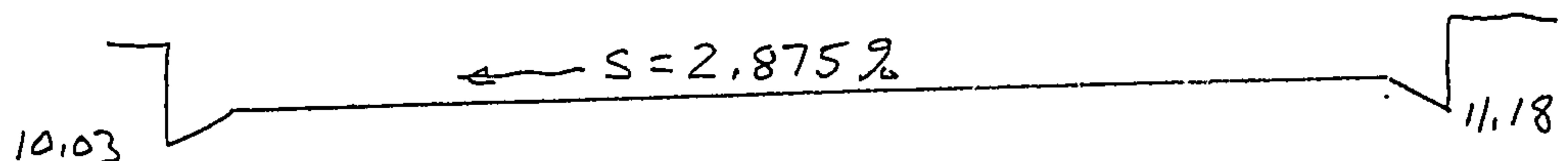
$$Q = 9.54 \text{ CFS} \approx 9.39 \text{ CFS} \quad \text{OK}$$



- FIND d ON PALM YUCCA



SECTION AT RETURNS AT NORTH END OF PALM YUCCA



SECTION AT RETURNS AT SOUTH END OF PALM YUCCA

FIND d AT SOUTH END $S = 1.2429\%$ STD C+G

$$d = 0.47$$

$$WP = 14.47$$

$$A = 2.885$$

$$U = 3.33 \text{ F/S}$$

$$Q = 9.60 \text{ CFS} \approx 9.39 \text{ CFS} \quad \text{OK}$$



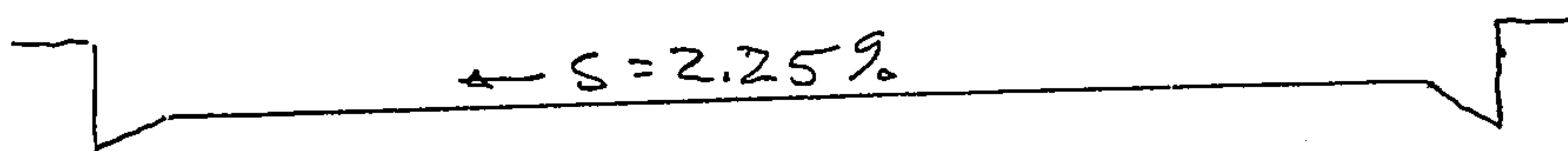
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SHEET 19C OF _____

• FIND d HALFWAY BETWEEN NORTH AND SOUTH ENDS

$$S = 1.2429\% \quad \text{STD C+G}$$



$$\begin{aligned} d &= 0.45 \\ WP &= 16.89 \\ A &= 3.12 \\ V &= 3.16 \text{ F/s} \\ Q &= 9.86 \text{ cfs} \approx 9.39 \text{ cfs} \quad \text{OK} \end{aligned}$$

FROM NOMO SHEET 41

$$Q_{\text{GATE}} = 6.0 \text{ cfs} \quad \text{DBL "A"}$$

$$Q_{\text{PAST INLET}}$$

$$9.39 - 6.2 = 3.19 \text{ cfs}$$

• FIND NEW d AT SOUTH END $S = 1.2429\%$
 $S = 2.875\% \times \text{SLOPE}$

$$\begin{aligned} d &= 0.33 \\ WP &= 9.46 \\ A &= 1.266 \\ V &= 2.55 \text{ F/s} \\ Q &= 3.23 \text{ cfs} \approx 3.19 \text{ cfs} \quad \text{OK} \end{aligned}$$

FROM NOMO SHEET 42

$$Q_{\text{GATE}} = 2.85 \text{ cfs} \quad \text{TYPE "B"}$$

$$Q_{\text{PAST INLET}}$$

$$3.19 - 2.85 = 0.34 \text{ cfs}$$

ADD THIS TO FLOW IN BOXWOOD WEST OF PALM YUCCA

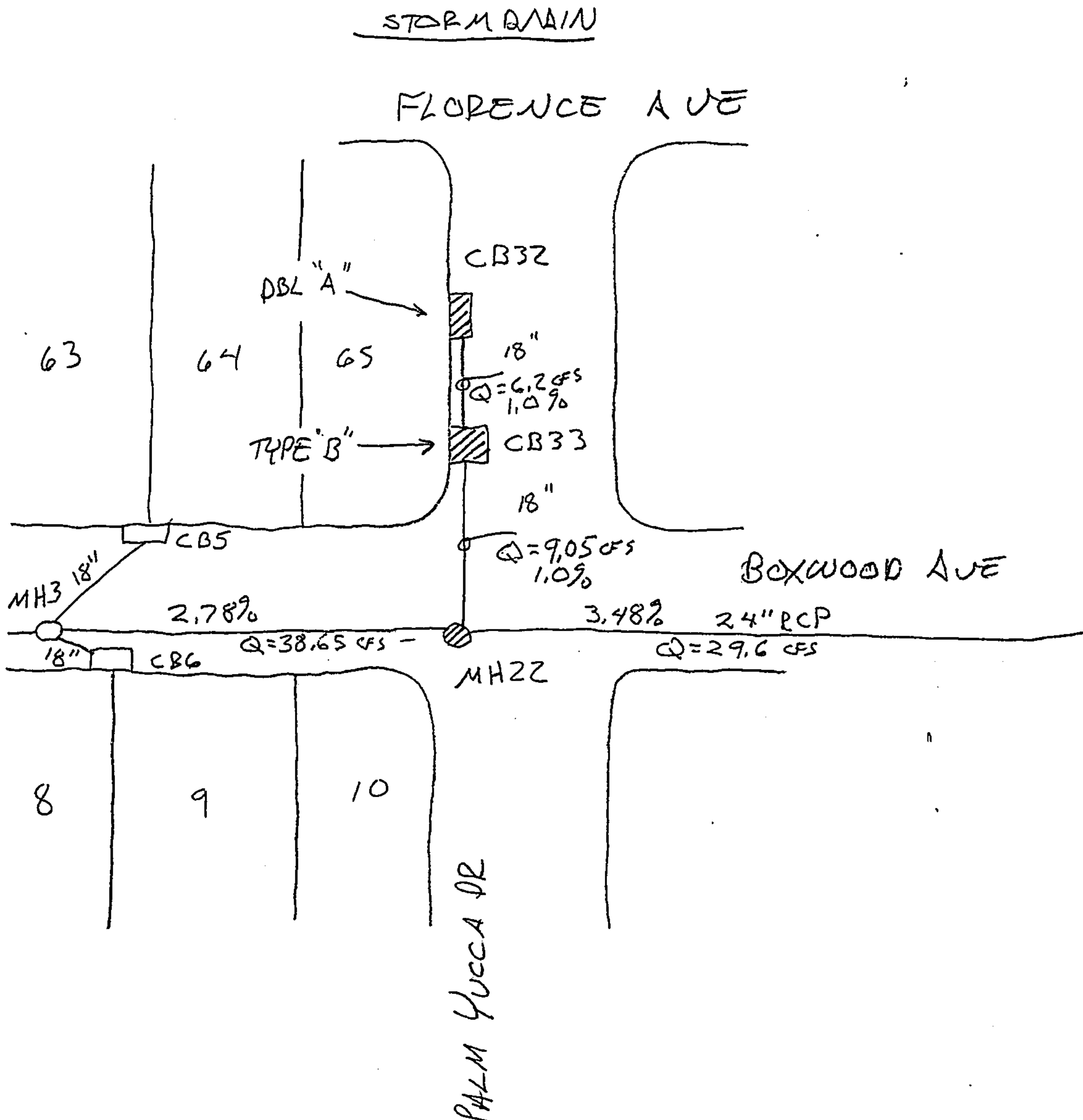
$$\begin{aligned} Q &= 31.20 + 0.34 \\ &= 31.54 \text{ cfs} \approx 31.58 \text{ cfs} = \text{CAPACITY} \quad \text{OK} \end{aligned}$$



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SHEET 19D OF _____



SEE REVISED SHEETS 18 + 19 FOR FLOW $\frac{1}{2}$ SLOPE CHANGES

• FIND Q IN LOUISIANA BETWEEN MODESTO $\frac{1}{2}$ FLORENCE

$A = 2.3747$ AC.

TYPE D = 75.51%

TYPE B = 24.49%

FROM AH4MD OUTPUT SHEETS 38-40

$Q = 10.50$ CFS

= 5.25 CFS EACH SIDE

• INSTALL DBL "A" JUST NORTH OF GLENDALE AVE ON
EAST SIDE



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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GJK DATE 8-10-01
CHECKED _____ DATE _____
SHEET 19E OF _____

$$AREA = 1.3173 AC = 55.47\% \text{ TO INLETS}$$

$$Q_{AT INLET} = 5.25 \times 0.5547 \\ = 2.91 CFS$$

• FIND d IN LOUISIANA AT INLET

$$S = 0.5\% \quad \times \text{SLOPE} = 1.0\%$$

$$d = 0.31$$

$$WP = 20.625$$

$$A = 2.206$$

$$V = 1.39 \text{ F/S}$$

$$Q = 3.07 CFS \approx 2.91 CFS$$

FROM NOMO SHEET 41

$$Q_{GRATE} = 1.75 CFS$$

$$Q_{PAST INLET} = 5.25 - 1.75 \\ = 3.5 CFS$$

• TOTAL Q THAT REACHES THE SE CORNER OF
FLORENCE AND LOUISIANA

$$Q = 2.23 + 3.5 \\ = 5.73 CFS$$

THIS FLOW WILL FOLLOW THE HISTORICAL
PATH AT THE NW CORNER OF INTERSECTION

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS PARK
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.15 IN RAIN SIX=2.50 IN
RAIN DAY=2.90 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003125 SQ MI
PER A=0 B=50 C=50 D=0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 06/05/2001
START TIME (HR:MIN:SEC) = 10:07:46 USER NO.=

M_GOODWN.I01

INPUT FILE = DRTP.DAT

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS PARK
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=2.15 IN RAIN SIX=2.50 IN
 RAIN DAY=2.90 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
DT = .033330 HOURS END TIME = 5.999400

HOURS						
	.0000	.0016	.0032	.0049	.0066	.0083
.0101	.0119	.0138	.0157	.0177	.0197	.0218
.0239	.0261	.0284	.0307	.0331	.0356	.0381
.0408	.0436	.0464	.0494	.0525	.0558	.0592
.0627	.0665	.0705	.0746	.0806	.0869	.0937
.1083	.1409	.1911	.2632	.3617	.4910	.6560
.8613	1.1120	1.3447	1.4418	1.5239	1.5969	1.6632
1.7243	1.7811	1.8341	1.8838	1.9306	1.9747	2.0164
2.0558	2.0932	2.1286	2.1623	2.1942	2.2245	2.2314
2.2378	2.2438	2.2496	2.2550	2.2603	2.2653	2.2702
2.2748	2.2794	2.2837	2.2879	2.2920	2.2960	2.2998
2.3036	2.3072	2.3108	2.3142	2.3176	2.3209	2.3242
2.3273	2.3304	2.3334	2.3364	2.3393	2.3422	2.3450
2.3478	2.3505	2.3531	2.3557	2.3583	2.3608	2.3633
2.3658	2.3682	2.3706	2.3729	2.3752	2.3775	2.3797
2.3820	2.3841	2.3863	2.3884	2.3905	2.3926	2.3947
2.3967	2.3987	2.4007	2.4026	2.4046	2.4065	2.4084
2.4103	2.4121	2.4139	2.4158	2.4176	2.4193	2.4211
2.4228	2.4246	2.4263	2.4280	2.4296	2.4313	2.4330
2.4346	2.4362	2.4378	2.4394	2.4410	2.4425	2.4441
2.4456	2.4472	2.4487	2.4502	2.4517	2.4531	2.4546
2.4561	2.4575	2.4589	2.4604	2.4618	2.4632	2.4646

2.4659						
	2.4673	2.4687	2.4700	2.4714	2.4727	2.4740
2.4753						
	2.4766	2.4779	2.4792	2.4805	2.4818	2.4831
2.4843						
	2.4856	2.4868	2.4880	2.4893	2.4905	2.4917
2.4929						
	2.4941	2.4953	2.4965	2.4976	2.4988	2.5000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003125 SQ MI
 PER A=0 B=50 C=50 D=0
 TP=0.1333 HR MASS RAINFALL=-1

K = .121401HR TP = .133300HR K/TP RATIO = .910734
 SHAPE CONSTANT, N = 3.888663
 UNIT PEAK = 8.1507 CFS UNIT VOLUME = .9988 B =
 347.68 P60 = 2.1500
 AREA = .003125 SQ MI IA = .42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.06197 INCHES = .1770 ACRE-FEET
 PEAK DISCHARGE RATE = 5.89 CFS AT 1.500 HOURS BASIN
 AREA = .0031 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 10:07:46

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.15 IN RAIN SIX=2.50 IN
RAIN DAY=2.90 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.095397 SQ MI
PER A=0 B=40.16 C=4.86 D=54.98
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

1994 AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,

M_GOODWN.I01 RUN DATE (MON/DAY/YR) = 06/14/2001
 START TIME (HR:MIN:SEC) = 19:17:44 USER NO.=
 INPUT FILE = drt316.dat

START TIME=0.0
 ***** HYDROGRAPH FOR DESERT RIDGE TRAILS
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=2.15 IN RAIN SIX=2.50 IN
 RAIN DAY=2.90 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
 ATLAS 2 - PEAK AT 1.40 HR.

HOURS	DT = .033330 HOURS						END TIME = 5.999400
.0101	.0000	.0016	.0032	.0049	.0066	.0083	
.0239	.0119	.0138	.0157	.0177	.0197	.0218	
.0408	.0261	.0284	.0307	.0331	.0356	.0381	
.0627	.0436	.0464	.0494	.0525	.0558	.0592	
.1083	.0665	.0705	.0746	.0806	.0869	.0937	
.8613	.1409	.1911	.2632	.3617	.4910	.6560	
1.7243	1.1120	1.3447	1.4418	1.5239	1.5969	1.6632	
2.0558	1.7811	1.8341	1.8838	1.9306	1.9747	2.0164	
2.2378	2.0932	2.1286	2.1623	2.1942	2.2245	2.2314	
2.2748	2.2438	2.2496	2.2550	2.2603	2.2653	2.2702	
2.3036	2.2794	2.2837	2.2879	2.2920	2.2960	2.2998	
2.3273	2.3072	2.3108	2.3142	2.3176	2.3209	2.3242	
2.3478	2.3304	2.3334	2.3364	2.3393	2.3422	2.3450	
2.3658	2.3505	2.3531	2.3557	2.3583	2.3608	2.3633	
2.3820	2.3682	2.3706	2.3729	2.3752	2.3775	2.3797	
2.3967	2.3841	2.3863	2.3884	2.3905	2.3926	2.3947	
2.4103	2.3987	2.4007	2.4026	2.4046	2.4065	2.4084	
2.4228	2.4121	2.4139	2.4158	2.4176	2.4193	2.4211	
2.4346	2.4246	2.4263	2.4280	2.4296	2.4313	2.4330	
2.4456	2.4362	2.4378	2.4394	2.4410	2.4425	2.4441	
2.4561	2.4472	2.4487	2.4502	2.4517	2.4531	2.4546	
	2.4575	2.4589	2.4604	2.4618	2.4632	2.4646	

2.4659
 2.4753
 2.4843
 2.4929
 2.4673 2.4687 2.4700 2.4714 2.4727 2.4740
 2.4766 2.4779 2.4792 2.4805 2.4818 2.4831
 2.4856 2.4868 2.4880 2.4893 2.4905 2.4917
 2.4941 2.4953 2.4965 2.4976 2.4988 2.5000

COMPUTE NM HYD

ID=1 HYD NO=101.1 AREA=0.095397 SQ MI
 PER A=0 B=40.16 C=4.86 D=54.98
 TP=0.1333 HR MASS RAINFALL=-1

K = .072904HR TP = .133300HR K/TP RATIO = .546914
 SHAPE CONSTANT, N = 7.074595
 UNIT PEAK = 206.48 CFS UNIT VOLUME = .9993 B =
 524.78 P60 = 2.1500
 AREA = .052449 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .128569HR TP = .133300HR K/TP RATIO = .964509
 SHAPE CONSTANT, N = 3.662811
 UNIT PEAK = 106.97 CFS UNIT VOLUME = 1.000 B =
 332.03 P60 = 2.1500
 AREA = .042948 SQ MI IA = .48381 INCHES INF =
 1.20466 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD

ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.66326 INCHES = 8.4624 ACRE-FEET
 PEAK DISCHARGE RATE = 241.41 CFS AT 1.500 HOURS BASIN
 AREA = .0954 SQ. MI.

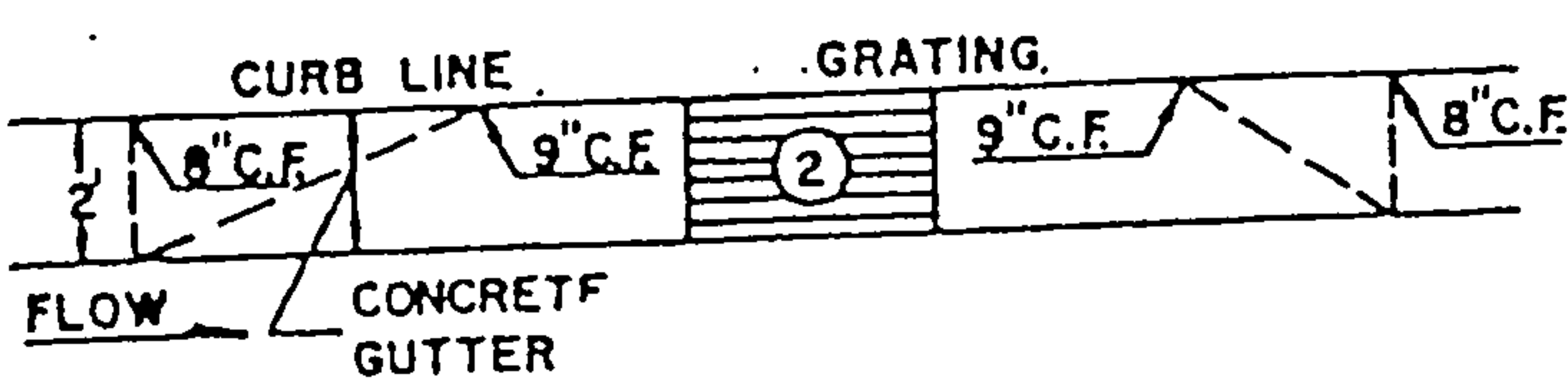
FINISH

NORMAL PROGRAM FINISH

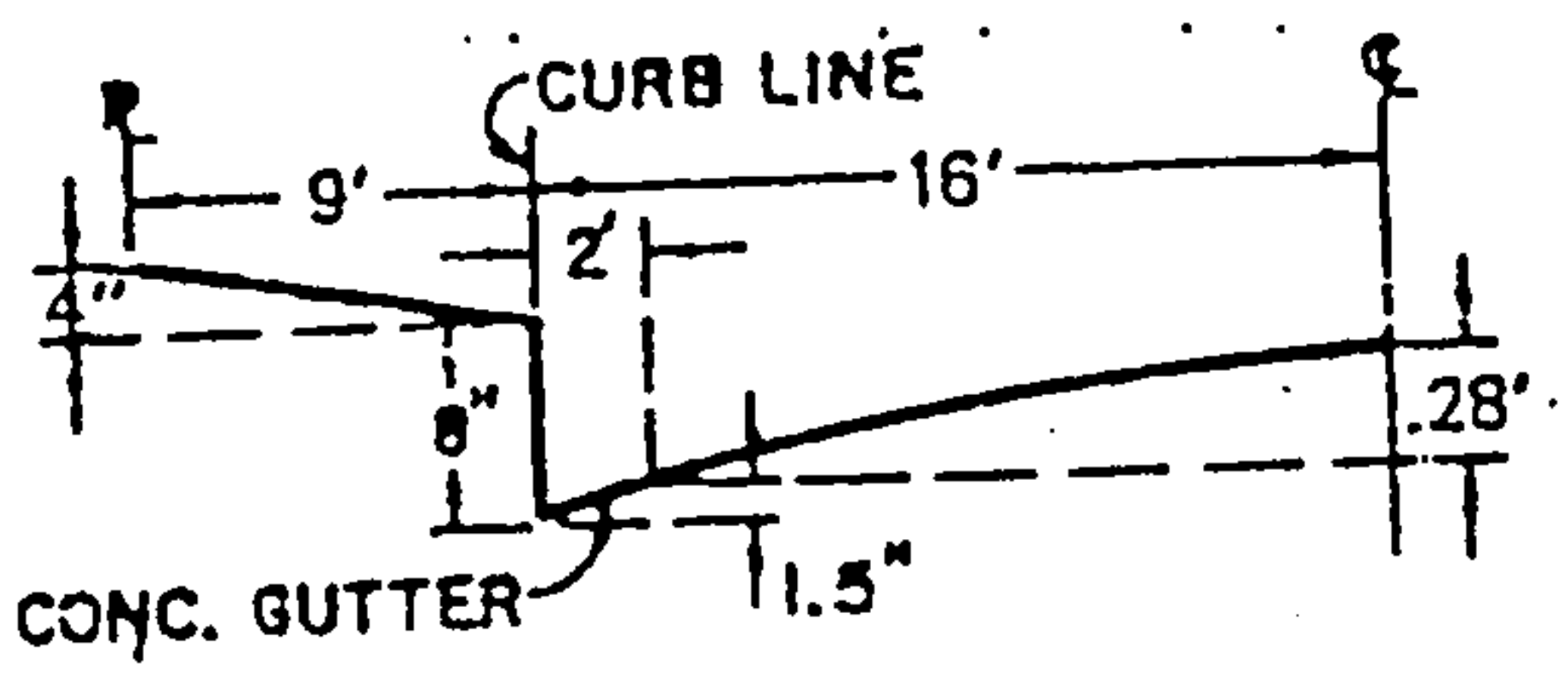
END TIME (HR:MIN:SEC) = 19:17:45

GRATING CAPACITIES FOR TYPE "A", "C" and "D"

