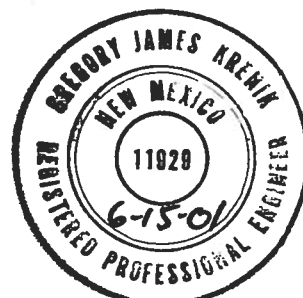


DRAINAGE REPORT
for
DESERT RIDGE TRAILS



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



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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 AHYMO 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 AHYMO 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 3 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
80	(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
7.9	(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

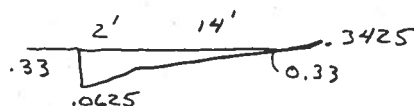
WP = 15.705

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

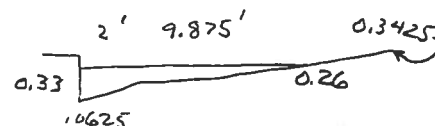
WP = 12.135

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

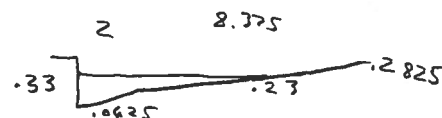
WP = 10.605

A = 1.0989

V_{1/2} = 4.1908 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

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



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PROJECT DESERT RIDGE TRAILS

SUBJECT DRAINAGE CALCS

BY GSK DATE 5-18-01

CHECKED _____ DATE _____

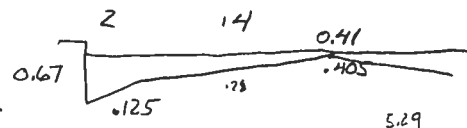
SHEET 3 OF _____
REVISED 8-6-01

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 AHYMO OUTPUT SHEETS 23-25

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

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

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

STREET CAPACITY AT THIS POINT
REQUIRES STD C+G AFTER THE RETURNS

- FIND FLOW ON BLUE CYPRESS AT CANYON SAGE DR.

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

FROM THIS SHEET



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BY GSK DATES 5-18-01
CHECKED _____ DATE _____
SHEET 4 OF _____
REVISED 8-6-01

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

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

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

FROM NONG 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.

$$Q = 7 \times 0.9951 + 12.33 + 5.84 = 25.19 \text{ CFS} < 27.97 \text{ OK} \\ S = 4.17\% \text{ 32' FF} \quad \text{PARK} \rightarrow$$

$$d = 0.40$$

$$WP = 16.15$$

$$A = 2.5656$$

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

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

$$1 + \frac{V^2}{2g} = 0.83 < 0.85 \text{ OK}$$

- INSTALL 2 SGL "A" INLETS AT RETURNS ON BLUE CYPRESS FROM NONG 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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PROJECT DESERT RIDGE TRAILS
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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

$$\begin{aligned}d &= .121 \\ WP &= 9.585 \\ A &= .9014 \\ V_{1/2} &= 4.428 \text{ F/S} \\ Q_{1/2} &= 3.99 \text{ CFS} \\ d + V_{1/2}^2/2g &= .51 \text{ OK}\end{aligned}$$

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

- 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 $N = 0.017$

$$d = 0.4$$

$$WP = 16.15$$

$$A = 2.5656$$

$$V_{1/2} = 5.28 \text{ F/S}$$

$$Q_{1/2} = 13.55 \text{ CFS}$$

$$d + V_{1/2}^2/2g = 0.83 < 0.85 \text{ OK}$$

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

$$d = 0.36 \quad S = 4.24\% \quad 32' \text{ FF}$$

$$WP = 14.11$$

$$A = 1.98$$

$$V_{1/2} = 4.85 \text{ F/S}$$

$$d + V_{1/2}^2/2g = 0.73' < 0.85 \text{ OK}$$

$$Q_{1/2} = 9.59 \text{ CFS} \times 2 = 19.18 \text{ CFS} \approx 18.31 \text{ CFS}$$

FROM NOMO SHEET 26

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

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



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

ADD TWO SGL "A" INLETS ON PRARIE 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

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

$$\begin{aligned} \text{① PAST INLETS INTO WILD OLIVE AVE} \\ = 19.65 - 2(5.5) \\ = 8.65 \text{ CFS} \end{aligned}$$

- FIND Q IN WILD OLIVE AVE JUST WEST OF PRARIE 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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PROJECT DESERT RIDGE TRAILS
SUBJECT DRAINAGE CALCS
BY GJK DATE 5-18-01
CHECKED _____ DATE _____
SHEET 7 OF _____