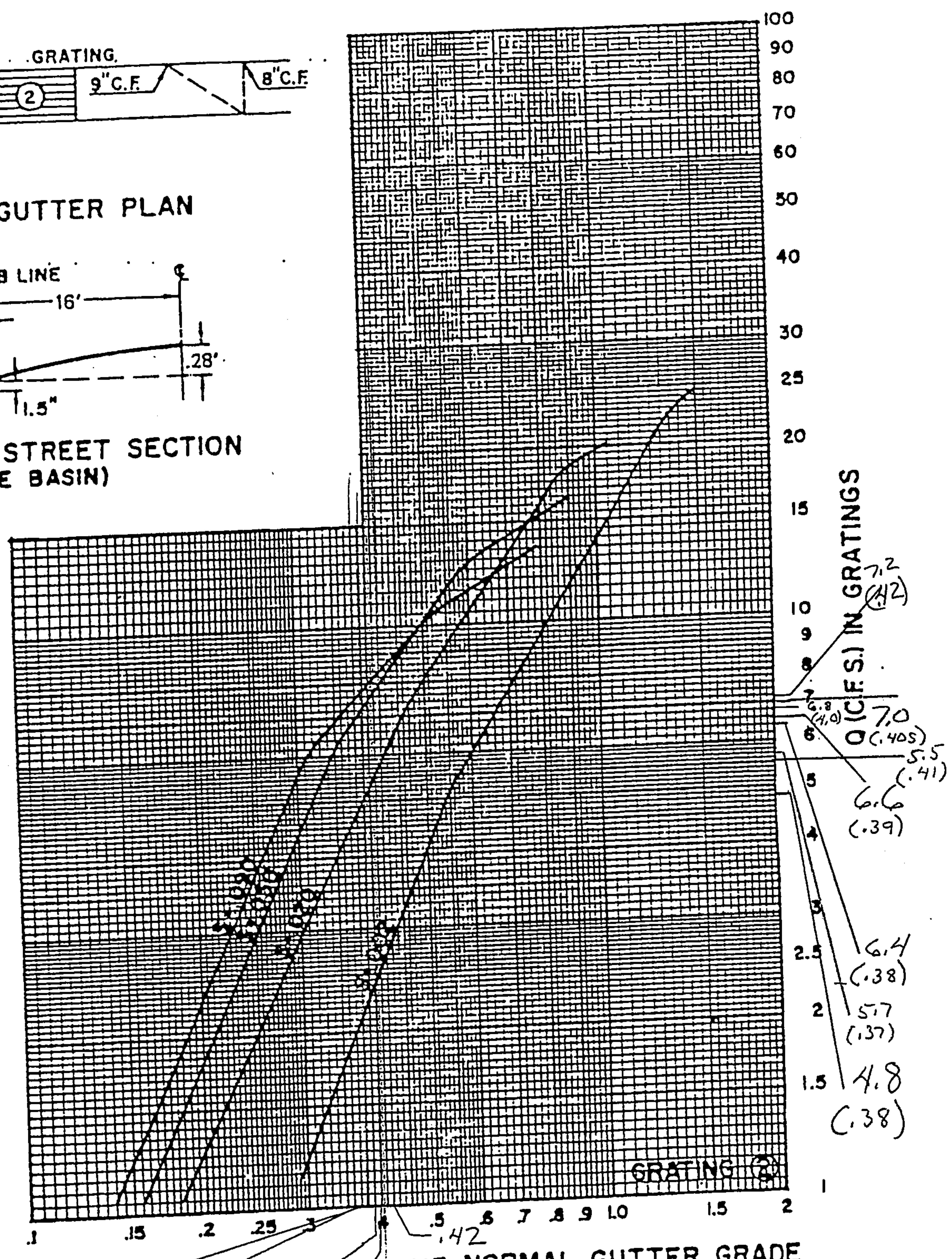
26



GRATING & GUTTER PLAN



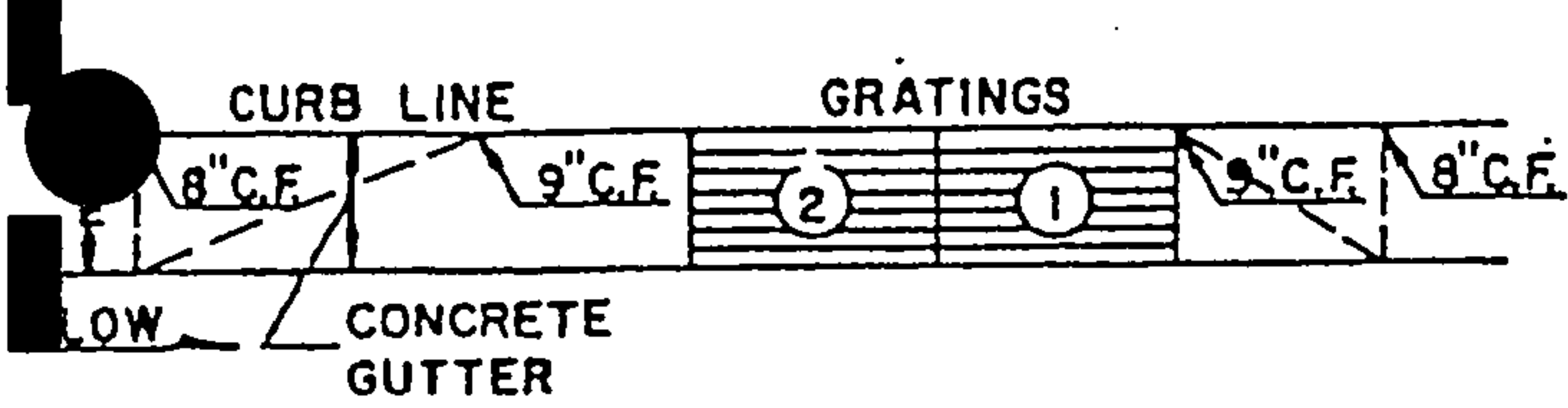
TYPICAL HALF STREET SECTION (ABOVE BASIN)



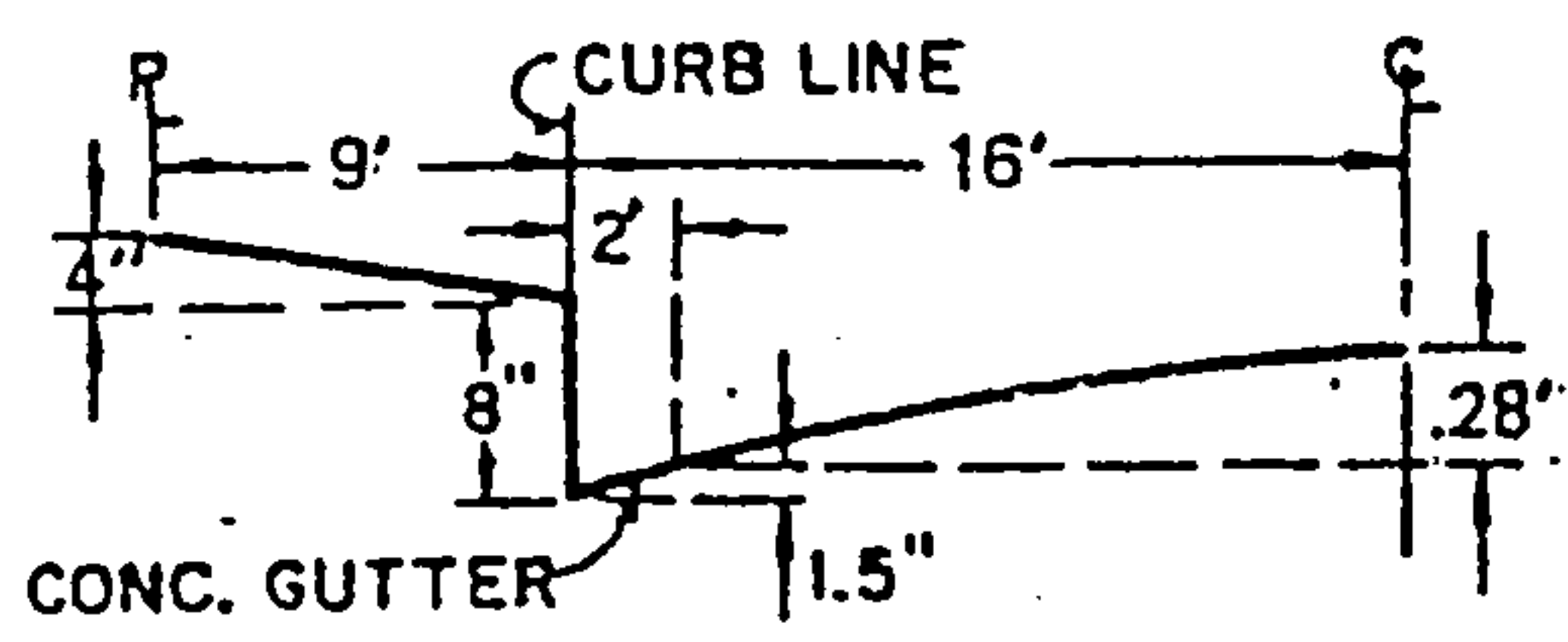
D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

0.38 0.37 0.39 0.40 0.405

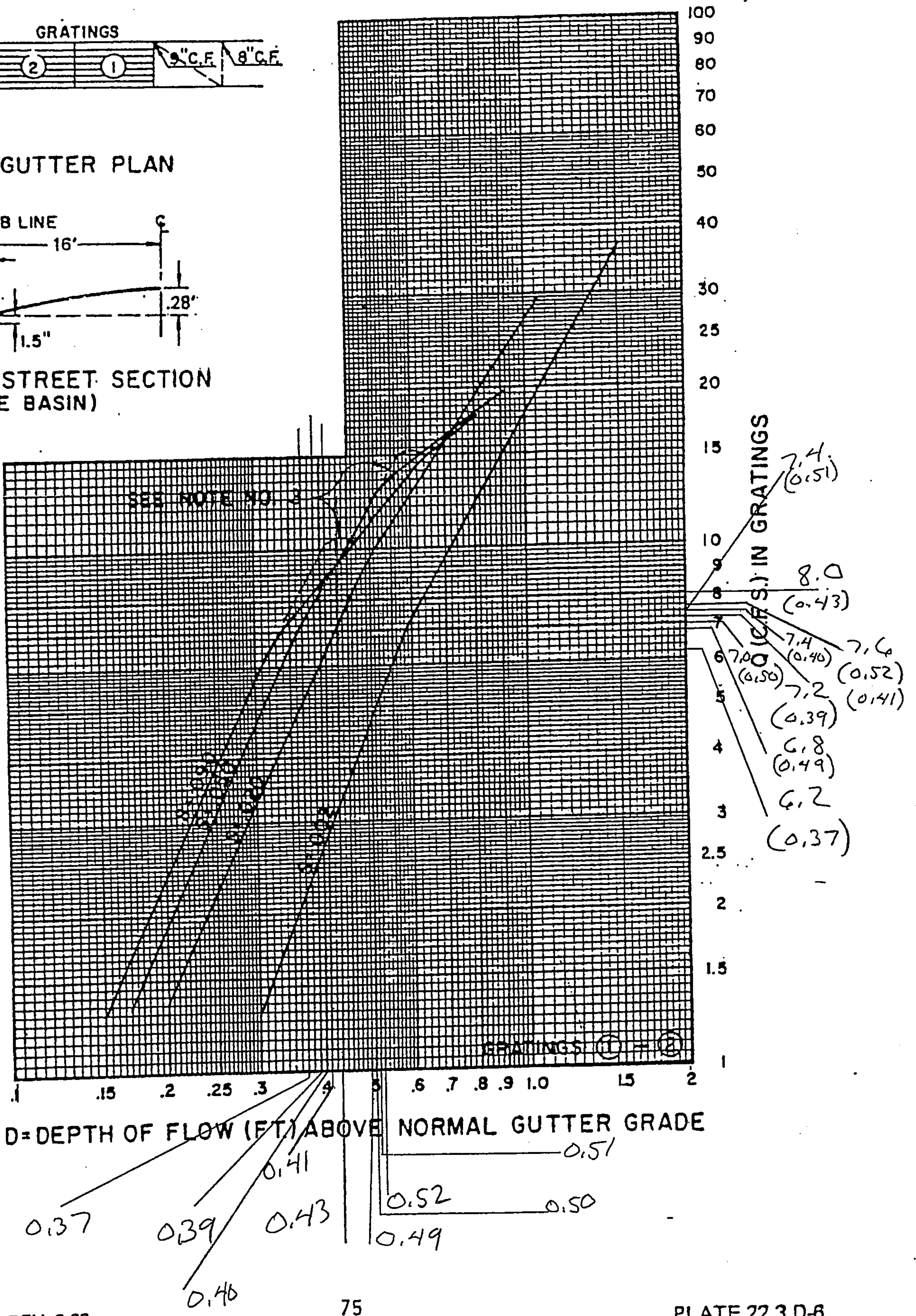
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



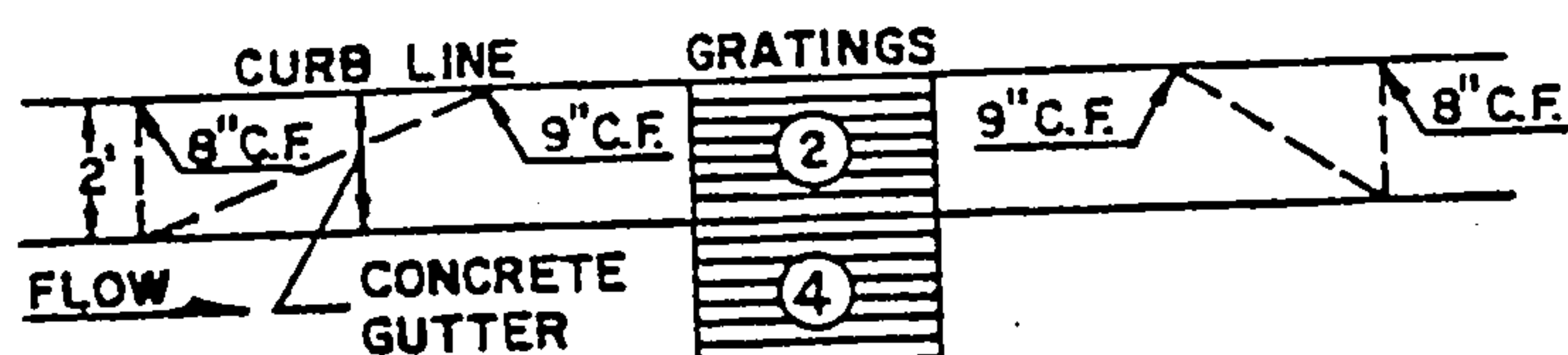
GRATING & GUTTER PLAN



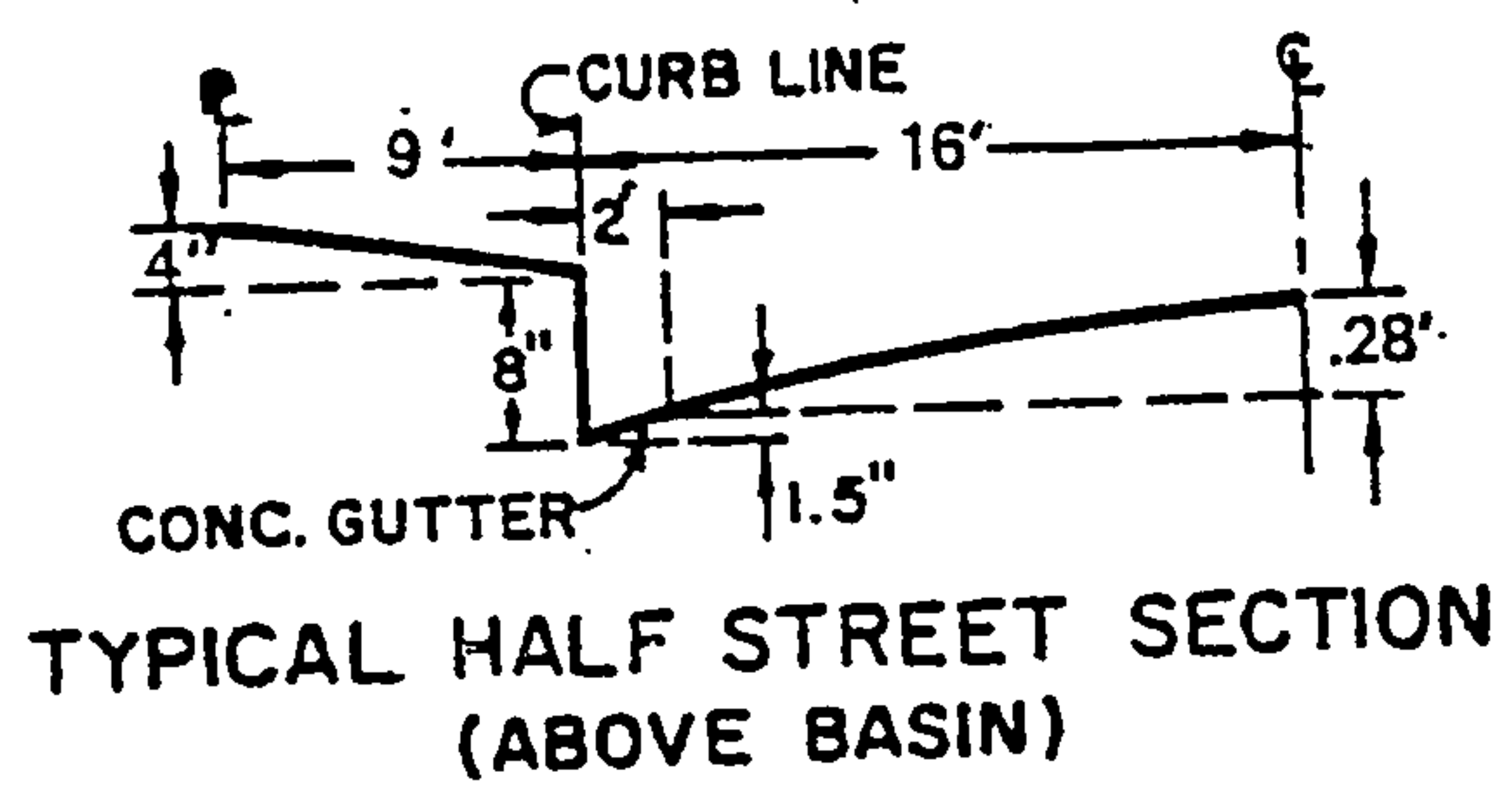
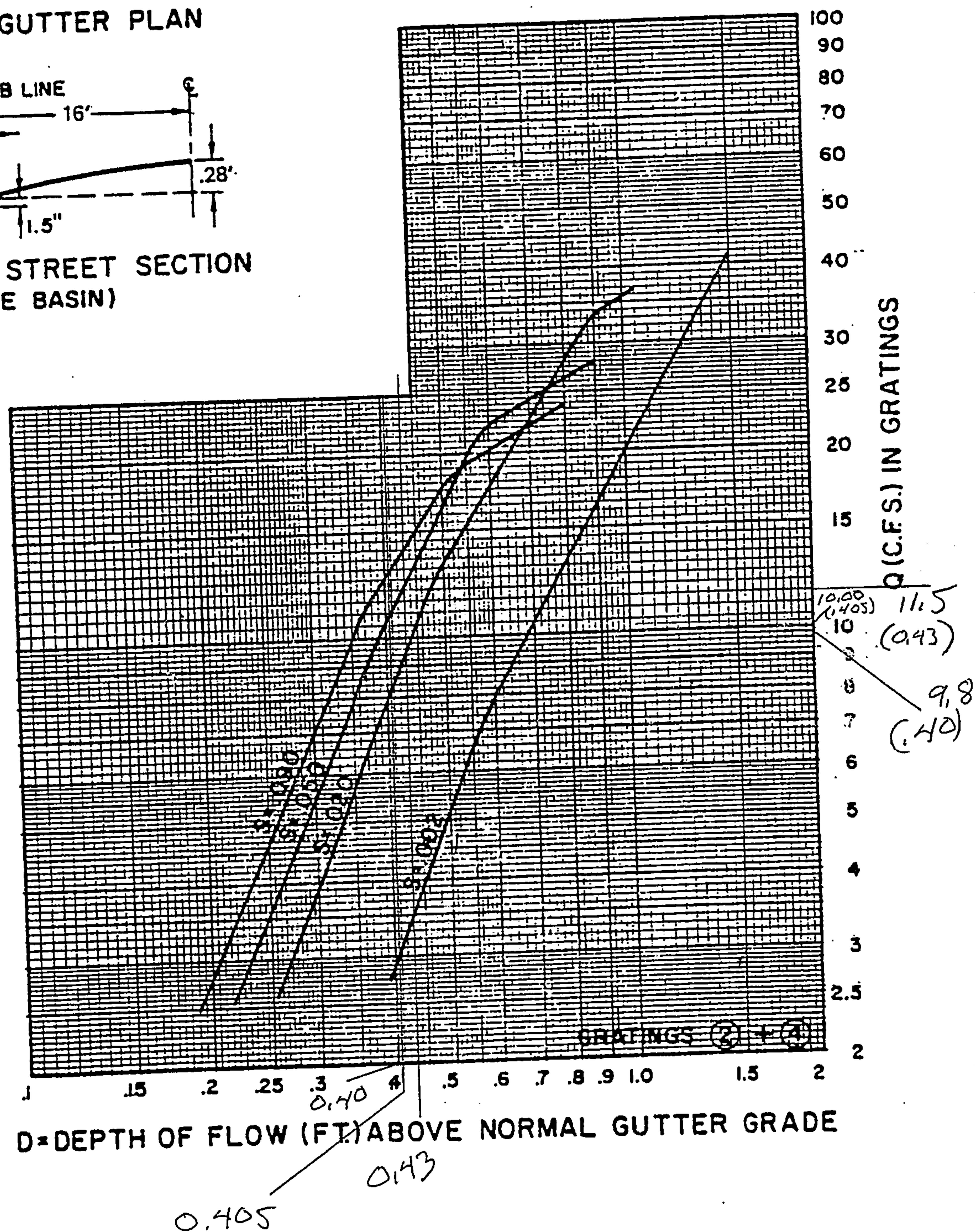
TYPICAL HALF STREET SECTION (ABOVE BASIN)



GRATING CAPACITIES FOR TYPE "B"



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS WYOMING RUNOFF INTO SUBD. @ BC
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.15 IN RAIN SIX=2.50 IN
RAIN DAY=2.90 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.002198 SQ MI
PER A=0 B=28.29 C=0 D=71.71
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994

RUN DATE (MON/DAY/YR) = 08/10/2001
START TIME (HR:MIN:SEC) = 13:17:10 USER NO.=

M_GOODWN.I01

INPUT FILE = DRTWA.DAT

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS WYOMING RUNOFF INTO SUBD.
@ BC
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=2.15 IN RAIN SIX=2.50 IN
 RAIN DAY=2.90 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.

	DT = .033330 HOURS			END TIME = 5.999400		
HOURS						
	.0000	.0016	.0032	.0049	.0066	.0083
.0101						
	.0119	.0138	.0157	.0177	.0197	.0218
.0239						
	.0261	.0284	.0307	.0331	.0356	.0381
.0408						
	.0436	.0464	.0494	.0525	.0558	.0592
.0627						
	.0665	.0705	.0746	.0806	.0869	.0937
.1083						
	.1409	.1911	.2632	.3617	.4910	.6560
.8613						
	1.1120	1.3447	1.4418	1.5239	1.5969	1.6632
1.7243						
	1.7811	1.8341	1.8838	1.9306	1.9747	2.0164
2.0558						
	2.0932	2.1286	2.1623	2.1942	2.2245	2.2314
2.2378						
	2.2438	2.2496	2.2550	2.2603	2.2653	2.2702
2.2748						
	2.2794	2.2837	2.2879	2.2920	2.2960	2.2998
2.3036						
	2.3072	2.3108	2.3142	2.3176	2.3209	2.3242
2.3273						
	2.3304	2.3334	2.3364	2.3393	2.3422	2.3450
2.3478						
	2.3505	2.3531	2.3557	2.3583	2.3608	2.3633
2.3658						
	2.3682	2.3706	2.3729	2.3752	2.3775	2.3797
2.3820						
	2.3841	2.3863	2.3884	2.3905	2.3926	2.3947
2.3967						
	2.3987	2.4007	2.4026	2.4046	2.4065	2.4084
2.4103						
	2.4121	2.4139	2.4158	2.4176	2.4193	2.4211
2.4228						
	2.4246	2.4263	2.4280	2.4296	2.4313	2.4330
2.4346						
	2.4362	2.4378	2.4394	2.4410	2.4425	2.4441
2.4456						
	2.4472	2.4487	2.4502	2.4517	2.4531	2.4546
2.4561						

2.4659	2.4575	2.4589	2.4604	2.4618	2.4632	2.4646
2.4753	2.4673	2.4687	2.4700	2.4714	2.4727	2.4740
2.4843	2.4766	2.4779	2.4792	2.4805	2.4818	2.4831
2.4929	2.4856	2.4868	2.4880	2.4893	2.4905	2.4917
	2.4941	2.4953	2.4965	2.4976	2.4988	2.5000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.002198 SQ MI
 PER A=0 B=28.29 C=0 D=71.71
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 6.2229 CFS UNIT VOLUME = .9976 B =
 526.28 P60 = 2.1500
 AREA = .001576 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .133777HR TP = .133300HR K/TP RATIO = 1.003575
 SHAPE CONSTANT, N = 3.517606
 UNIT PEAK = 1.5002 CFS UNIT VOLUME = .9911 B =
 321.61 P60 = 2.1500
 AREA = .000622 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.87725 INCHES = .2201 ACRE-FEET
 PEAK DISCHARGE RATE = 6.10 CFS AT 1.500 HOURS BASIN
 AREA = .0022 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:17:10

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS WYOMING RUNOFF ONTO FLORENCE
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.15 IN RAIN SIX=2.50 IN
RAIN DAY=2.90 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001231 SQ MI
PER A=0 B=31.54 C=0 D=68.46
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

1994 AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,

RUN DATE (MON/DAY/YR) = 08/10/2001
 START TIME (HR:MIN:SEC) = 13:25:06 USER NO.=
 M_GOODWN.I01
 INPUT FILE = DRTFL.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR DESERT RIDGE TRAILS WYOMING RUNOFF ONTO
 FLORENCE
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=2.15 IN RAIN SIX=2.50 IN
 RAIN DAY=2.90 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
 ATLAS 2 - PEAK AT 1.40 HR.
 DT = .033330 HOURS END TIME = 5.999400

HOURS						
	.0000	.0016	.0032	.0049	.0066	.0083
.0101						
	.0119	.0138	.0157	.0177	.0197	.0218
.0239						
	.0261	.0284	.0307	.0331	.0356	.0381
.0408						
	.0436	.0464	.0494	.0525	.0558	.0592
.0627						
	.0665	.0705	.0746	.0806	.0869	.0937
.1083						
	.1409	.1911	.2632	.3617	.4910	.6560
.8613						
	1.1120	1.3447	1.4418	1.5239	1.5969	1.6632
1.7243						
	1.7811	1.8341	1.8838	1.9306	1.9747	2.0164
2.0558						
	2.0932	2.1286	2.1623	2.1942	2.2245	2.2314
2.2378						
	2.2438	2.2496	2.2550	2.2603	2.2653	2.2702
2.2748						
	2.2794	2.2837	2.2879	2.2920	2.2960	2.2998
2.3036						
	2.3072	2.3108	2.3142	2.3176	2.3209	2.3242
2.3273						
	2.3304	2.3334	2.3364	2.3393	2.3422	2.3450
2.3478						
	2.3505	2.3531	2.3557	2.3583	2.3608	2.3633
2.3658						
	2.3682	2.3706	2.3729	2.3752	2.3775	2.3797
2.3820						
	2.3841	2.3863	2.3884	2.3905	2.3926	2.3947
2.3967						
	2.3987	2.4007	2.4026	2.4046	2.4065	2.4084
2.4103						
	2.4121	2.4139	2.4158	2.4176	2.4193	2.4211
2.4228						
	2.4246	2.4263	2.4280	2.4296	2.4313	2.4330
2.4346						
	2.4362	2.4378	2.4394	2.4410	2.4425	2.4441
2.4456						
	2.4472	2.4487	2.4502	2.4517	2.4531	2.4546
2.4561						

2.4659	2.4575	2.4589	2.4604	2.4618	2.4632	2.4646
2.4753	2.4673	2.4687	2.4700	2.4714	2.4727	2.4740
2.4843	2.4766	2.4779	2.4792	2.4805	2.4818	2.4831
2.4929	2.4856	2.4868	2.4880	2.4893	2.4905	2.4917
	2.4941	2.4953	2.4965	2.4976	2.4988	2.5000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001231 SQ MI
 PER A=0 B=31.54 C=0 D=68.46
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 3.3272 CFS UNIT VOLUME = .9961 B =
 526.28 P60 = 2.1500
 AREA = .000843 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .133777HR TP = .133300HR K/TP RATIO = 1.003575
 SHAPE CONSTANT, N = 3.517606
 UNIT PEAK = .93674 CFS UNIT VOLUME = .9852 B =
 321.61 P60 = 2.1500
 AREA = .000388 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.83268 INCHES = .1203 ACRE-FEET
 PEAK DISCHARGE RATE = 3.36 CFS AT 1.500 HOURS BASIN
 AREA = .0012 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:25:06

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS FLORENCE RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.15 IN RAIN SIX=2.50 IN
RAIN DAY=2.90 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.005692 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

1994 AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,

RUN DATE (MON/DAY/YR) = 08/10/2001

START TIME (HR:MIN:SEC) = 13:30:58

USER NO.=

M_GOODWN.I01

INPUT FILE = DRTFLO.DAT

START

TIME=0.0

***** HYDROGRAPH FOR DESERT RIDGE TRAILS FLORENCE RUNOFF

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=2.15 IN RAIN SIX=2.50 IN

RAIN DAY=2.90 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400

HOURS

	.0000	.0016	.0032	.0049	.0066	.0083
.0101						
	.0119	.0138	.0157	.0177	.0197	.0218
.0239						
	.0261	.0284	.0307	.0331	.0356	.0381
.0408						
	.0436	.0464	.0494	.0525	.0558	.0592
.0627						
	.0665	.0705	.0746	.0806	.0869	.0937
.1083						
	.1409	.1911	.2632	.3617	.4910	.6560
.8613						
	1.1120	1.3447	1.4418	1.5239	1.5969	1.6632
1.7243						
	1.7811	1.8341	1.8838	1.9306	1.9747	2.0164
2.0558						
	2.0932	2.1286	2.1623	2.1942	2.2245	2.2314
2.2378						
	2.2438	2.2496	2.2550	2.2603	2.2653	2.2702
2.2748						
	2.2794	2.2837	2.2879	2.2920	2.2960	2.2998
2.3036						
	2.3072	2.3108	2.3142	2.3176	2.3209	2.3242
2.3273						
	2.3304	2.3334	2.3364	2.3393	2.3422	2.3450
2.3478						
	2.3505	2.3531	2.3557	2.3583	2.3608	2.3633
2.3658						
	2.3682	2.3706	2.3729	2.3752	2.3775	2.3797
2.3820						
	2.3841	2.3863	2.3884	2.3905	2.3926	2.3947
2.3967						
	2.3987	2.4007	2.4026	2.4046	2.4065	2.4084
2.4103						
	2.4121	2.4139	2.4158	2.4176	2.4193	2.4211
2.4228						
	2.4246	2.4263	2.4280	2.4296	2.4313	2.4330
2.4346						
	2.4362	2.4378	2.4394	2.4410	2.4425	2.4441
2.4456						
	2.4472	2.4487	2.4502	2.4517	2.4531	2.4546
2.4561						
	2.4575	2.4589	2.4604	2.4618	2.4632	2.4646

2.4659
 2.4753
 2.4843
 2.4929

2.4673 2.4687 2.4700 2.4714 2.4727 2.4740
 2.4766 2.4779 2.4792 2.4805 2.4818 2.4831
 2.4856 2.4868 2.4880 2.4893 2.4905 2.4917
 2.4941 2.4953 2.4965 2.4976 2.4988 2.5000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.005692 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 17.978 CFS UNIT VOLUME = .9988 B =
 526.28 P60 = 2.1500
 AREA = .004554 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .133777HR TP = .133300HR K/TP RATIO = 1.003575
 SHAPE CONSTANT, N = 3.517606
 UNIT PEAK = 2.7466 CFS UNIT VOLUME = .9952 B =
 321.61 P60 = 2.1500
 AREA = .001138 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.99095 INCHES = .6044 ACRE-FEET
 PEAK DISCHARGE RATE = 16.52 CFS AT 1.500 HOURS BASIN
 AREA = .0057 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:30:58

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS LOUISIANA RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.15 IN RAIN SIX=2.50 IN
RAIN DAY=2.90 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003710 SQ MI
PER A=0 B=24.49 C=0 D=75.51
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994

RUN DATE (MON/DAY/YR) = 08/10/2001
START TIME (HR:MIN:SEC) = 15:46:35 USER NO.=

M_GOODWN.I01

INPUT FILE = DRTLQ.DAT

START TIME=0.0
***** HYDROGRAPH FOR DESERT RIDGE TRAILS LOUISIANA RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=2.15 IN RAIN SIX=2.50 IN
 RAIN DAY=2.90 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.

	DT = .033330 HOURS			END TIME = 5.999400		
HOURS						
	.0000	.0016	.0032	.0049	.0066	.0083
.0101						
	.0119	.0138	.0157	.0177	.0197	.0218
.0239						
	.0261	.0284	.0307	.0331	.0356	.0381
.0408						
	.0436	.0464	.0494	.0525	.0558	.0592
.0627						
	.0665	.0705	.0746	.0806	.0869	.0937
.1083						
	.1409	.1911	.2632	.3617	.4910	.6560
.8613						
	1.1120	1.3447	1.4418	1.5239	1.5969	1.6632
1.7243						
	1.7811	1.8341	1.8838	1.9306	1.9747	2.0164
2.0558						
	2.0932	2.1286	2.1623	2.1942	2.2245	2.2314
2.2378						
	2.2438	2.2496	2.2550	2.2603	2.2653	2.2702
2.2748						
	2.2794	2.2837	2.2879	2.2920	2.2960	2.2998
2.3036						
	2.3072	2.3108	2.3142	2.3176	2.3209	2.3242
2.3273						
	2.3304	2.3334	2.3364	2.3393	2.3422	2.3450
2.3478						
	2.3505	2.3531	2.3557	2.3583	2.3608	2.3633
2.3658						
	2.3682	2.3706	2.3729	2.3752	2.3775	2.3797
2.3820						
	2.3841	2.3863	2.3884	2.3905	2.3926	2.3947
2.3967						
	2.3987	2.4007	2.4026	2.4046	2.4065	2.4084
2.4103						
	2.4121	2.4139	2.4158	2.4176	2.4193	2.4211
2.4228						
	2.4246	2.4263	2.4280	2.4296	2.4313	2.4330
2.4346						
	2.4362	2.4378	2.4394	2.4410	2.4425	2.4441
2.4456						
	2.4472	2.4487	2.4502	2.4517	2.4531	2.4546
2.4561						
	2.4575	2.4589	2.4604	2.4618	2.4632	2.4646

2.4659
2.4753
2.4843
2.4929
2.4673 2.4687 2.4700 2.4714 2.4727 2.4740
2.4766 2.4779 2.4792 2.4805 2.4818 2.4831
2.4856 2.4868 2.4880 2.4893 2.4905 2.4917
2.4941 2.4953 2.4965 2.4976 2.4988 2.5000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003710 SQ MI
PER A=0 B=24.49 C=0 D=75.51
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.060 CFS UNIT VOLUME = .9984 B =
526.28 P60 = 2.1500
AREA = .002801 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .133777HR TP = .133300HR K/TP RATIO = 1.003575
SHAPE CONSTANT, N = 3.517606
UNIT PEAK = 2.1921 CFS UNIT VOLUME = .9942 B =
321.61 P60 = 2.1500
AREA = .000909 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

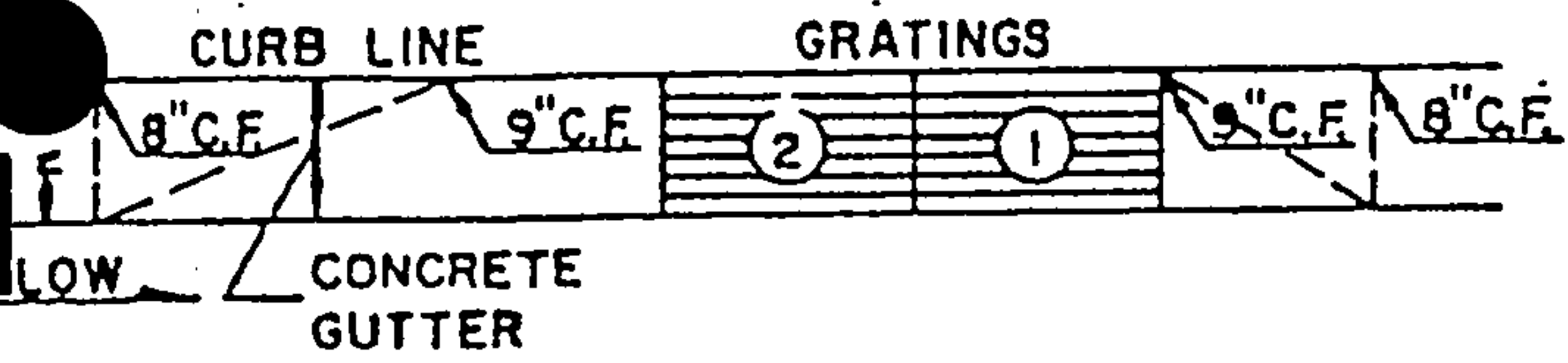
PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.92937 INCHES = .3818 ACRE-FEET
PEAK DISCHARGE RATE = 10.50 CFS AT 1.500 HOURS BASIN
AREA = .0037 SQ. MI.

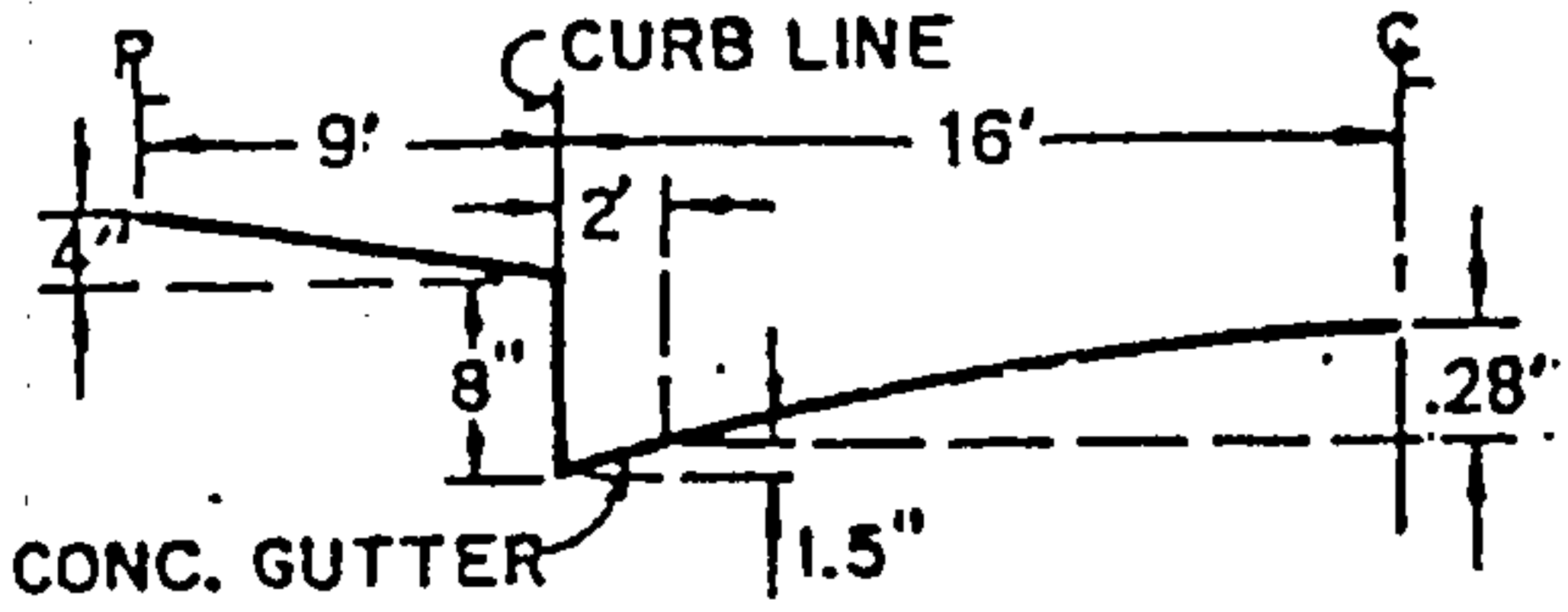
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 15:46:35

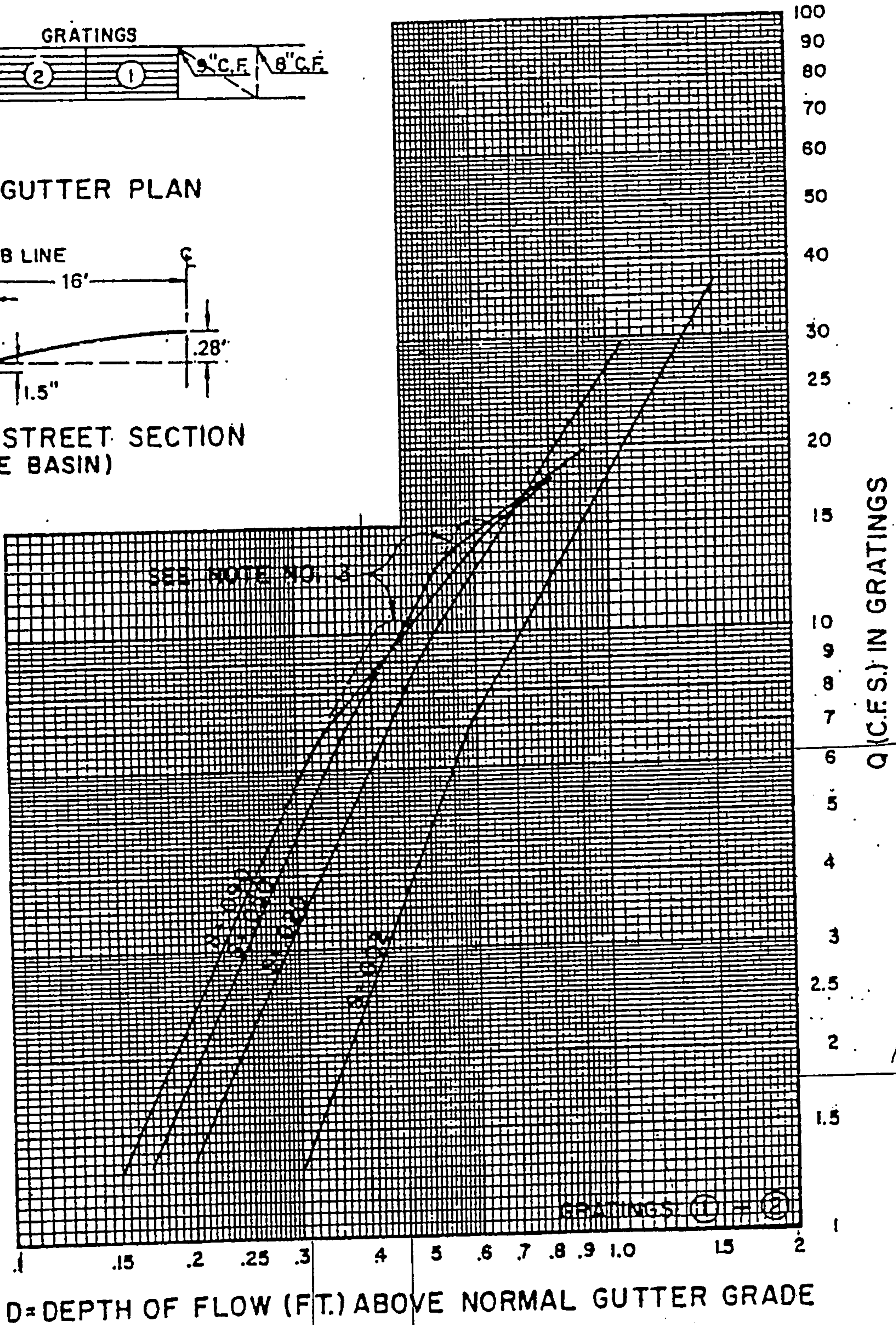
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION (ABOVE BASIN)

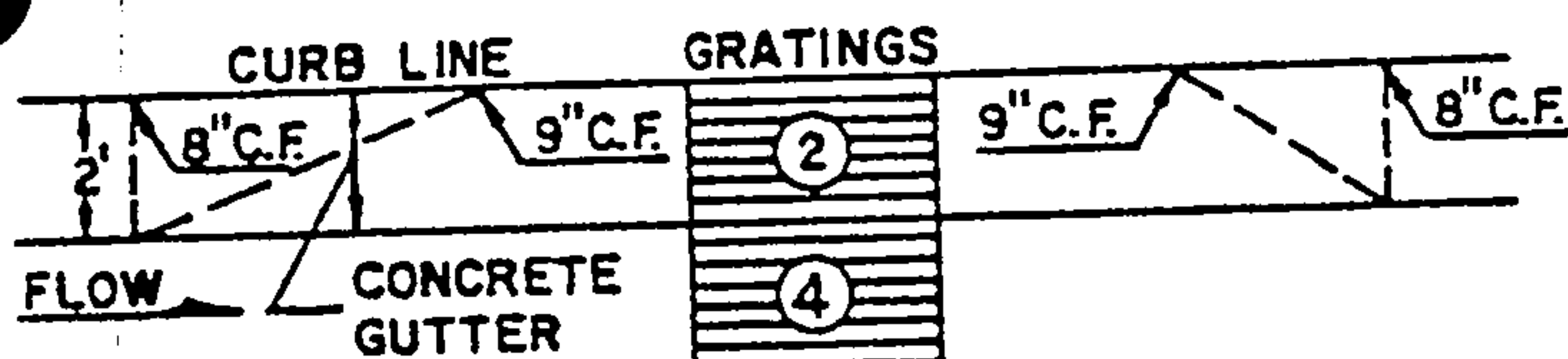


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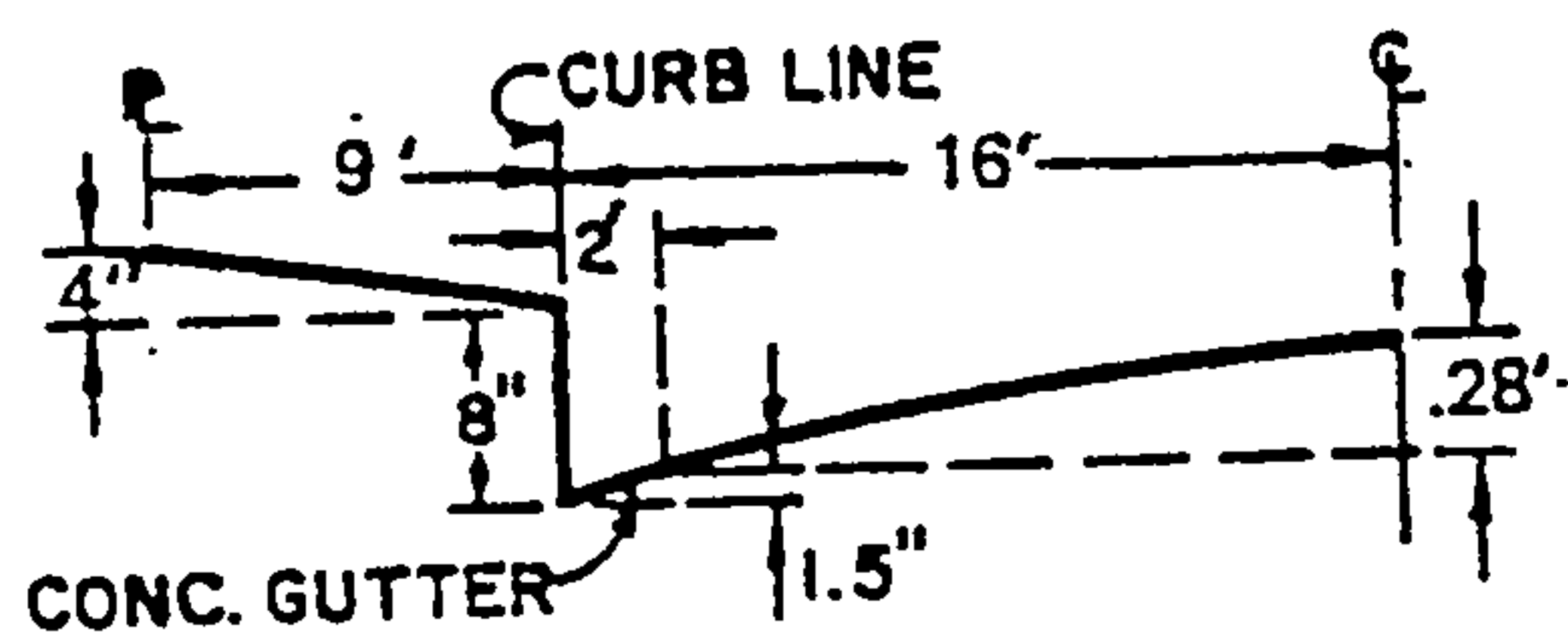
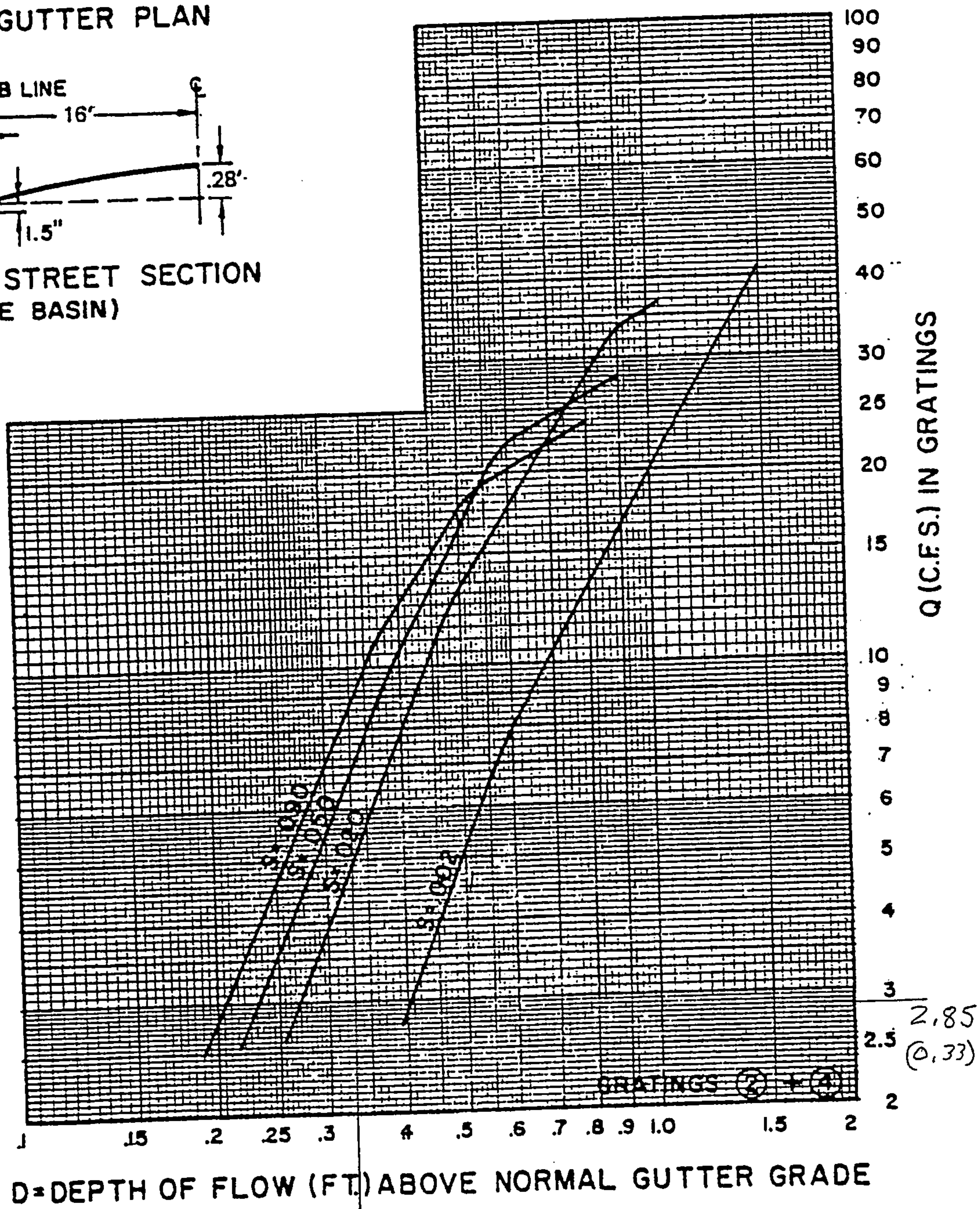
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GRATING CAPACITIES FOR TYPE "B"

42



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

HYDRAULIC REPORT FOR

DESERT RIDGE TRAILS

HAWTHORN STORMDRAIN

LINE 1 / Q = 57.2 / HT = 30 / WID = 30 / N = .013 / L = 65 / JLC = .25

OUTFALL / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	11.75	24.42	9.71	13.37	14.52	23.34	3.99	4.28
UPSTRM	13.05	24.42	11.01	13.37	15.82	23.34	7.86	4.28

Drainage area (ac)	=	0	Slope of invert (%)	=	2.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.000
Time of conc (min)	=	6	Critical depth (in)	=	28.86
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	52.4
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	15.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	57.2	Confluence angle (deg)	=	45
Default Q (cfs)	=	57.2	Natural ground elev (ft)	=	21.38
Line capac. (cfs)	=	58.0	Line storage (cuft)	=	278

LINE 2 / Q = 57.2 / HT = 30 / WID = 30 / N = .013 / L = 125 / JLC = .25

2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	13.74	30.00	11.01	11.65	15.85	0.00	7.86	4.91
UPSTRM	16.17	30.00	13.51	11.65	18.28	0.00	2.46	4.91

Drainage area (ac)	=	0	Slope of invert (%)	=	2.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.946
Time of conc (min)	=	6	Critical depth (in)	=	28.86
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	52.4
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	15.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	57.2	Confluence angle (deg)	=	45
Default Q (cfs)	=	57.2	Natural ground elev (ft)	=	18.48
Line capac. (cfs)	=	58.0	Line storage (cuft)	=	614

LINE 3 / Q = 42.4 / HT = 30 / WID = 30 / N = .013 / L = 395 / JLC = .25

3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	16.70	30.00	13.51	8.64	17.86	0.00	2.46	4.91
UPSTRM	26.30	26.60	24.08	9.21	27.61	19.02	10.01	4.60

Drainage area (ac)	=	0	Slope of invert (%)	=	2.676
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.470
Time of conc (min)	=	3	Critical depth (in)	=	26.55
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	38.8
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	11.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	42.4	Confluence angle (deg)	=	90
Default Q (cfs)	=	42.4	Natural ground elev (ft)	=	36.6
Line capac. (cfs)	=	67.1	Line storage (cuft)	=	1878

LINE 4 / Q = 42.4 / HT = 30 / WID = 30 / N = .013 / L = 270 / JLC = .25

4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.63	30.00	24.08	8.64	27.79	0.00	10.01	4.91
UPSTRM	32.95	26.60	30.73	9.21	34.26	19.02	11.2	4.60

Drainage area (ac)	=	0	Slope of invert (%)	=	2.463
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.400
Time of conc (min)	=	2	Critical depth (in)	=	26.55
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	38.8
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	11.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	42.4	Confluence angle (deg)	=	0
Default Q (cfs)	=	42.4	Natural ground elev (ft)	=	44.44
Line capac. (cfs)	=	64.4	Line storage (cuft)	=	1284

LINE 5 / Q = 27.6 / HT = 30 / WID = 30 / N = .013 / L = 97 / JLC = .25

5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	33.28	30.00	30.73	5.62	33.77	0.00	11.2	4.91
UPSTRM	33.48	21.24	31.71	7.43	34.34	27.28	9.1	3.72

Drainage area (ac)	=	0	Slope of invert (%)	=	1.011
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.588
Time of conc (min)	=	1	Critical depth (in)	=	21.06
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	25.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	7.3
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	27.6	Confluence angle (deg)	=	90
Default Q (cfs)	=	27.6	Natural ground elev (ft)	=	43.32
Line capac. (cfs)	=	41.2	Line storage (cuft)	=	418

LINE 6 / Q = 27.6 / HT = 24 / WID = 24 / N = .013 / L = 255 / JLC = .25

6 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	33.70	23.82	31.71	8.79	34.90	3.39	9.61	3.14
UPSTRM	37.68	24.00	34.26	8.79	38.88	0.00	2	3.14

Drainage area (ac)	=	0	Slope of invert (%)	=	1.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.446
Time of conc (min)	=	0	Critical depth (in)	=	22.28
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	25.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	7.3
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	27.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	27.6	Natural ground elev (ft)	=	38.26
Line capac. (cfs)	=	22.6	Line storage (cuft)	=	801



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Scanned
8/15/14

June 22, 2004

Mr. Gregory Krenik, PE
MARK GOODWIN & ASSOCIATES
P.O. Box 90606
Albuquerque, NM 87119

RE: DESET RIDGE TRAILS SUBDIVISION, UNIT 1 (B-19/D019)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 12/05/2001
Engineers Certification dated 06/21/2004

Dear Greg:

Based upon the information provided in your Engineer's Certification Submittal dated 06/21/2004, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982

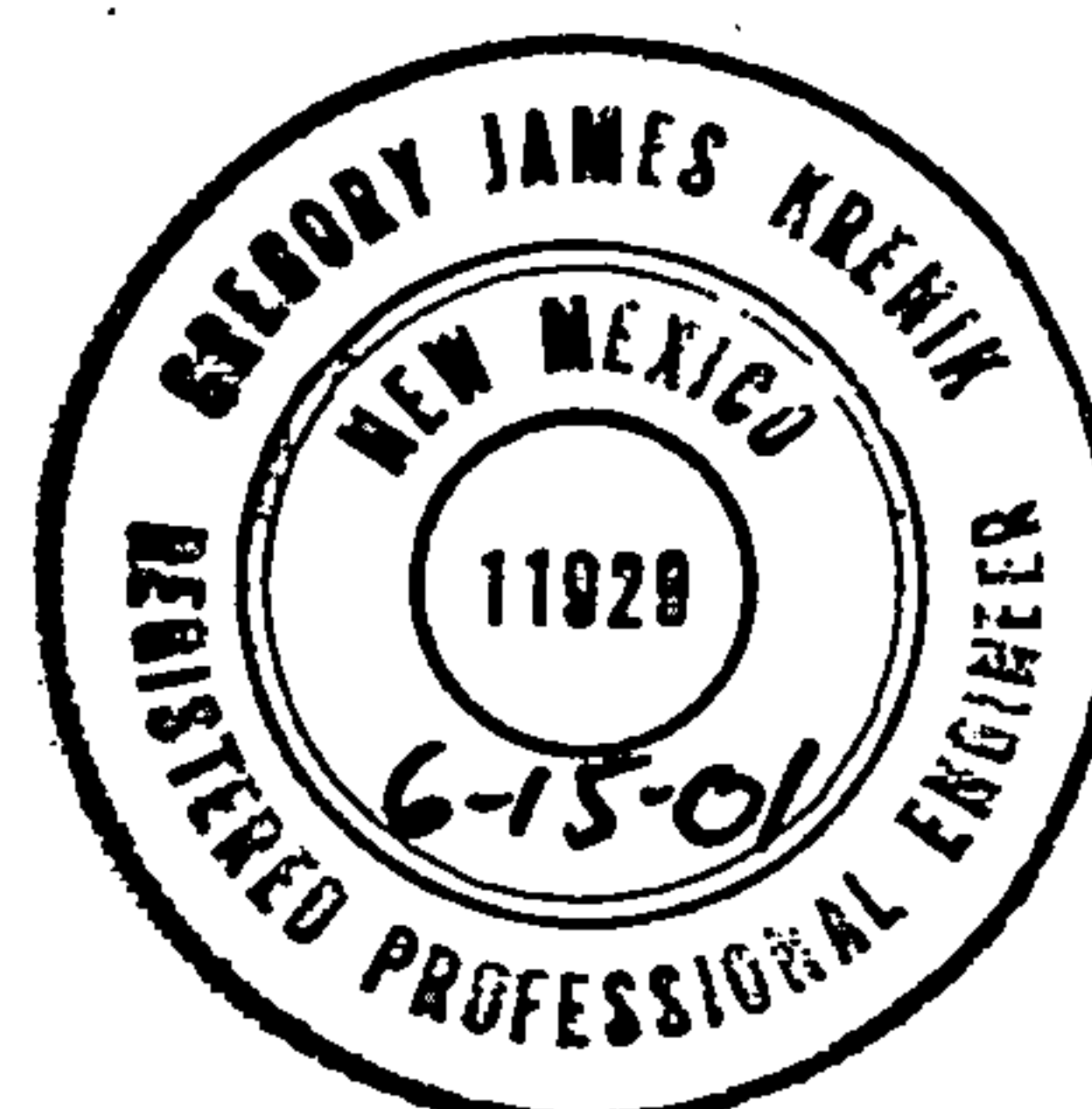
Sincerely,

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

C: Marilyn Maldonado, COA# 675481
File

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8/18/14

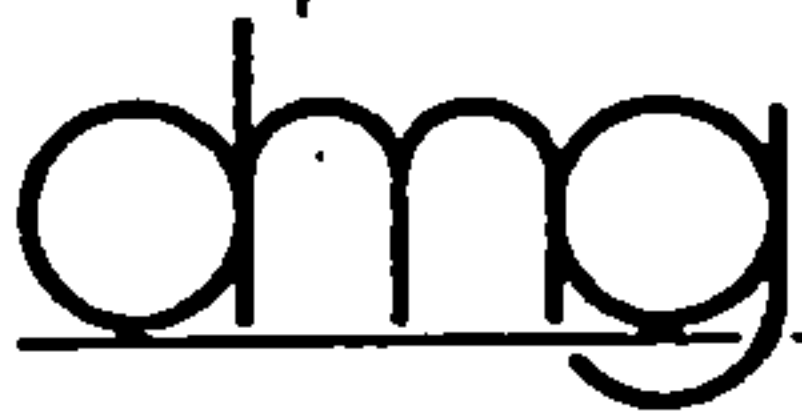
**DRAINAGE REPORT
for
DESERT RIDGE TRAILS**



7-3-01

8-6-01

8-13-01



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GJK DATE 5-18-01
CHECKED _____ DATE _____
SHEET 1 OF _____

- THE SITE CONTAINS 63.0539 AC SITUATED BETWEEN LOUISIANA BLVD, FLORENCE AVE NE, WYOMING BLVD NE AND THE LA CUEVA CHANNEL
- THE SITE SLOPES FROM SE TO NW AT A 5% SLOPE
- THE SITE IS IN TWO FLOOD ZONES BUT THOSE ZONES WILL BE REMOVED AS PART OF THE AMFCA CHANNEL PROJECT.
- THERE WILL BE 316 LOTS

- AREA OF R.O.W. = 14.1402 AC

11.1708 AC TYPE D

2.9694 AC TYPE C

- AREA OF PADS

50	30' x 60'	= 90,000 SF	10.60 %
80	77' x 35' x 60'	= 161,700 SF	19.04 %
75	76' x 40' x 60'	= 182,400 SF	21.48 %
70	69' x 50' x 70'	= 241,500 SF	28.44 %
29	32' x 55' x 70'	= 123,200 SF	14.51 %
	12' x 60' x 70'	= 50,400 SF	5.93 %

316

849,200 SF = 19.4949 AC TYPE D

- AREA OF DRIVES

316 x 20' x 20' = 126,400 SF = 2.9017 AC TYPE D

- AREA OF PARK

2.0 AC

1.0 AC TYPE C

1.0 AC TYPE B

} THIS WILL BE CALCULATED
SEPARATELY Q=5.89 CFS
FROM HYDRO SHEETS 18-20

- PERCENTAGES OF LAND TREATMENTS

TYPE D = 33.5674 AC 54.98 %

TYPE C = 2.9694 AC 4.86 %

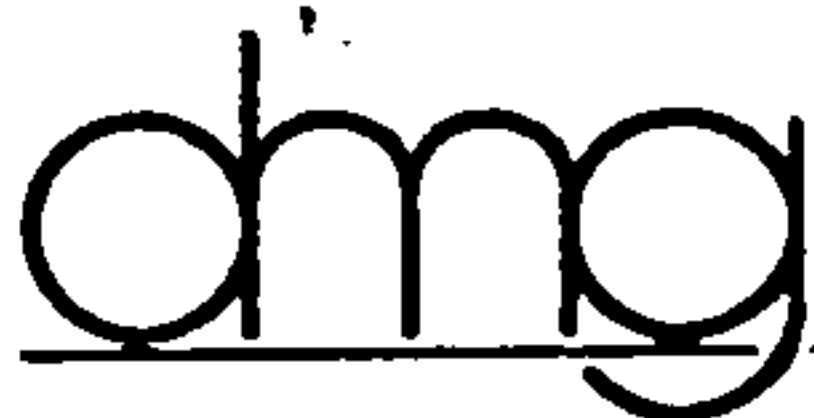
TYPE B = 24.5171 AC 40.16 %

61.0539 AC 100 %

* FROM HYDRO OUTPUT SHEETS 20-22

Q = 241.41 CFS

V = 8.4624 AC-FT



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

PROJECT DESERT RIDGE TRAILS
SUBJECT G+D PLAN
BY GJK DATE 5-18-01
CHECKED _____ DATE _____
SHEET 2 OF _____

• FIND RUNOFF PER PAD SIZE

ASSUME TOTAL Q IS DIVIDED BY TOTAL NUMBER OF LOTS.

		Q(CFS)	Q PER LOT
(50)	30'x60' PADS = 15.87%	25.59	0.5118
80 (77)	35'x60' PADS = 24.44%	45.96	0.5969
75 (76)	40'x60' PADS = 23.81%	51.85	0.6822
70 (69)	50'x70' PADS = 21.59%	68.66	0.9951
29 (32)	55'x70' PADS = 10.16%	35.03	1.0947
(12)	60'x70' PADS = 4.13%	14.32	1.1933
		<u>241.41</u>	

• FIND STREET CAPACITY

FIND MOUNTABLE CURB CAPACITY FOR 2%, 3.75%, 3.77% + 4.7%

S = 2% 32' F-F n = 0.017

$$d = 0.33$$

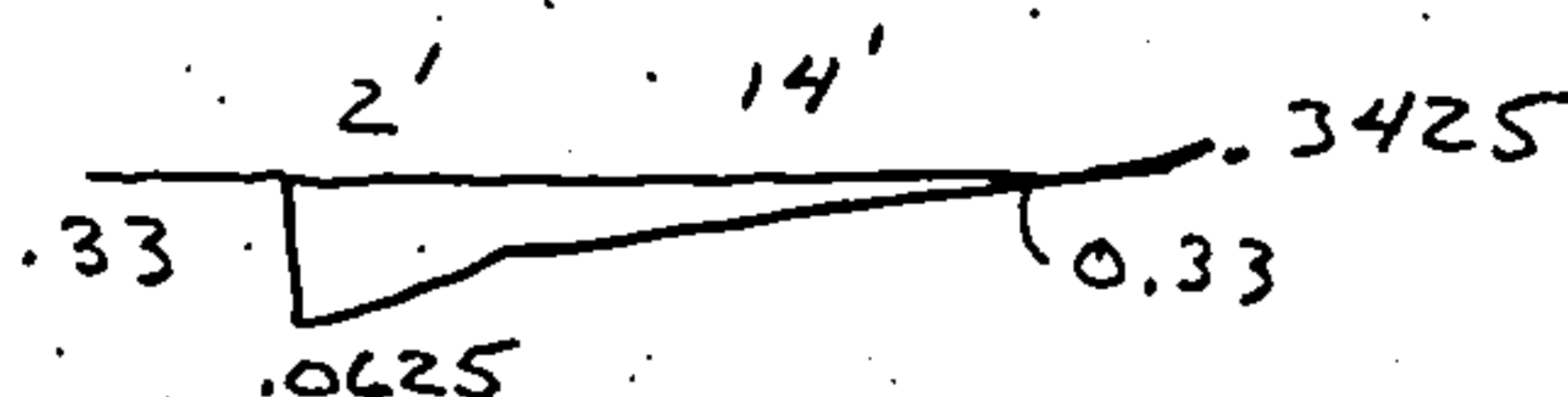
$$WP = 15.705$$

$$A = 2.3864$$

$$V_{1/2} = 3.52 \text{ F/S}$$

$$Q_{1/2} = 8.4 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.52 \approx 0.51$$



S = 3.75% + S = 3.77% 32' FF n = 0.017

$$d = 0.26$$

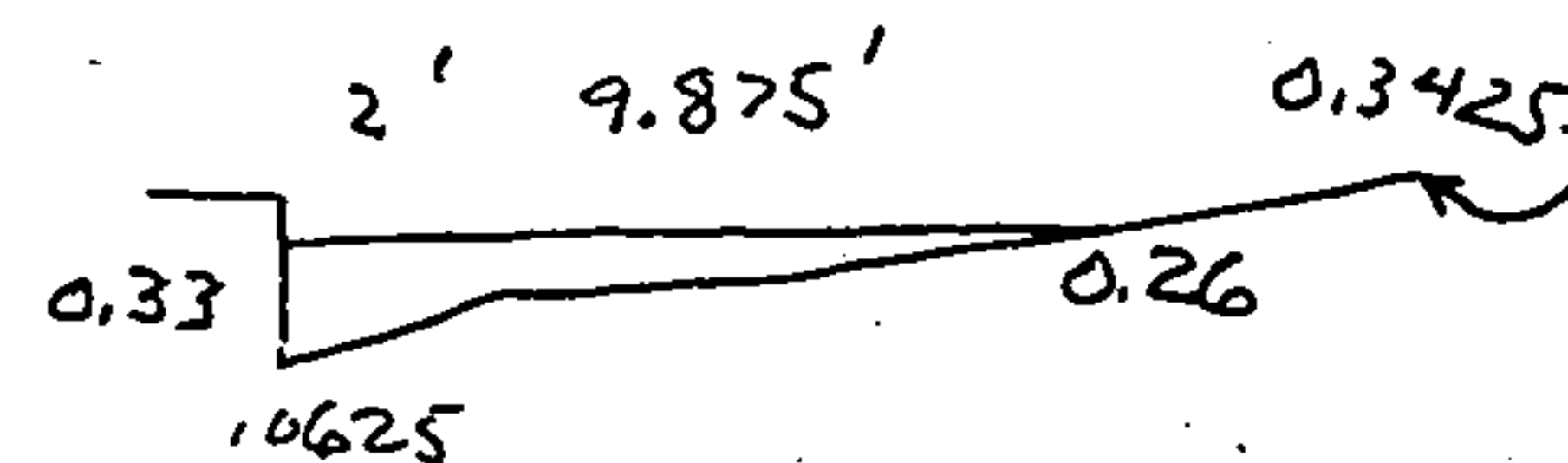
$$WP = 12.135$$

$$A = 1.43$$

$$V_{1/2} = 4.07 \text{ F/S}$$

$$Q_{1/2} = 5.83 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.52 \approx 0.51$$



S = 4.7% 26' FF n = 0.017

$$d = 0.23$$

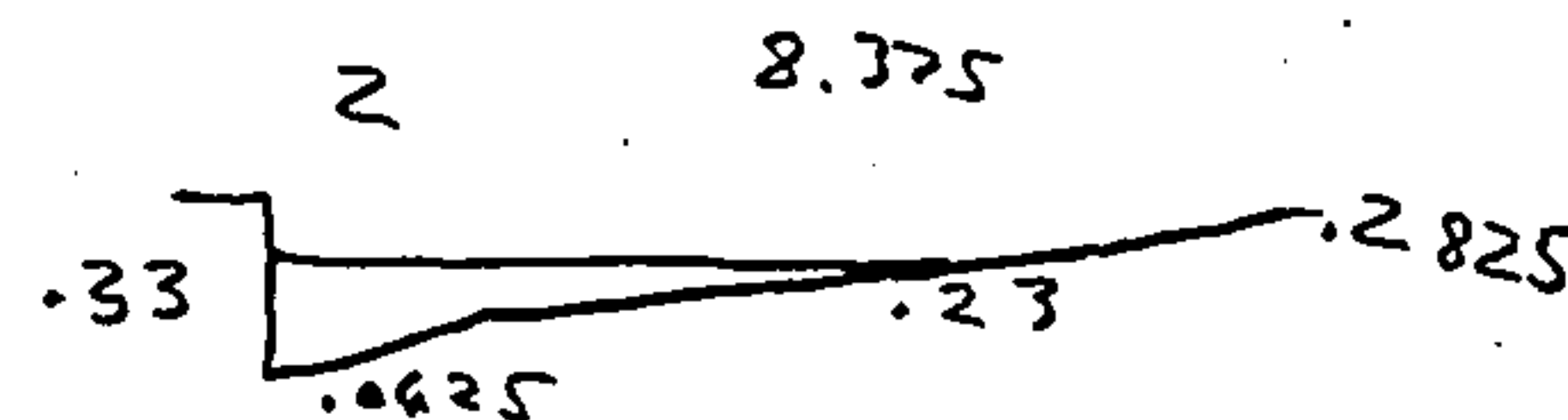
$$WP = 10.605$$

$$A = 1.0989$$

$$V_{1/2} = 4.1808 \text{ F/S}$$

$$Q_{1/2} = 4.59 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.50 < 0.51 \text{ OK}$$



S = 2% 28' F-F n = 0.017

$$d = 0.3025$$

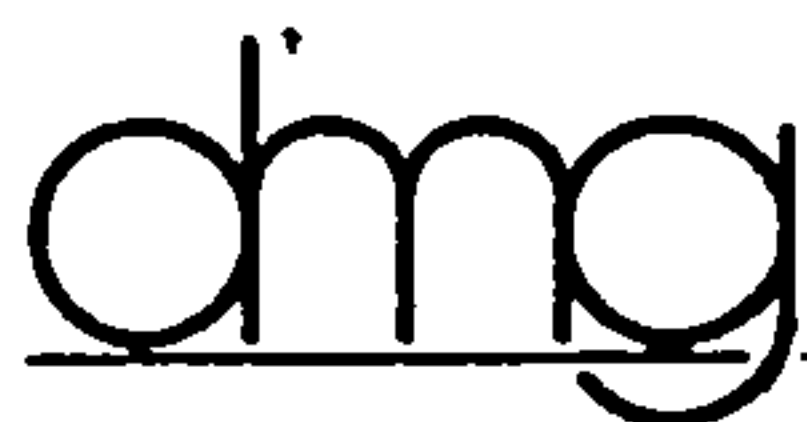
$$WP = 28.605$$

$$A = 3.965$$

$$V = 3.3109 \text{ F/S}$$

$$Q = 13.13 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.47 < 0.51 \text{ OK}$$



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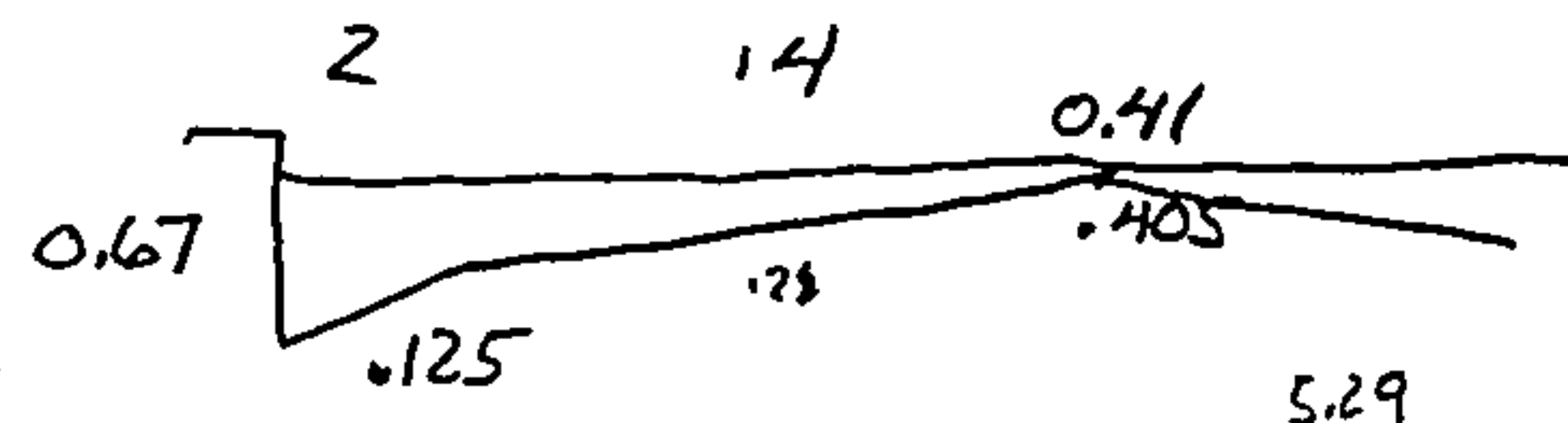
PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALLS
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FIND STD C+G CAPACITY FOR 3.75%, 3.26%, 3.33%, 4.17%

S = 3.75% 32' F-F n = 0.017

d = 0.41
WP = 32.82
A = 5.45
V = 5.11 F/s
Q = 27.87 cfs

$$d + \frac{V^2}{2g} = 0.82 < 0.85 \text{ OK}$$



S = 4.17% 32' FF n = 0.017

d = 0.405
WP = 32.81
A = 5.29
V = 5.29 F/s
Q = 27.97 cfs

$$d + \frac{V^2}{2g} = 0.84 < 0.85 \text{ OK}$$

- FIND RUNOFF FROM WEST HALF OF WYOMING THAT ENTERS THE SITE AT BLUE CYPRESS AVE.

- TOTAL AREA

$$R/W = 1.4067 \text{ AC}$$
$$\text{LOTS } 15 + 16 = 0.9002 \text{ AC}$$

$$\text{TOTAL} = 2.3069 \text{ AC}$$

$$\text{TYPE "D"} = 1.0353 \text{ AC} = 44.88\%$$

$$\text{TYPE B} = 1.2716 \text{ AC} = 55.12\%$$

FROM A44MO OUTPUT SHEETS 23-25

$$Q = 8.44 \text{ cfs}$$

- FIND FLOW IN BLUE CYPRESS AVE JUST WEST OF AUTUMN ROSE DR.

$$Q = (\text{9 LOTS} \times 0.6822) + (\text{2 LOTS} \times 0.9951) + 8.44 = 16.57 \text{ cfs} \approx 2 \times 8.4 = 16.8 \text{ cfs}$$

STREET CAPACITY AT THIS POINT

REQUIRES STD C+G AFTER THE RETURNS

- FIND FLOW ON BLUE CYPRESS AT CANYON SAGE DR.

$$Q = 7 \text{ LOTS} \times 0.6822 + 16.57 = 27.35 \text{ cfs} < 27.97 \text{ OK}$$

FROM THIS SHEET



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- FIND FLOW ON BLUE CYPRESS AVE JUST WEST OF BLUE MESA DR.

$$Q = 5 \text{ LOTS} \times 0.9951 + 21.35 = 26.33 \text{ CFS} < 27.97 \text{ OK} \\ \text{FROM SHEET } \frac{2}{3}$$

- INSTALL 2 SGL "A" INLETS AT THIS POINT ONE BETWEEN LOTS 14+15 BLOCK 4 AND ONE AT THE RETURN

FROM NMMO SHEET 26

$$Q_{\text{INLET}} = 7.0 \text{ CFS}$$

$$Q_{\text{PAST INLETS}} \\ = 26.33 - 14 \\ = 12.33 \text{ CFS}$$

- FIND FLOW ON BLUE CYPRESS AVE JUST EAST OF PRAIRIE VISTA DR.

$$Q = 7 \times 0.9951 + 12.33 + 5.89 = 25.19 \text{ CFS} < 27.97 \text{ OK} \\ S = 4.17\% \text{ 32' FF} \quad \text{PARK} \curvearrowright$$

$$d = 0.40$$

$$wP = 16.15$$

$$A = 2.5656$$

$$V_{1/2} = 5.236 \text{ F/S}$$

$$Q_{1/2} = 13.43 \text{ CFS} \times 2 = 26.86 \text{ CFS} \approx 25.19 \text{ CFS} \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.83 < 0.85 \text{ OK}$$

- INSTALL 2 SGL "A" INLETS AT RETURNS ON BLUE CYPRESS

FROM NMMO SHEET 26

$$Q_{\text{INLET}} = 6.8 \text{ CFS}$$

$$Q_{\text{PAST INLETS INTO PRAIRIE VISTA DR.}}$$

$$= 25.19 - 2(6.8)$$

$$= 11.59 \text{ CFS}$$

- FIND Q ON PRAIRIE VISTA DR. AT WILD OLIVE AVE

$$Q = 7 \times 0.9951 + (1 \times 1.0947) + 11.59 = 19.65 \text{ CFS}$$

- FIND Q ON WILD OLIVE AVE JUST EAST OF PRAIRIE VISTA DR.

$$Q = 24 \times 0.5969 + (4 \times 0.9951) = 18.31 \text{ CFS}$$



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• FIND WHERE TRANSITION FROM MOUNTABLE
TO STD C+G OCCURS ON WILD OLIVE AVE

$$\begin{aligned}d &= 1.21 \\WP &= 9.585 \\A &= .9014 \\V_{1/2} &= 4.428 \text{ F/S} \\Q_{1/2} &= 3.99 \text{ cfs} \\d + V^2/2g &= .51 \text{ OK}\end{aligned}$$

$$Q_{1/2} = 4 \times 0.9951 = 3.98 \text{ cfs} \quad \text{NO TRANSITION WILL OCCUR ON WILD OLIVE}$$

• FIND ^Q JUST PAST INTERSECTION OF WILD OLIVE AVE
AND PARRIE VISTA DR

$$Q = 19.65 + 18.31 = 37.96 \text{ cfs}$$

GRADE CHANGES TO 4.24%

FIND CAPACITY 32' FF STD C+G $N = 0.017$

$$\begin{aligned}d &= 0.4 \\WP &= 16.15 \\A &= 2.5656 \\V_{1/2} &= 5.28 \text{ F/S} \\Q_{1/2} &= 13.55 \text{ cfs}\end{aligned}$$

$$d + V^2/2g = 0.83 < 0.85 \text{ OK}$$

Q AT INTERSECTION IS TOO MUCH INLETS REQD.

ADD TWO 36" A" INLETS ON WILD OLIVE AVE
ONE BETWEEN LOTS 38+39 BLK 2
AND ONE AT THE RETURN.

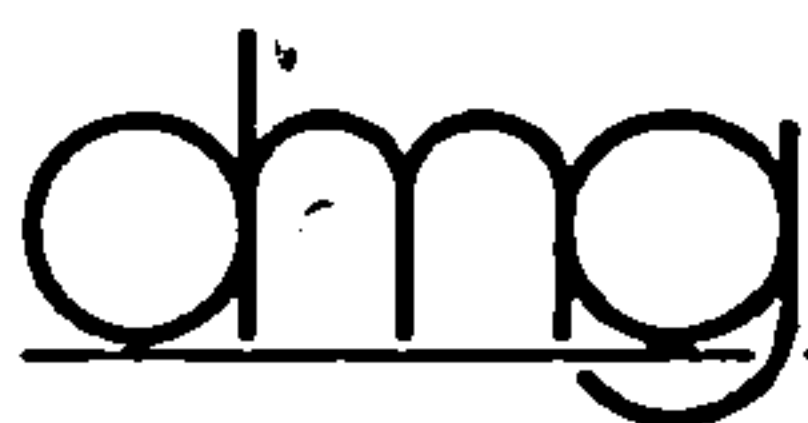
$$\begin{aligned}d &= 0.36 \quad S = 4.24\% \quad 32' \text{ FF} \\WP &= 14.11 \\A &= 1.98 \\V_{1/2} &= 4.85 \text{ F/S} \\Q_{1/2} &= 9.59 \text{ cfs} \times 2 = 19.18 \text{ cfs} \approx 18.31 \text{ OK}\end{aligned}$$

$$d + V^2/2g = 0.73 < 0.85 \text{ OK}$$

FROM NOMO SHEET 26

$$Q_{\text{GATE}} = 5.7 \text{ cfs}$$

$$\begin{aligned}Q_{\text{PAST INLETS AND PAST PARRIE VISTA DR}} &= 18.31 - 2(5.7) \\&= 6.91 \text{ cfs}\end{aligned}$$



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ADD TWO SGL "A" INLETS ON PRAIRIE VISTA DR
JUST SOUTH OF WILD OLIVE AVE

$$d = 0.40 \quad S = 2\% \quad 28' \text{ FF}$$

$$WP = 28.80$$

$$A = 5.07$$

$$V = 3.88 \text{ F/S}$$

$$d + \frac{V^2}{2g} = 0.66' < 0.85' \text{ OK}$$

$$Q = 19.69 \text{ CFS} \approx 19.65 \text{ CFS OK}$$

FROM NOMO SHEET 26

$$Q_{\text{GRATE}} = 5.5 \text{ CFS}$$

① PAST INLETS INTO WILD OLIVE AVE

$$= 19.65 - 2(5.5)$$

$$= 8.65 \text{ CFS}$$

- FIND Q IN WILD OLIVE AVE JUST WEST OF PRAIRIE VISTA DR

$$Q = 6.91 + 8.65 = 15.56$$

- FIND Q ON WILD OLIVE AVE JUST EAST OF PALM YUCCA DRIVE

$$Q = (11 \times 0.5969) + 15.56 = 22.13 \text{ CFS}$$

CAPACITY AT THIS POINT (SEE SHEET 5)

$$Q_{1/2} = 13.55 \text{ CFS} \times 2 = 27.10 \text{ CFS} > 22.13 \text{ CFS OK}$$

- CURB TRANSITION ON AUTUMN ROSE DR AND BLUE HOLLY CT

- FIND FLOW ON BLUE HOLLY CT

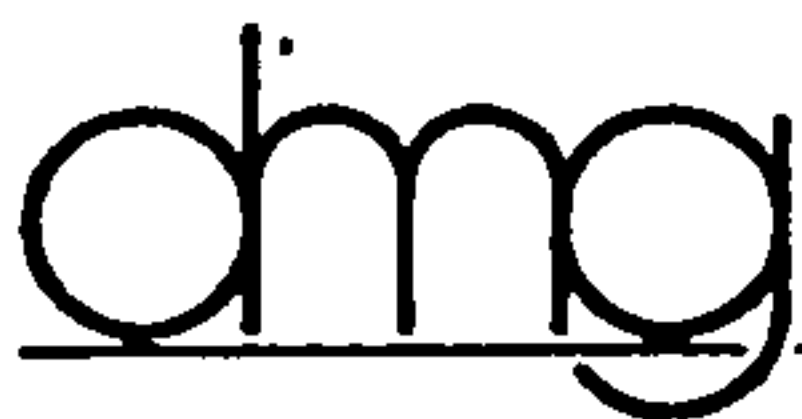
$$Q = 4 \times 1.1933 + (4 \times 1.0947) = 9.15 \text{ CFS}$$

THIS FLOW WILL ENTER CHANNEL

$$Q = 11.54 \text{ CFS}$$

$$Q = 2.95 L H^{1.5} \quad H = 8''$$

$$L = 5.78' \text{ USE } 6' \text{ OPENING}$$



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- SIZE CHANNEL FROM BLUE HOLLY CT TO BOXWOOD AVE

$$S = 11\% \quad n = 0.013 \quad 4' \text{ WIDE}$$

$$\begin{aligned} d &= 0.16 \\ wP &= 4.32 \\ A &= 0.64 \\ V &= 10.61 \text{ F/S} \\ Q &= 6.79 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 1.91'$$

$$S = 10\% \quad n = 0.013 \quad 9' \text{ WIDE}$$

$$\begin{aligned} d &= 0.10 \\ wP &= 9.20 \\ A &= 0.9 \\ V &= 7.67 \text{ F/S} \\ Q &= 6.91 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 1.01'$$

$$S = 0.5\% \quad n = 0.013 \quad 5' \text{ WIDE}$$

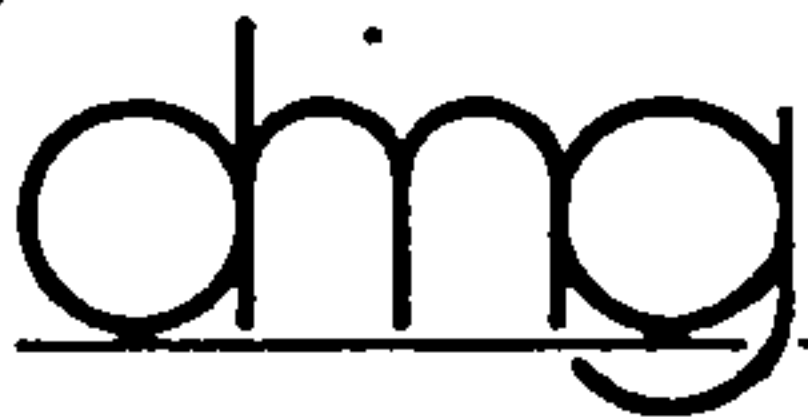
$$\begin{aligned} d &= 0.35 \\ wP &= 5.7 \\ A &= 1.75 \\ V &= 3.68 \text{ F/S} \\ Q &= 6.44 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.56' \text{ USE } 0.60'$$

$$S = 1.0\% \quad n = 0.013 \quad 4' \text{ WIDE}$$

$$\begin{aligned} d &= 0.32 \\ wP &= 4.62 \\ A &= 1.28 \\ V &= 4.86 \text{ F/S} \\ Q &= 6.22 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.69'$$

$$S = 1.0\% \quad n = 0.013 \quad 5' \text{ WIDE}$$

$$\begin{aligned} d &= 0.28 \\ wP &= 5.56 \\ A &= 1.4 \\ V &= 4.56 \text{ F/S} \\ Q &= 6.38 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.60'$$



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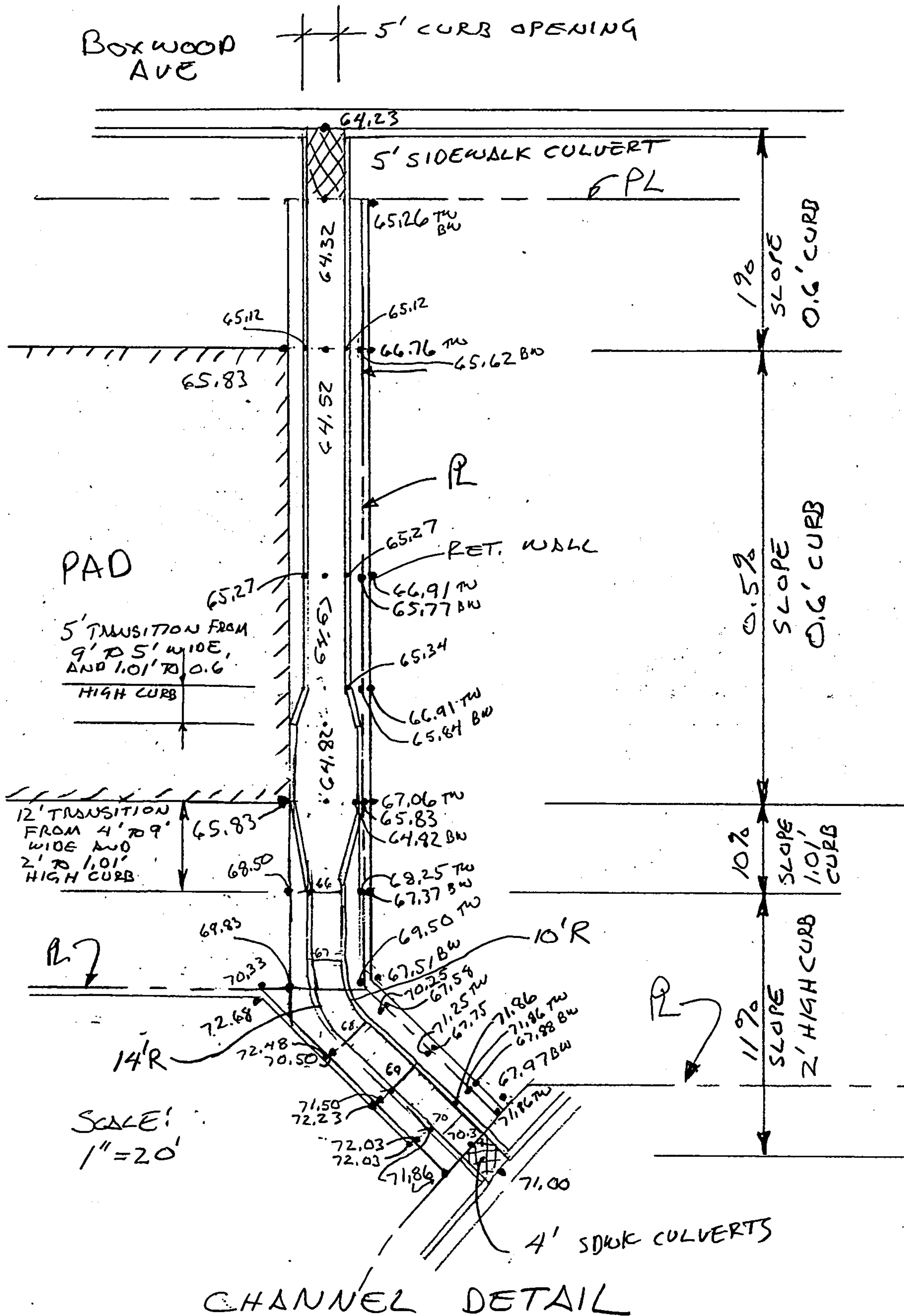
PROJECT DESERT RIDGE TRAILS

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- FIND TRANSITION FROM MOUNTABLE TO
STD C+G ON BOXWOOD AVE

$$S = 3.0\% \quad n = 0.017 \quad 28' FF$$

$$d = 0.28$$

$$WP = 13.16$$

$$A = 1.68$$

$$V_{1/2} = 3.84 \text{ F/S}$$

$$Q_{1/2} = 6.45 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.51' = 0.51' \text{ OK}$$

FIND Q AT CHANNEL ON BOXWOOD

$$Q = 5 \times 1.0947 + (5 \times 1.1933) + 9.15' = 20.59 \text{ CFS} > 2 \times 6.45 = 12.90$$

TOO MUCH

MOUNTABLE CURB UP TO CHANNEL
AND BETWEEN LOTS 4 + 5 BLOCK 13

- FIND FLOW JUST PAST CANYON SAGE DR ON BOXWOOD AVE

$$Q = 1 \times 1.0947 + (4 \times 0.9951) + (1 \times 1.1933) + 3 \times 0.6822 + 20.59 \\ = 28.91 \text{ CFS}$$

CAPACITY OF 33.5% 28' FF $n = 0.017$ STD C+G

$$d = 0.41$$

$$WP = 28.82$$

$$A = 5.35$$

$$V = 5.21 \text{ F/S}$$

$$Q = 27.85 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.83 < 0.85 \text{ OK}$$

CAPACITY OF 33.5% 32' FF $n = 0.017$ STD C+G

$$d = 0.43$$

$$WP = 32.86$$

$$A = 6.09$$

$$V = 5.20 \text{ F/S}$$

$$Q = 31.67 \text{ CFS} > 28.91 \text{ CFS OK}$$

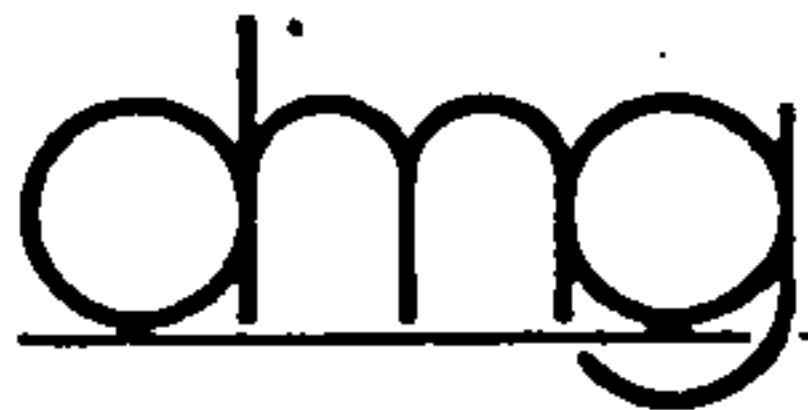
$$d + \frac{V^2}{2g} = 0.85' \approx 0.85' \text{ OK}$$

- INSTALL TWO 56L "A" INLETS ON BOXWOOD AVE
JUST PAST CANYON SAGE DR.

ONE BETWEEN LOT 24 + 25 BLOCK 2 AND

BETWEEN LOT 24 + 25 BLOCK 1

$$Q = 28.91 + 2(0.5118) + 1(1.5969) + 1(1.6822) \\ = 31.21 \text{ CFS} > 31.67 \text{ CFS OK}$$



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FROM NOMO SHEET 26

$$d = 0.42 \quad Q_{\text{GATE}} = 7.2 \text{ CFS}$$

Q PAST INLETS

$$Q = 31.21 - 2(7.2) = 16.81 \text{ CFS CONTINUES DOWN BOXWOOD}$$

• FIND FLOW ON BOXWOOD JUST WEST OF 20' PED TRAIL

$$Q = (22 \times 0.5118) + (2 \times 0.6822) + 16.81 = 29.43 \text{ CFS}$$

FIND CAPACITY OF 3.46% 32' FF $n = 0.017$

$$d = 0.42$$

$$WP = 32.84$$

$$A = 5.77$$

$$V = 5.10 \text{ F/S}$$

$$Q = 29.43 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.82 = 0.85 \text{ OK}$$

THE 29.43 CFS = 29.43 CFS OK

• FIND CAPACITY OF 3.33% 32' FF $n = 0.017$

$$d = 0.43$$

$$WP = 32.86$$

$$A = 6.09$$

$$V = 5.19 \text{ F/S}$$

$$Q = 31.58 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.85 = 0.85 \text{ OK}$$

• INSTALL TWO DBL 'A' INLETS ON BOXWOOD
ONE BETWEEN LOTS 13+14 BLOCK 1 AND
BETWEEN LOTS 12+13 BLOCK 2

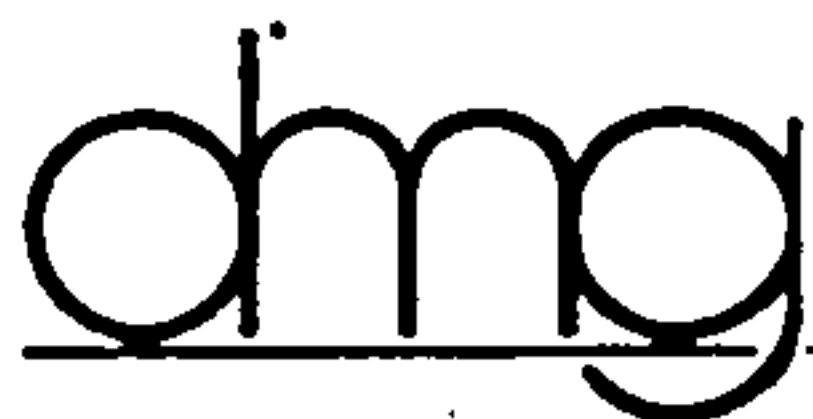
FROM NOMO SHEET 27

$$Q_{\text{gate}} = 7.6 \text{ CFS}$$

Q PAST INLETS

$$= 29.43 - 2(7.6)$$

$$= 14.23 \text{ CFS}$$



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— THE NEXT INLETS ARE TWO DBL "A"'S
ONE IS LOCATED AT THE RETURN AND
THE OTHER IS BETWEEN LOTS 63+64 BLOCK 8
THESE ARE ON BOXWOOD
FROM NODD SHEET 27

$$Q_{\text{grate}} = 8.0 \text{ cfs}$$

Q PAST INLETS ON BOXWOOD AVE

$$= 31.20 - 2(8) \\ = 15.20 \text{ cfs}$$

• FIND Q JUST WEST OF PALM YUCCA DR ON BOXWOOD AVE

$$Q = (23 \times 0.5118) + (5 \times 0.6822) + 3 \times 0.5969 + 14.23 \\ = 31.20 < 31.58 \text{ cfs SEE SH 10 OK}$$

• FIND Q ON BOXWOOD WHERE 3.33% SLOPE
CHANGES TO 1% SLOPE

$$Q = (6 \times 0.5969) + (6 \times 0.5118) + (1 \times 0.6822) + 13.49 \\ = 20.82 \text{ cfs} < 31.58 \text{ OK}$$

• FIND CAPACITY OF

$$32' \text{ FF } S = 1.0\%$$

$$d = 0.57$$

$$WP = 33.14$$

$$A = 11.21$$

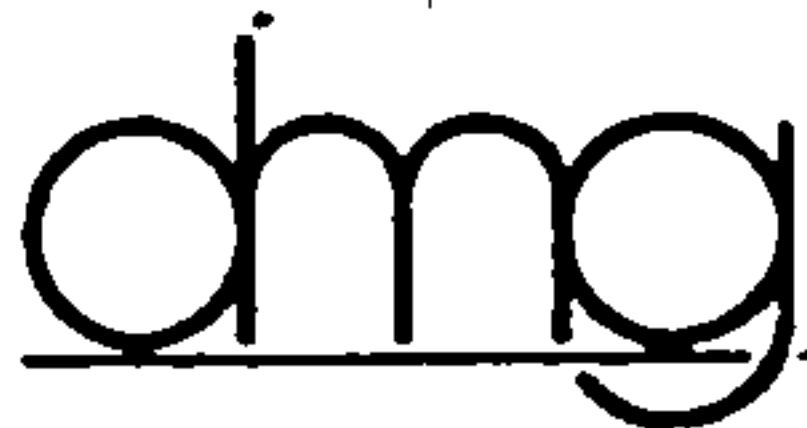
$$V = 4.24 \text{ F/S}$$

$$Q = 47.57 \text{ cfs}$$

$$d + \frac{V^2}{2g} = 0.85 = 0.85 \text{ OK}$$

• FIND Q ON BOXWOOD AT SILVER WOOD

$$Q = (8 \times 0.5969) + (6 \times 0.6822) + 15.20 + (4 \times 0.5118) \\ = 26.12 \text{ cfs} < 47.57 \text{ OK}$$



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- FIND FLOW ON PALM YUCCA DR JUST SOUTH OF WILD OLIVE AVE

$$Q = (11 \times 0.9951) + (2 \times 1.0947) + (2 \times 1.1933) + (7 \times 0.6822) \\ = 20.30 \text{ CFS}$$

$$d = 1.37 \quad S = 2.39\% \quad 28' \text{ FF}$$

$$WP = 28.74$$

$$A = 4.23$$

$$V = 3.77 \text{ F/S}$$

$$Q = 15.93 \text{ CFS}$$

$$d + \frac{V^2}{2g} = 0.59' < 0.85' \text{ OK}$$

- FIND FLOW ON PALM YUCCA DR JUST NORTH OF WILD OLIVE AVE

$$Q = 2 \times 0.5969 = 1.19 \text{ CFS}$$

- FIND TOTAL FLOW ON WILD OLIVE AVE JUST PAST PALM YUCCA DR.

$$Q = 22.13 + 20.30 + 1.19 \\ = 43.62 \text{ CFS TOO MUCH}$$

ADD 2 DRAINAGE INLETS ON WILD OLIVE AVE JUST EAST OF PALM YUCCA DR

$$Q = 22.13 \text{ CFS} \quad S = 4.24\% \quad 32' \text{ FF}$$

$$d = 0.39$$

$$WP = 15.46$$

$$A = 2.41$$

$$V_{1/2} = 5.10 \text{ F/S}$$

$$Q_{1/2} = 12.28 \text{ CFS} \times 2 = 24.56 \text{ CFS} > 22.13' \text{ OK}$$

FROM NOMO SHEET 27

$$Q_{\text{gate}} = 7.2 \text{ CFS}$$

Q THRU PALM YUCCA DR

$$= 22.13 - 2(7.2)$$

$$= 7.73 \text{ CFS}$$

Q JUST WEST OF PALM YUCCA DR

$$= 7.73 + 20.30 + 1.19$$

$$= 29.22 \text{ CFS}$$



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- FIND FLOW JUST WEST OF PALM YUCCA
ON WILD OLIVE AVE

$$Q = 29.22 + 0.6822 \\ = 29.90 \text{ CFS}$$

- FIND CAPACITY OF WILD OLIVE 3,26% 32' FF

$$\begin{aligned} d &= 0.43 \\ WP &= 32.86 \\ A &= 6.09 \\ V &= 5.13 \text{ F/S} \\ Q &= 31.24 \text{ CFS} \approx 29.90 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.84' < 0.85' \text{ OK}$$

- INSTALL 2 "8" INLETS ON WILD AVE
ONE BETWEEN LOTS 11+12 BLOCK 9
AND ONE AT THE RETURN
FROM NMD SHEET 28

$$Q_{\text{grate}} = 11.5 \text{ CFS}$$

$$\begin{aligned} Q_{\text{PAST INLETS}} \\ &= 29.90 - 2(11.5) \\ &= 6.90 \text{ CFS} \end{aligned}$$

- FIND FLOW ON SILVER SAGE DR
JUST SOUTH OF WILD OLIVE AVE

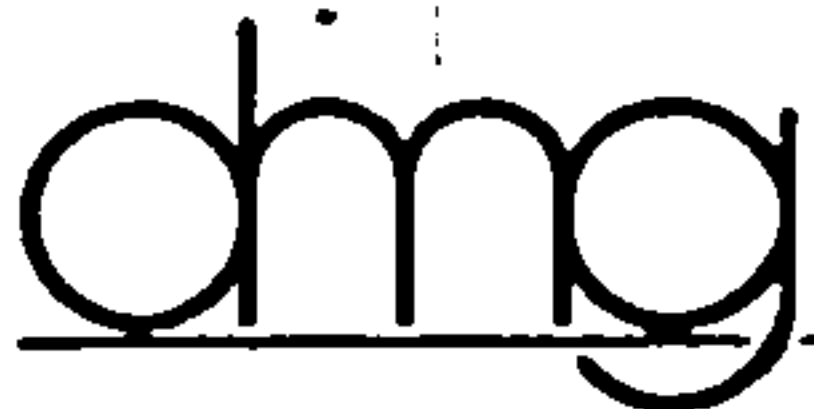
$$Q = 14 \times 0.6822 = 9.55 \text{ CFS}$$

- FIND FLOW ON WILD OLIVE AVE AT SILVERWOOD DR

$$\begin{aligned} Q &= 9 \times 0.5969 + 6.90 + 9.55 \\ &= 21.82 \text{ CFS} \end{aligned}$$

- FIND FLOW ON SILVERWOOD JUST NORTH
OF WILD OLIVE AVE

$$Q = 26.12 + (6 \times 0.5969) = 29.70 \text{ CFS}$$



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

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e-mail: dmgs@swcp.com

PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GJK DATE 5-18-01
CHECKED _____ DATE _____

REvised 8-6-01 SHEET 14 OF _____

- FIND FLOW IN HAWTHORN AVE AT BLUE MESA DR

$$Q = (7 \times 0.6822) + (4 \times 1.0947) + (1 \times 0.9951) \\ = 10.15 \text{ CFS}$$

- FIND FLOW IN HAWTHORN AVE AT PRAIRIE VISTA DR

$$Q = (8 \times 1.0947) + (7 \times 0.9951) + 10.15 \\ = 25.87 \text{ CFS}$$

FIND CAPACITY OF HAWTHORN AVE

$$S = 2.86 \quad 32' \text{ FF}$$

$$d = 0.44$$

$$WP = 32.88$$

$$A = 6.41$$

$$V = 4.97 \text{ F/S}$$

$$Q = 31.86 \text{ CFS} > 24.87 \text{ OK}$$

$$d + V^2/2g = 0.82 = 0.85 \text{ OK}$$

- ADD 2 DBL "A" INLETS ON HAWTHORN AVE

ONE AT THE RETURN OF PRAIRIE VISTA DR
AND ONE EAST OF THE 20' EASEMENT

$$d = 0.40$$

$$S = 3.75 \quad 32' \text{ FF}$$

$$WP = 16.15$$

$$A = 2.57$$

$$V_{1/2} = 4.97 \text{ F/S}$$

$$Q_{1/2} = 12.74 \text{ CFS} \times 2 = 25.48 \text{ CFS} \approx 25.87 \text{ CFS OK}$$

FROM NOMO SHEET 27

$$Q_{\text{GRATE}} = 7.4 \text{ CFS}$$

$$Q_{\text{PAST INLETS}} = 25.87 - 2(7.4) \\ = 11.07 \text{ CFS}$$

- FIND FLOW IN HAWTHORN AT PALM YUCCA DR.

$$S = 4.58\%$$

$$Q = 4 \times 1.0947 + 10 \times 0.9951 + 2 \times 0.6822 + 11.07 \\ = 26.76 \text{ CFS} \approx 2 \times 12.96 = 25.92$$

$$d = 0.39$$

$$WP = 15.64$$

$$A = 2.41$$

$$V_{1/2} = 5.38 \text{ F/S}$$

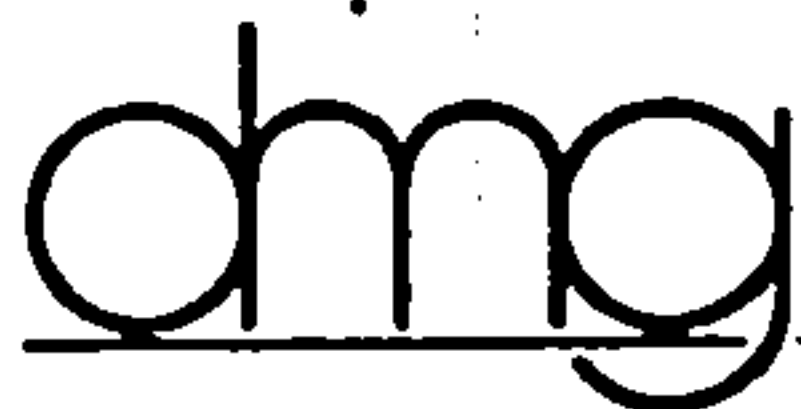
$$Q_{1/2} = 12.96 \text{ CFS}$$

$$d + V^2/2g = 0.84 < 0.85 \text{ OK}$$

USE 2 DBL A INLETS ON HAWTHORN

ONE AT THE RETURN OF PALM YUCCA DR

AND ONE EAST OF THE 20' EASEMENT



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REVISED 8-6-01 SHEET 15 OF _____

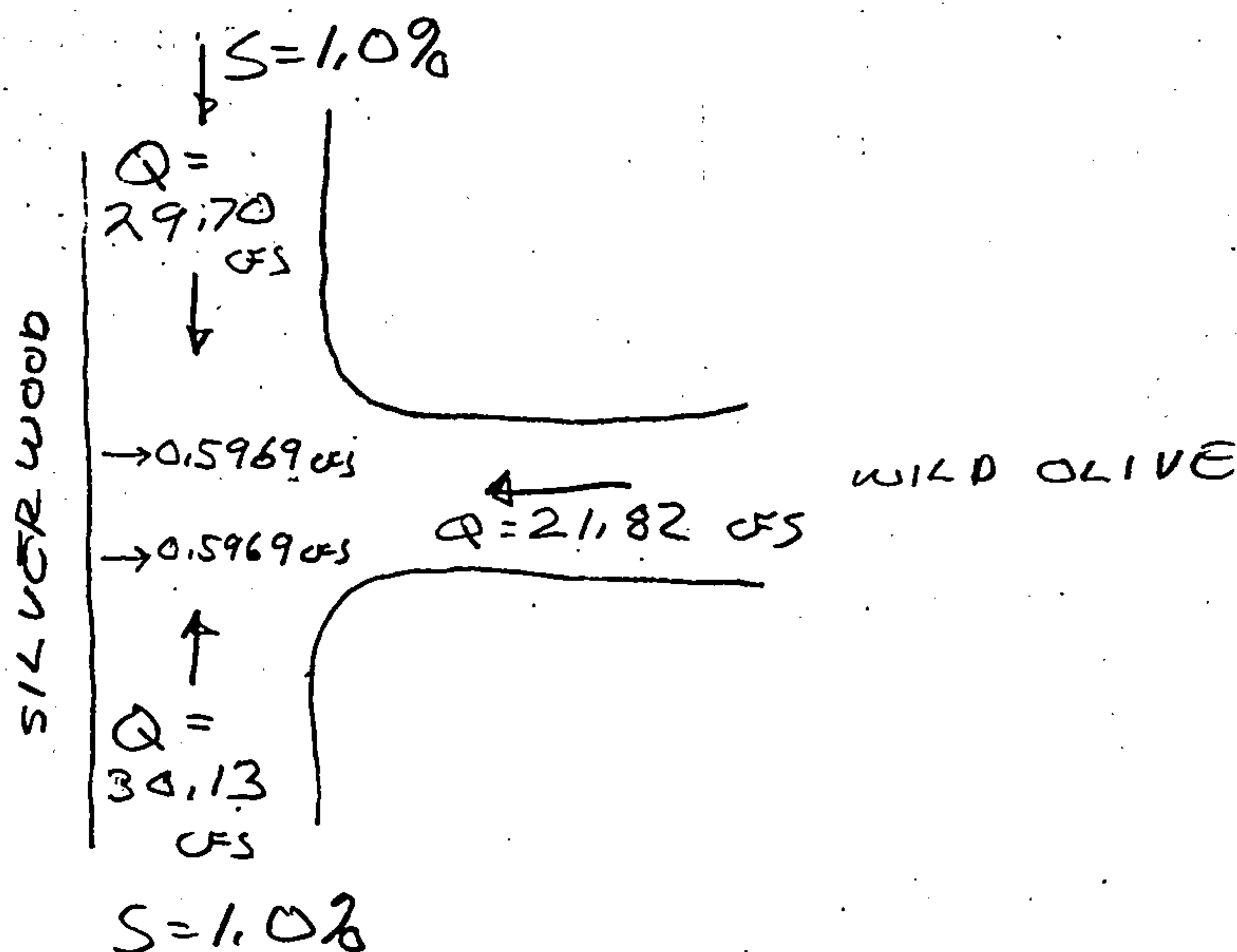
$$\begin{aligned} Q_{\text{PAST INLETS IN HAWTHORN}} &= 26.76 - 2(7.4) \\ &= 11.96 \text{ CFS} \end{aligned}$$

• FIND FLOW ON HAWTHORN AT SILVERWOOD

$$\begin{aligned} Q &= 9 \times 0.9951 + 11.96 \\ &= 20.92 \text{ CFS} \end{aligned}$$

• FIND FLOW JUST SOUTH OF WILD OLIVE
ON SILVERWOOD

$$\begin{aligned} Q &= (3 \times 0.6822) + (12 \times 0.5969) + 20.92 \\ &= 30.13 \text{ CFS} \end{aligned}$$



ADD FOUR DBL "A" INLETS ON SILVERWOOD
ONE BETWEEN LOTS 45+46 BLOCK 8
ONE BETWEEN LOTS 47+48 BLOCK 8
ONE EACH AT THE RETURNS

• FIND d ON SILVERWOOD NORTH OF WILD OLIVE

$$Q=30.20 \text{ CFS } S=1\% \quad 32' \text{ FF}$$

$$d=0.51$$

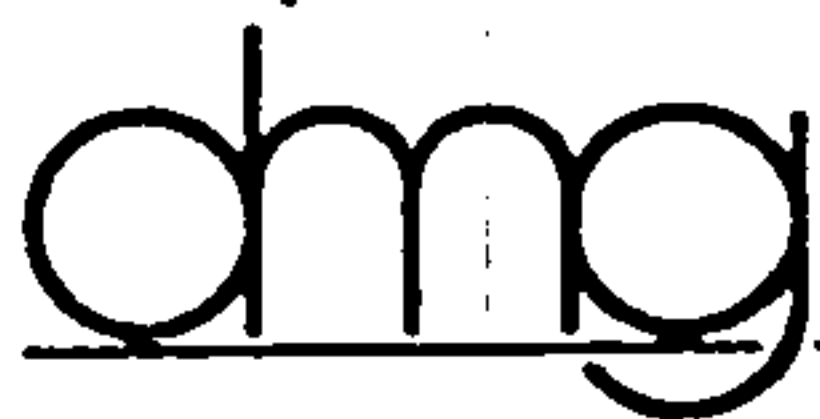
$$WP=33.02$$

$$A=8.65$$

$$V=3.58 \text{ F/S}$$

$$Q=30.96 \text{ CFS} \approx 29.70 \text{ CFS OK}$$

$$d + \frac{V^2}{2g} = 0.71' < 0.85' \text{ OK}$$



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REVISED 8-6-01 SHEET 16 OF _____

FROM NOMO SHEET 27

$$Q_{\text{grate}} = 7.4 \text{ cfs}$$

$$\begin{aligned} Q_{\text{PAST INLETS TO WILD OLIVE}} \\ &= 29.70 - 2(7.4) \\ &= 14.90 \text{ cfs} \end{aligned}$$

• FIND d ON SILVERWOOD SOUTH OF WILD OLIVE

$$Q = 30.13 \text{ cfs } S = 1\% \quad 32' \text{ FF}$$

$$\begin{aligned} d &= 0.50 \\ WP &= 33.00 \\ A &= 8.33 \\ V &= 3.49 \text{ F/S} \\ Q &= 29.08 \approx 30.13 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.67' < 0.85' \text{ OK}$$

FROM NOMO SHEET 27

$$Q_{\text{grate}} = 7.0 \text{ cfs}$$

$$\begin{aligned} Q_{\text{PAST INLETS TO WILD OLIVE}} \\ &= 30.13 - 2(7.0) \\ &= 16.13 \text{ cfs} \end{aligned}$$

• FIND Q IN SUMP CONDITION IN WILD OLIVE

$$\begin{aligned} &= 14.90 + 16.13 + 21.81 + 2 \times 0.5969 \\ &= 54.04 \text{ cfs} \quad \text{TOO MUCH} \end{aligned}$$

ADD 2 "B" INLETS ON WILD OLIVE BEFORE THE
2 DBL "A" DBL THROAT INLETS AT THE
INTERSECTION OF SILVERWOOD

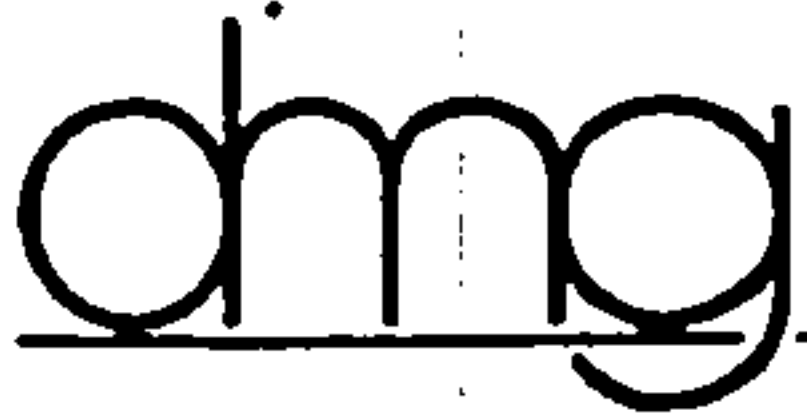
$$S = 3.2\% \quad 32' \text{ FF} \quad Q = 22.81 \text{ cfs}$$

$$\begin{aligned} d &= 0.40 \\ WP &= 76.15 \\ A &= 2.57 \\ V &= 4.59 \text{ F/S} \\ Q &= 23.54 \text{ cfs} \approx 21.82 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.73' < 0.85' \text{ OK}$$

FROM NOMO SHEET 28

$$Q_{\text{grate}} = 9.8 \text{ cfs}$$

$$\begin{aligned} Q_{\text{PAST ONTO THE DBL "A" DBL THROATS}} \\ &= 21.82 - 2(9.8) = 2.22 \text{ cfs} \end{aligned}$$



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REVISED 8-6-01

SHEET 17 OF _____

EVALUATE SUMP INLETS

- 2 DBL "A" DBL THROAT INLETS

$$\text{TOTAL } Q = 14.90 + 16.13 + 2.22 + 2 \times 0.5969 \\ = 33.25 \text{ cfs}$$

$$Q/P = 3.0 \text{ H}^{1.5}$$

$$P = 17 \times 2 = 34$$

$$H = 0.49' < 0.67' \text{ OK}$$

ASSUME 50% CLOGGED

$$P = 17$$

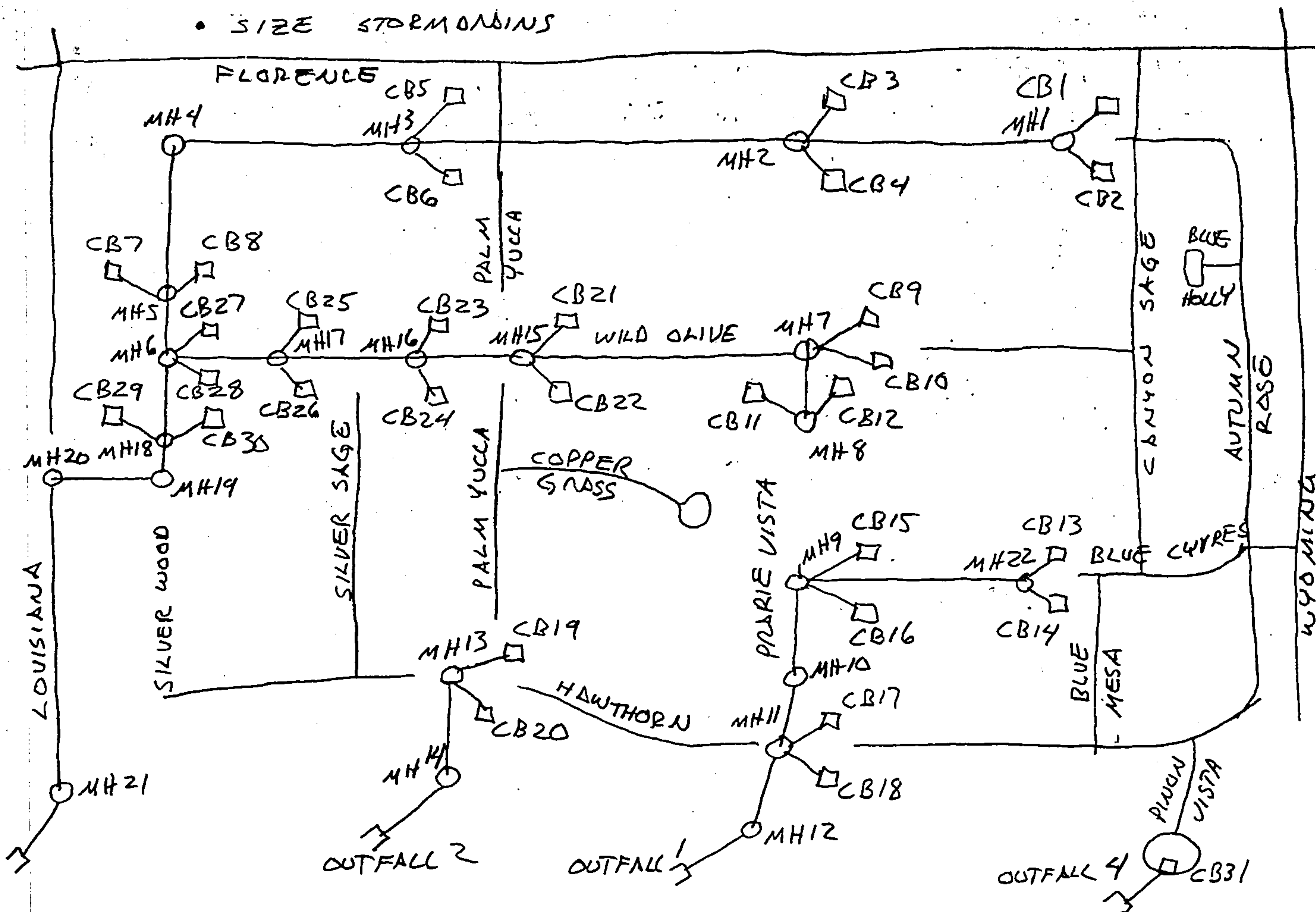
$$H = 0.78' < 0.85' \text{ OK}$$

FIND FLOW IN PINON VISTA CT.

$$Q = 10 \times 0.6822 + 3 \times 0.9951 \\ = 9.81 \text{ cfs}$$

THIS FLOW WILL DISCHARGE TO THE CHANNEL

SIZE STORMDRAINS





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SHEET 19A OF _____

- WE WILL CHANGE THE FLOW IN WYOMING ON SHEET 3
 - THE ADJACENT LOTS TO THE WEST WILL DRAIN TO THE WEST INTO A SWALE IN THE 20' DRAINAGE ROW.
 - ONLY THE WYOMING ROW WILL BE CALCULATED AS FLOW.

FROM SHEET 3

$$R/W = 1,4067 \text{ AC}$$

$$\begin{aligned} \text{TYPE D} &= 0.5424 + 0.4664 \\ &= 1.0088 \text{ AC} = 71.71\% \end{aligned}$$

$$\text{TYPE B} = 0.3979 \text{ AC} = 28.29\%$$

THIS ENTERS THE SUBDIVISION AT BLUE CYPRESS AVE
FROM AHYMO OUTPUT SHEETS 29-31

$$Q = 6,10 \text{ CFS} \quad \text{THIS IS 2.34 CFS LESS THAN SHEET 3.}$$

- FLOW FROM WYOMING FROM BLUE CYPRESS TO FLORENCE

$$A = 0.7881 \text{ AC}$$

$$\begin{aligned} \text{TYPE D} &= 68.46\% \quad 0.5396 \text{ AC} \\ \text{TYPE B} &= 31.54\% \end{aligned}$$

THIS FLOW ENTERS FLORENCE AVE
FROM AHYMO OUTPUT SHEETS 32-34

$$Q = 3.36 \text{ CFS}$$

- FLOW ON FLORENCE FROM WYOMING TO LOUISIANA

$$A = 3.6431 \text{ AC}$$

$$\begin{aligned} 80\% \text{ D} \\ 20\% \text{ B} \end{aligned}$$

FROM AHYMO OUTPUT SHEETS 35-37

$$Q = 16.52 \text{ CFS}$$

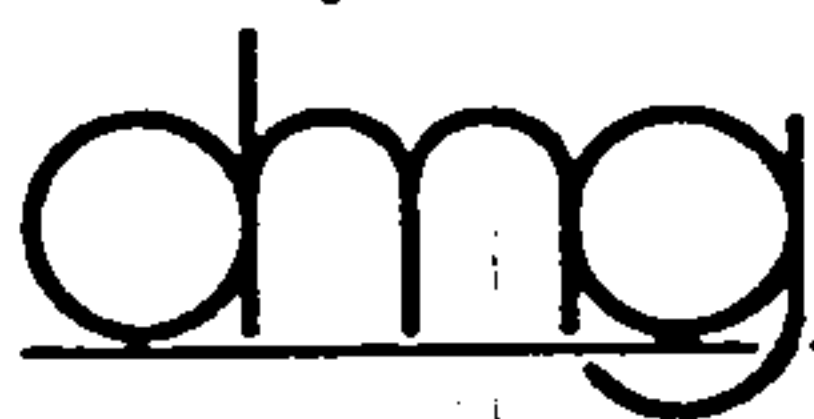
$$= 8.26 \text{ CFS PER SIDE}$$

WE WILL TURN RUNOFF INTO PALM YUCCA DRIVE.

THIS CONSISTS OF 73% OF Q + Q FROM WYOMING

$$\begin{aligned} Q_m &= 6.03 \text{ CFS} + 3.36 \text{ CFS} \\ &= 9.39 \text{ CFS} \end{aligned}$$

- 2.23 CFS CONTINUES DOWN FLORENCE TO LOUISIANA



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SHEET 19B OF _____

FROM SHEET 11

- Q JUST WEST PALM YUCCA ON BOXWOOD AVE
= 31,20 CFS

THIS IS RIGHT AT CAPACITY.

- INLETS WILL NEED TO BE ADDED ON PALM YUCCA
NORTH OF BOXWOOD AVE

- FIND d ON FLORENCE AT PALM YUCCA

$$S = 3.50\% \quad \text{STD C+G} \quad n = 0.017$$

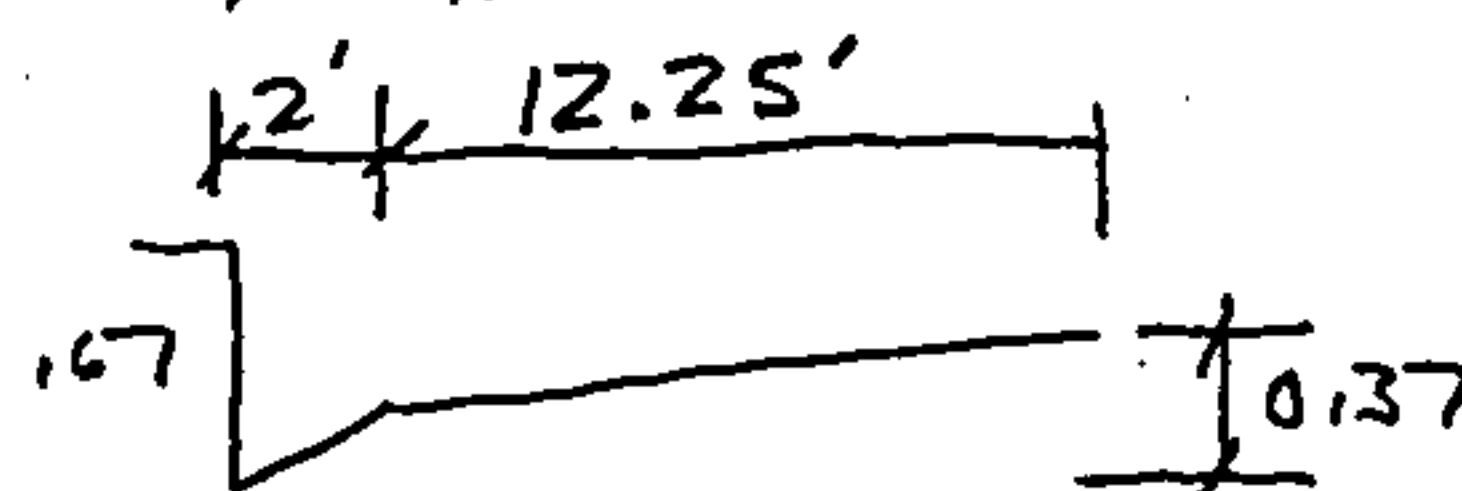
$$d = 0.37$$

$$WP = 14.62$$

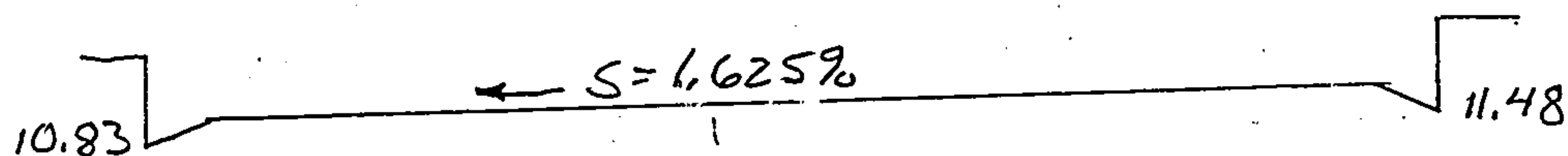
$$A = 2.1156$$

$$U = 4.507 \text{ F/S}$$

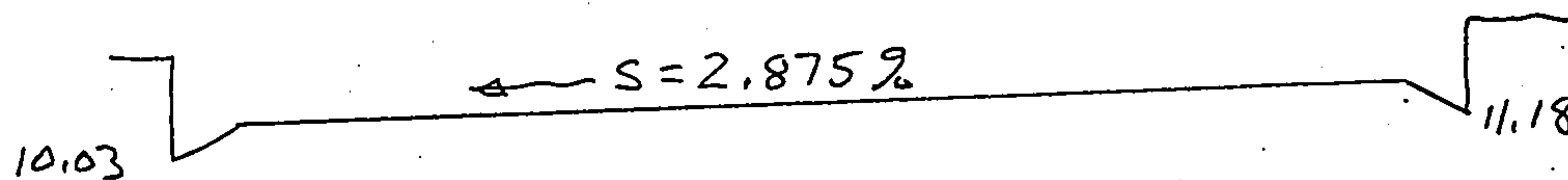
$$Q = 9.54 \text{ CFS} \approx 9.39 \text{ CFS} \quad \text{OK}$$



- FIND d ON PALM YUCCA



SECTION AT RETURNS AT NORTH END OF PALM YUCCA



SECTION AT RETURNS AT SOUTH END OF PALM YUCCA

FIND d AT SOUTH END $S = 1.2429\%$ STD C+G

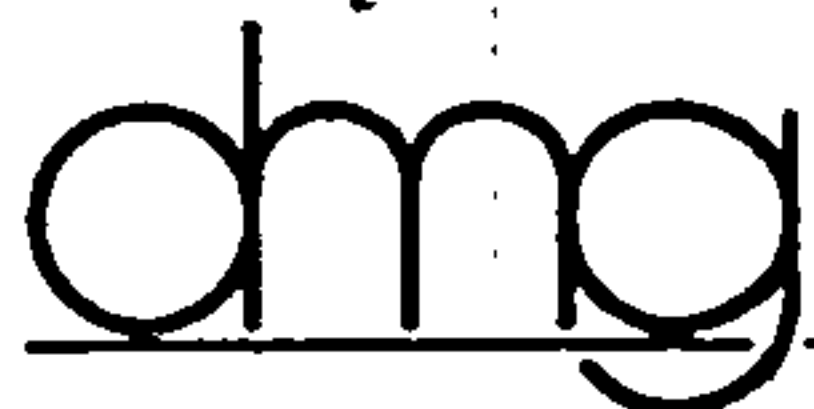
$$d = 0.47$$

$$WP = 14.47$$

$$A = 2.885$$

$$U = 3.33 \text{ F/S}$$

$$Q = 9.60 \text{ CFS} \approx 9.39 \text{ CFS} \quad \text{OK}$$



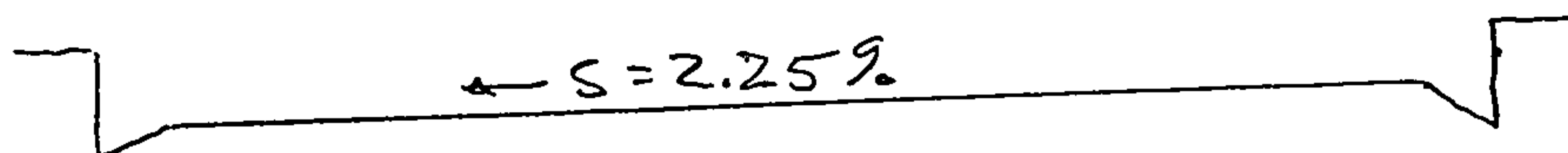
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SHEET 19C OF _____

• FIND d HALFWAY BETWEEN NORTH AND SOUTH ENDS

$$S = 1.2429\% \quad \text{STD C+G}$$



$$\begin{aligned} d &= 0.45 \\ WP &= 16.89 \\ A &= 3.12 \\ V &= 3.16 \text{ F/s} \\ Q &= 9.86 \text{ cfs} \approx 9.39 \text{ cfs} \quad \text{OK} \end{aligned}$$

FROM NOMO SHEET 41

$$Q_{\text{GATE}} = 6.0 \text{ cfs} \quad \text{DBL "A"}$$

$Q_{\text{PAST INLET}}$

$$9.39 - 6.2 = 3.19 \text{ cfs}$$

• FIND NEW d. AT SOUTH END $S = 1.2429\%$
 $S = 2.875\% \times \text{SLOPE}$

$$\begin{aligned} d &= 0.33 \\ WP &= 9.46 \\ A &= 1.266 \\ V &= 2.55 \text{ F/s} \\ Q &= 3.23 \text{ cfs} \approx 3.19 \text{ cfs} \quad \text{OK} \end{aligned}$$

FROM NOMO SHEET 42

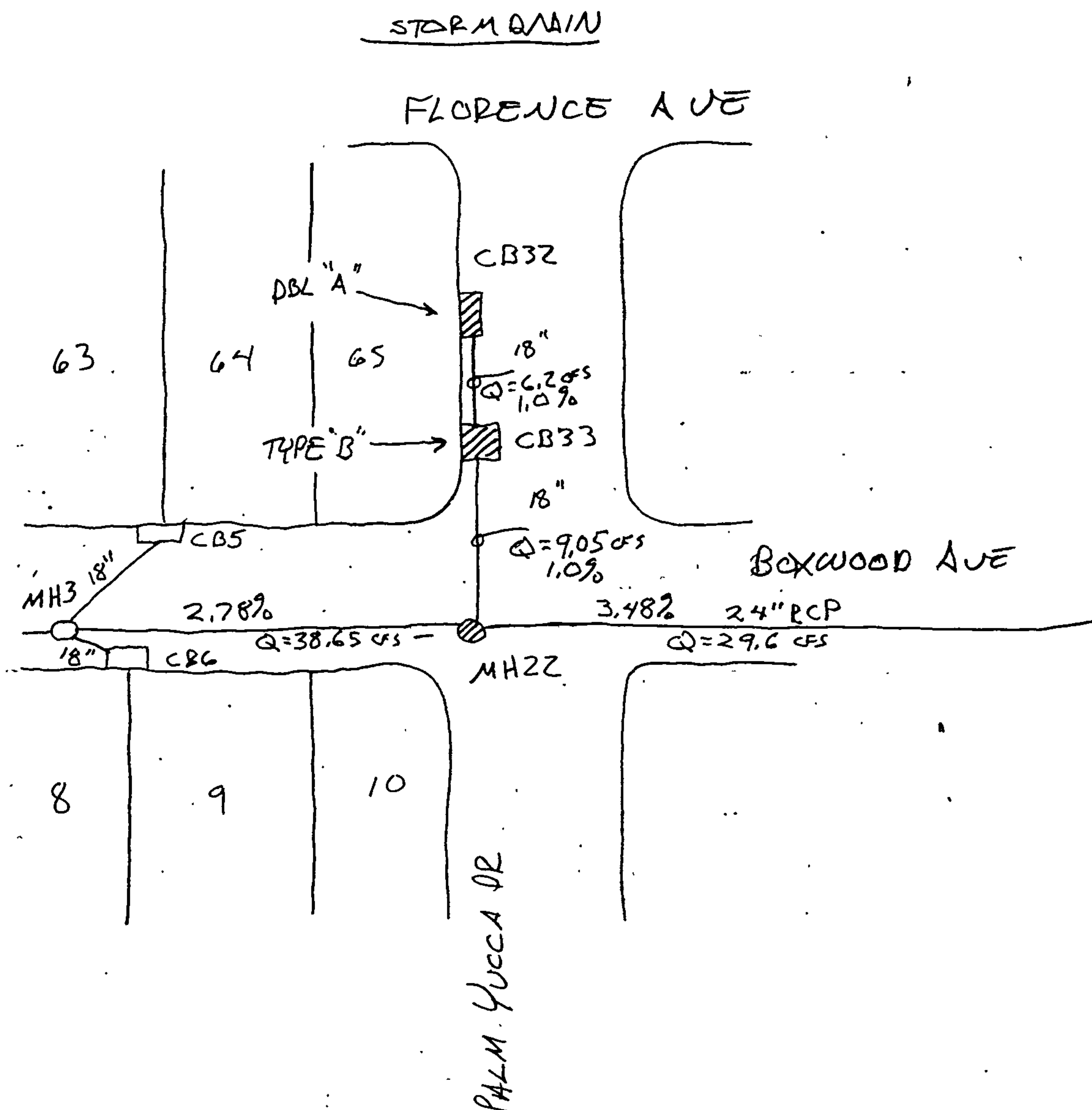
$$Q_{\text{GATE}} = 2.85 \text{ cfs} \quad \text{TYPE "B"}$$

$Q_{\text{PAST INLET}}$

$$3.19 - 2.85 = 0.34 \text{ cfs}$$

ADD THIS TO FLOW IN BOXWOOD WEST OF PALM YUCCA

$$\begin{aligned} Q &= 31.20 + 0.34 \\ &= 31.54 \text{ cfs} \approx 31.58 \text{ cfs} = \text{CAPACITY} \quad \text{OK} \end{aligned}$$



SEE REVISED SHEETS 18 + 19 FOR FLOW & SCOPE CHANGES

- FIND Q IN LOUISIANA BETWEEN N. MODESTO $\frac{1}{2}$ FLORENCE

$$A = 2.3747 \text{ AC.}$$

TYPE D $\Rightarrow 5.5/2$

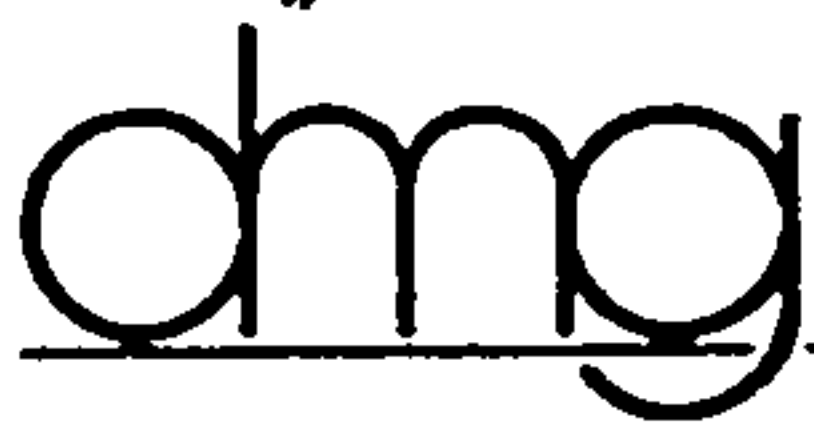
TYPE B = 24.49 %

FROM A44MC OUTPUT SHEETS 38-40

$$Q = 10.50 \text{ GS}$$

= 5.25 US EACH SIDE

- INSTALL DBL "A" JUST NORTH OF GLENDALE AVE ON EAST SIDE



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$$AREA = 1.3173 AC = 55.47\% \text{ TO INLETS}$$

$$Q \text{ AT INLET} = 5.25 \times 0.5547 \\ = 2.91 \text{ CFS}$$

• FIND d IN LOUISIANA AT INLET

$$S = 0.5\% \quad \times \text{SLOPE} = 1.0\%$$

$$d = 0.31$$

$$WP = 20.625$$

$$A = 2.206$$

$$V = 1.39 \text{ F/S}$$

$$Q = 3.07 \text{ CFS} \approx 2.91 \text{ CFS}$$

FROM NOMO SHEET 41

$$Q_{\text{GRATE}} = 1.75 \text{ CFS}$$

$$Q_{\text{PAST INLET}} = 5.25 - 1.75 \\ = 3.5 \text{ CFS}$$

• TOTAL Q THAT REACHES THE SE CORNER OF
FLORENCE AND LOUISIANA

$$Q = 2.23 + 3.5 \\ = 5.73 \text{ CFS}$$

THIS FLOW WILL FOLLOW THE HISTORICAL
PATH AT THE NW CORNER OF INTERSECTION

3-1910019

Scanned
8/18/14

CPN 675481

AGREEMENT AND COVENANT

8/21/2002

This Agreement and Covenant, between the City of Albuquerque, New Mexico ("City") and Mesa Verde Development Corporation, ("User") is made in Albuquerque, New Mexico and is entered into as of the date Enterprises, Inc. Road SW of recording this Agreement with the Bernalillo County Clerk.

1. Recital. The User is the owner of certain real property ("User's Property") located at northwest corner of Florence Ave. and Wyoming Blvd., in Albuquerque, New Mexico, and more particularly described as: (give legal description and filing information)

Lots 17-20, block 4 Unit 3, Tract 1, NAA, filed in the Bernalillo County clerk's office September 10, 1931, Volume D, Folio 121A

The City is the owner of certain real property, easement or public right-of-way ("City's Property") in the vicinity of, contiguous to, abutting or within User's Property, and more particularly described as:

Portions of Wyoming Blvd NE, Florence Ave NE and a Temporary Public Drainage easement on Lots 17-20, filed in the Bernalillo County clerk's office August 21, 2002, Volume A-40 Folio 5110.

The User wishes to construct upon, improve or repair and to maintain the following "Improvement" on the City's Property (or already has done so):

Temporary Arroyo Diversion

A sketch of the proposed or existing Improvement is attached as Exhibit A and made a part of this Agreement.

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. City Use of City's Property and City Liability. The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. The cost of repairing the Improvement will be paid by User.

rp4/
f:\de



Mary Herrera

Bern. Co. AGRE

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Page: 1 of 6
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3. User's Responsibility for Improvement. The User will be solely responsible for constructing, maintaining, repairing and, if required, removing the Improvement, all in accordance with standards required by the City as per the approved Grading and Drainage Plan File B19-D19 on file at the City Engineer's office. The User will be solely responsible for paying all related costs. The User will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The User will conform with all applicable laws, ordinances and regulations.

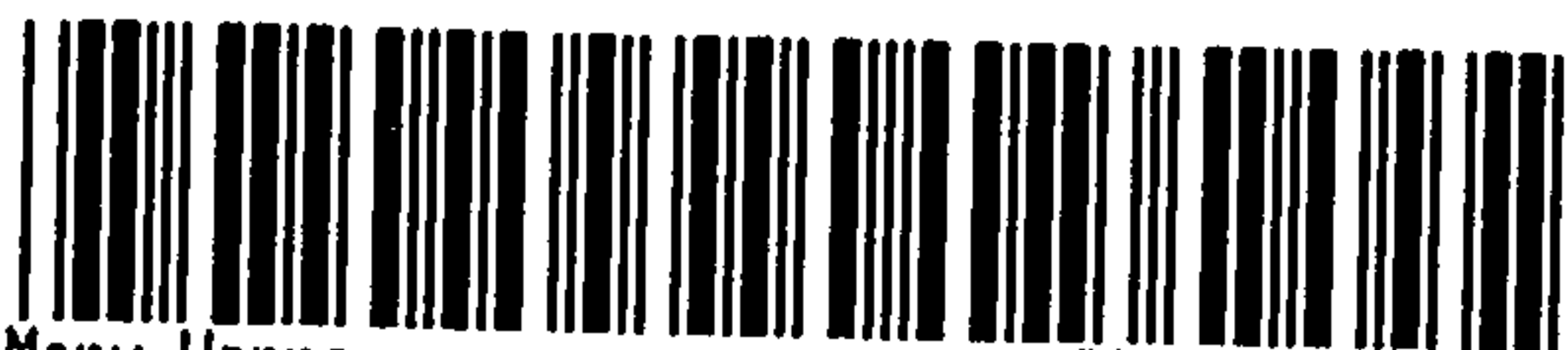
4. Use of the Improvement. If the City's Property is a public right-of-way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods of construction, maintenance or repair.

5. Demand for Repair, Modification or Removal. The City may send written notice ("Notice") to the User requiring the User to repair, modify or remove the Improvement within 30 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.

6. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User for the cost of the work and for any other expenses or damages which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the city within thirty (30) days after the City gives the User written notice of the amount due, the City may impose a lien against User's Property for the total resulting amount.

7. Cancellation of Agreement and Release of Covenant. This Agreement may be canceled, and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

8. Condemnation. If any part of the User's Property is ever condemned by the City, the User will forego all claims to compensation for any portion of User's structure which encroaches on City Property and for severance damage to the remaining portion of User's structure on User's Property.



9. Assessment. Nothing in this Agreement shall be construed to relieve the User, his heirs, assigns and successors from an assessment against User's Property for improvements to the City Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Improvement will not reduce the amount assessed by the City.

10. Notice. For purposes of giving formal written notice to the User, User's address is:

*Mesa Verde Development Corp.
P.O. Box 91417
Albuquerque, NM 87199*

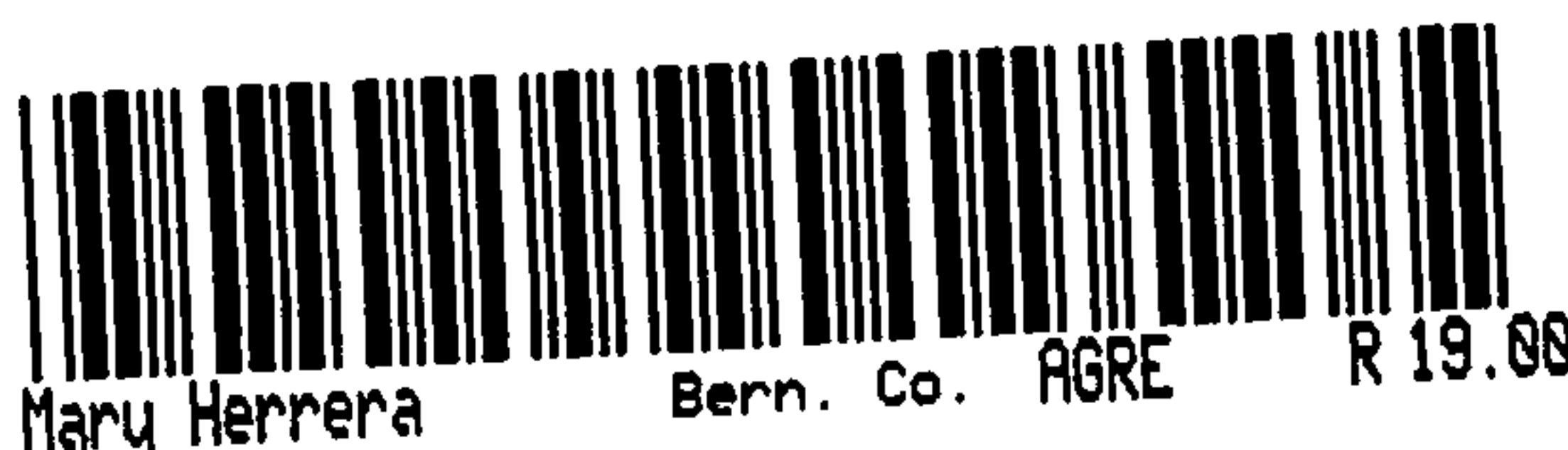
Notice may be given to the User either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the User within 3 days after the notice is mailed if there is no actual evidence of receipt. The User may change User's address by giving written notice of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 87103.

11. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of user's use of the City's Property. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expense, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

12. Term. This Agreement shall continue until revoked by the City pursuant to Section 7 above.

13. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs, assigns and successors and on User's Property and constitute covenants running with User's Property until release by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.



15. Changes of Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

CITY OF ALBUQUERQUE:

By: *Fred J. Aguirre*
Chief Administrative Officer
Dated: 8-21-02

USER:

By: *John Clark*
Title: V.P.
Dated: 8-21-02

APPROVED:

Fred J. Aguirre 8/21/02
Director, Public Works Dept. *6/4/02*

Reviewed by:

Fred J. Aguirre
City Engineer *8/21/02*
H. G. G. G. G.

CITY'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on August 21, 2002, by Fred J. Aguirre *for* Chief Administrative Officer for the City of Albuquerque, a New Mexico municipal corporation, on behalf of the corporation.

My Commission Expires:

11-15-2003

Gloria V. Saavedra
Notary Public

rp44
f:\d



Mary Herrera

Bern. Co. AGRE

R 19.00

2002105417

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Page: 4 of 6

08/21/2002 02:25P

Bk-A40 Pg-5111

USER'S ACKNOWLEDGMENT

STATE OF New Mexico)
) SS
COUNTY OF Bernalillo)

This instrument was acknowledged before me on 5/21,
2002, by John Clarke, Vice Pres.,
on behalf of Mesa Verde Development Corp.

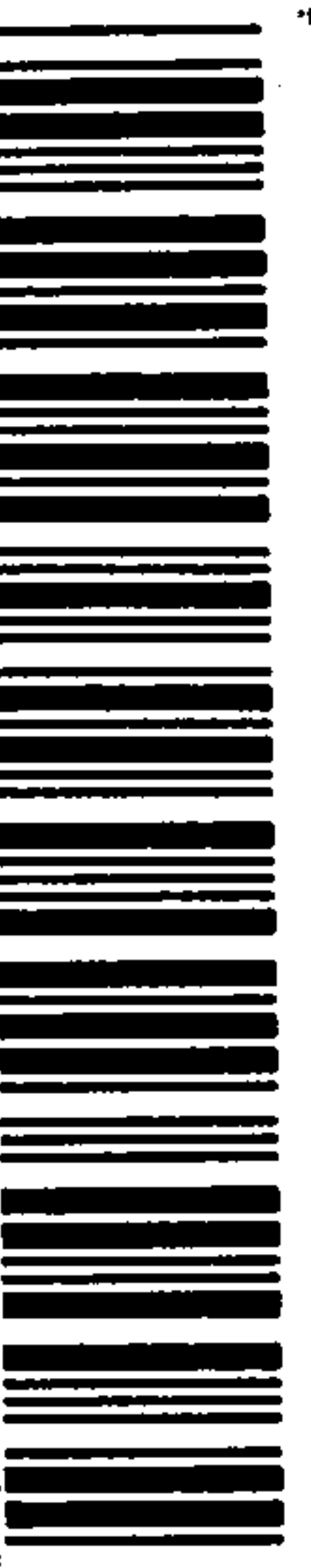
My Commission Expires:

Cindy Edson
Notary Public



OFFICIAL SEAL
CINDY EDSON
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 8/4/05



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Page: 6 of 6
08/21/2002 02:25P
BK-R40 Pg-5111

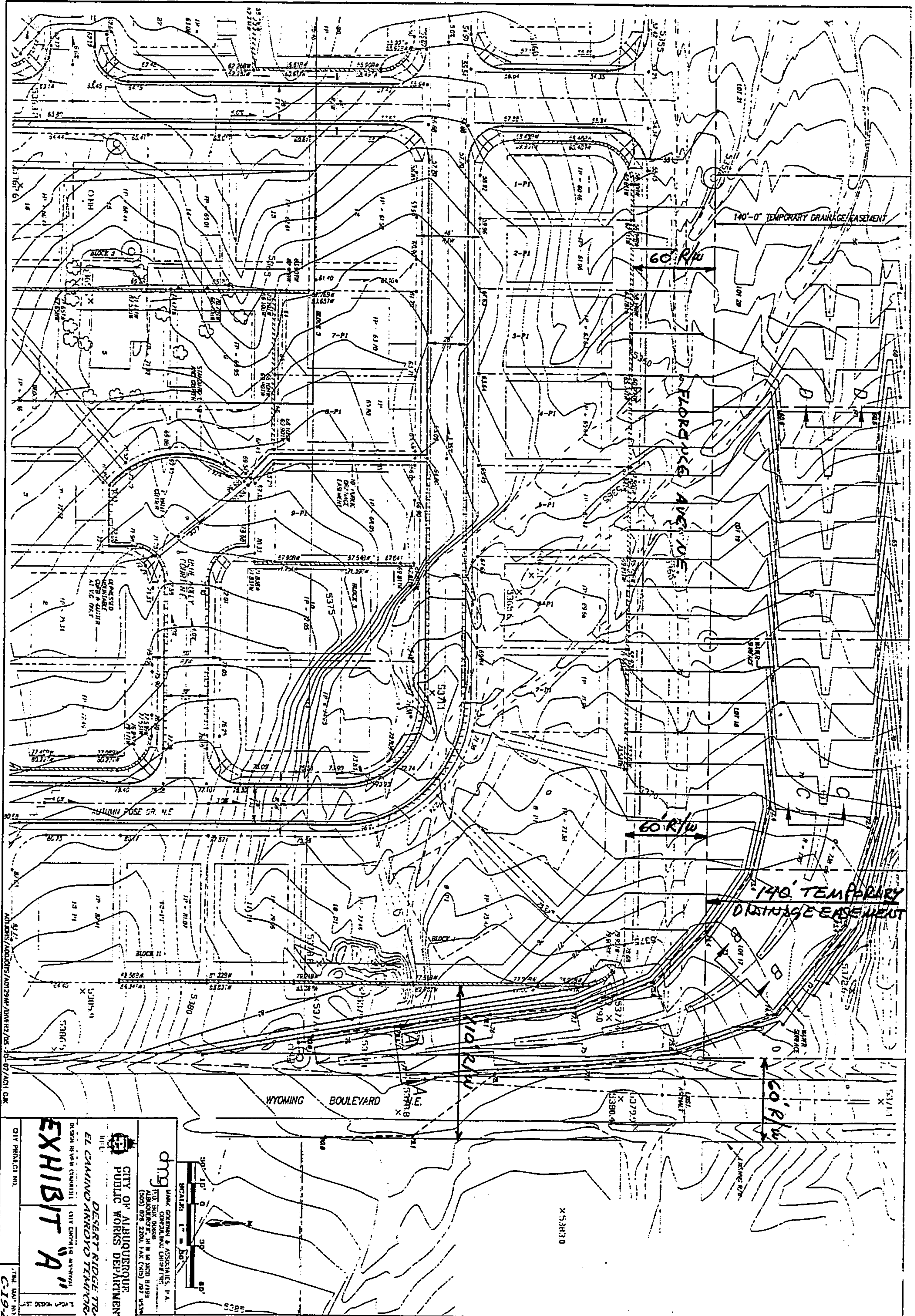


EXHIBIT "A"

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

DESERT RIDGE TRAILS
EL CAMINO ARROYO TEMPORARY DIVERSION

DESIGNER: [Signature]
DRAWN BY: [Signature]
CHECKED BY: [Signature]

DATE: 08/21/02

NO.	DATE	REMARKS
1	08/21/02	DESIGNED BY: [Signature]
2	08/21/02	DRAWN BY: [Signature]
3	08/21/02	CHECKED BY: [Signature]



SURVEY INFORMATION		BENCH MARKS		AS BUILT INFORMATION	
NO.	DATE	NAME	LOCATION	DATE	BY
1	08/21/02	ALBUQUERQUE	TO REACH THE STATION FROM THE INTERSECTION OF I-40 AND LOUISIANA BLVD. 0.25 MILES TO THE STATION ON THE LEFT. THE STATION MARK IS A STANDARD ACS ALUMINUM CAP STAMPED "71-C18 1985". IT IS RATED TO A 2 1/2" ALUMINUM TUBE 5/8" DIA. PROJECTING 0.1 FT. ABOVE THE GROUND.	DATE	BY
2	08/21/02	ALBUQUERQUE	TO REACH THE STATION FROM THE INTERSECTION OF I-40 AND LOUISIANA BLVD. 0.25 MILES TO THE STATION ON THE LEFT. THE STATION MARK IS A STANDARD ACS ALUMINUM CAP STAMPED "71-C18 1985". IT IS RATED TO A 2 1/2" ALUMINUM TUBE 5/8" DIA. PROJECTING 0.1 FT. ABOVE THE GROUND.	DATE	BY

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Contact Person KATHY JARAMILLO
Phone No. 924-3996

Project # 675481
CCN# 200200642
~~New or~~ (Ext. #)

Type of Agreement: temp. const. - easement & agreement & covenant

Description/Project Name: Desert Ridge Trails #1
Public Works Dept./Div.: DESIGN REVIEW
Developer: Mesa Verde Dev. Corp
Contract Amount \$ -0- SIA Contract Period: 8/21/02 - 12/31/2022
Contract Amount \$ -0- SIA Contract Period: 8/21/02 - 12/31/2022
Contract Amount \$ S/W Contract Period:

DRAFT CONTRACT:

Rec'd by Legal: Rejected/Returned to Dept.: 01/13/02 KJE
Returned to Legal: / Approved: Initials:

FINANCIAL GUARANTY:

Letter of Credit No.: Date: Attached: Yes No Initial
Other: Type Date: Attached: Yes No Initial

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	<u>Date Delivered</u>	<u>Returned to Dept.</u>	<u>Approved By</u>	<u>Approval Date</u>
Utility Div	<u></u>	<u></u>	<u></u>	<u></u>
Hydrology Div	<u>5/28/2002</u>	<u>5-25-02</u>	<u>Carlin M</u>	<u>5-25-02</u>
Transportation Div	<u></u>	<u></u>	<u></u>	<u></u>
DRC Chairman	<u>5/29/02</u>	<u>6-11/02</u>	<u></u>	<u>6/4/02</u>
Legal Dept	<u>6/5/02</u>	<u>6/6/02</u>	<u></u>	<u>6/20/02</u>
City Engineer	<u>6/12/02</u>	<u>8/21/02</u>	<u>FA</u>	<u>8/21/02</u>
PWD Director	<u></u>	<u></u>	<u></u>	<u></u>
Finance	<u></u>	<u></u>	<u></u>	<u></u>
City Clerk	<u></u>	<u></u>	<u></u>	<u></u>
CAO	<u></u>	<u></u>	<u></u>	<u></u>

DISTRIBUTION:

	<u>Date:</u>	<u>By:</u>
User Department.	<u>8/21/02</u>	<u>IS</u>
Vendor	<u></u>	<u></u>
City Clerk	<u>8/26/02</u>	<u>mm</u>
Treasury	<u></u>	<u></u>
Other: <u></u>	<u></u>	<u></u>

ALBUQUERQUE CITY CLERK

02 AUG 26 PM 3:34

ADDENDUM TO COVER PAGE

5/28/02

(Date)

TO: Kevin Curran, Assistant City Attorney, Legal Department

FROM: Project Administrator, Project Review Sec., PWD

SUBJECT: PROJECT TITLE: Desert Ridge Trails #1 PROJECT # 675481

The attached documents have been review, approved, initialed and/or signed by the DRC Chairman and are submitted for your action as noted.

ITEM	ACTION		
	<u>Review & Approval</u>	<u>Reference</u>	<u>Comments</u>
Procedure "A".....	☐ ☐ ☐	☐ ☐	_____
Procedure "B".....	☐ ☐ ☐	☐ ☐	_____
Procedure "B" Modified Non Work Order.....	☐ ☐ ☐	☐ ☐	_____
Procedure "C".....	☐ ☐ ☐	☐ ☐	_____
Procedure "C" Modified.....	☐ ☐ ☐	☐ ☐	_____
Special Agreement.....	☐ ☐ ☐	☐ ☐	_____
Sidewalk Deferral Agreement.....	☐ ☐ ☐	☐ ☐	_____
Amendment.....	☐ ☐ ☐	☐ ☐	_____
Assignment.....	☐ ☐ ☐	☐ ☐	_____
Financial Guarantee.....	☐ ☐ ☐	☐ ☐	_____
Construction Paperwork:			
Contractors Proposal.....	☐ ☐ ☐	☐ ☐	_____
Performance/Warranty Bonds.....	☐ ☐ ☐	☐ ☐	_____
Labor/Material Bonds.....	☐ ☐ ☐	☐ ☐	_____
Certificate of Insurance.....	☐ ☐ ☐	☐ ☐	_____
Engineers Cost Estimate.....	☐ ☐ ☐	☐ ☐	_____
Extension.....	☐ ☐ ☐	☐ ☐	_____
Release/Agreement.....	☐ ☐ ☐	☐ ☐	_____
Release/Financial Guarantee.....	☐ ☐ ☐	☐ ☐	_____
Calling Notice.....	☐ ☐ ☐	☐ ☐	_____
Letter of Commitment.....	☐ ☐ ☐	☐ ☐	_____
Reduction Letter.....	☐ ☐ ☐	☐ ☐	_____
License Agreement.....	☐ ☐ ☐	☐ ☐	_____
Monitoring Well Permit.....	☐ ☐ ☐	☐ ☐	_____
Agreement & Covenant.....	☒ ☐ ☐	☐ ☐	_____
Drainage Covenant.....	☐ ☐ ☐	☐ ☐	_____
Revocable Permit.....	☐ ☐ ☐	☐ ☐	_____
Encroachment.....	☐ ☐ ☐	☐ ☐	_____
Permanent Easement.....	☐ ☐ ☐	☐ ☐	_____
Temporary Easement.....	☒ ☐ ☐	☐ ☐	_____

Other:

Please Call Kach at 3996 if you have any questions regarding the above or when the documents are ready to be picked up.

No. of Attachments (2)