- SIZE CHANNEL FROM BLUE HOLLY CT TO BOXWOOD AVE

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

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

$$\begin{aligned} S &= 10\% \quad n = 0.013 \quad 9' \text{ WIDE} \\ d &= 0.10 \\ WP &= 9.20 \\ A &= 0.9 \\ V &= 7.67 \text{ F/S} \\ Q &= 6.91 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 1.01'$$

$$\begin{aligned} S &= 0.5\% \quad n = 0.013 \quad 5' \text{ WIDE} \\ d &= 0.35 \\ WP &= 5.7 \\ A &= 1.75 \\ V &= 3.68 \text{ F/S} \\ Q &= 6.44 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.56' \text{ USE } 0.60'$$

$$\begin{aligned} S &= 1.0\% \quad n = 0.013 \quad 4' \text{ WIDE} \\ d &= 0.32 \\ WP &= 4.62 \\ A &= 1.28 \\ V &= 4.86 \text{ F/S} \\ Q &= 6.22 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.69'$$

$$\begin{aligned} S &= 1.0\% \quad n = 0.013 \quad 5' \text{ WIDE} \\ d &= 0.28 \\ WP &= 5.56 \\ A &= 1.4 \\ V &= 4.56 \text{ F/S} \\ Q &= 6.38 \text{ cfs} > 6.194 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.60'$$



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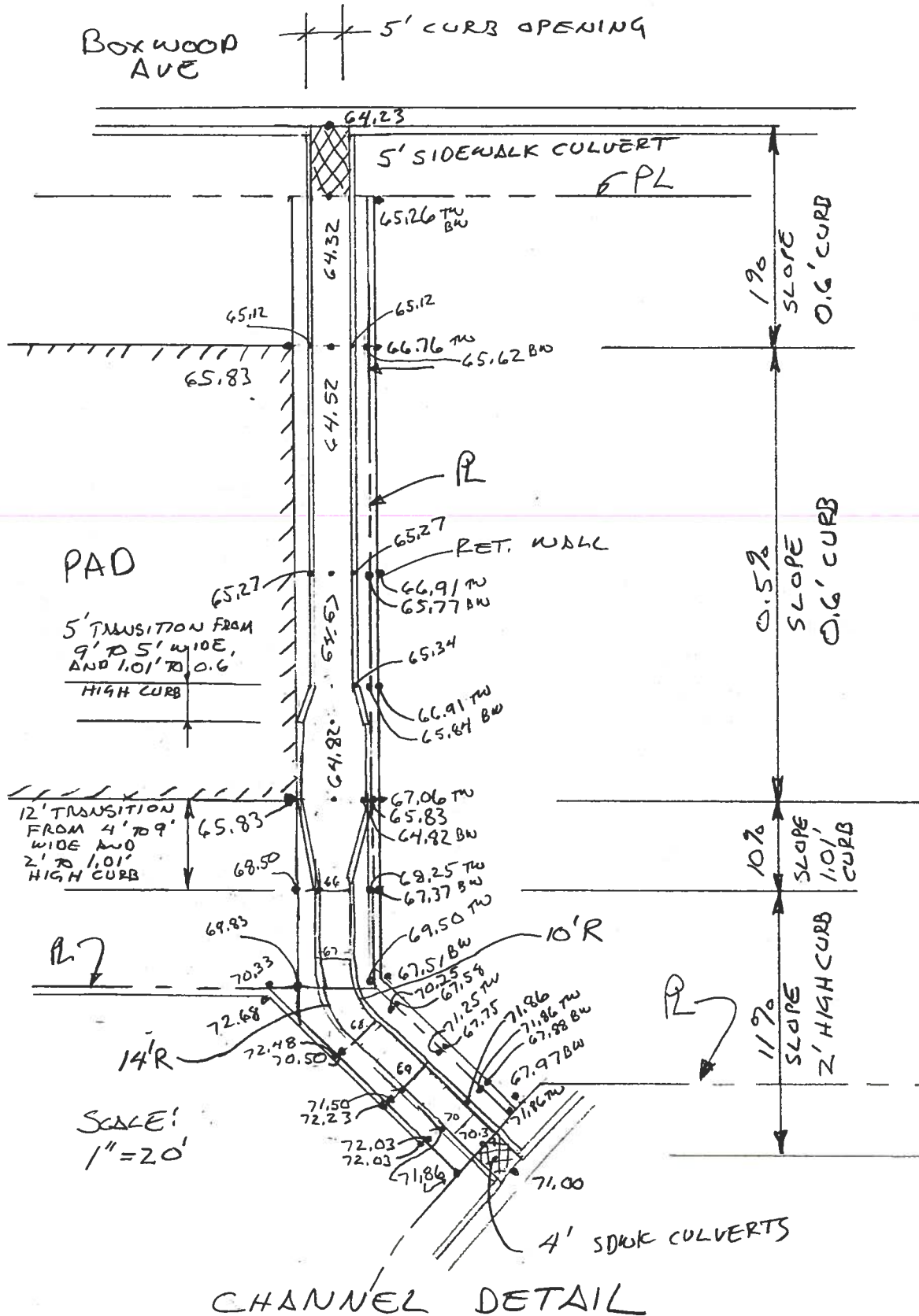
PROJECT DESERT RIDGE TRAILS

SUBJECT DRAINAGE CALCS

BY GJK DATE 5-18-01

CHECKED _____ DATE _____

SHEET 8 OF _____





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

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

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

$$d = 0.28$$

$$WP = 13.16$$

$$A = 1.68$$

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

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

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

- FIND Q AT CHANNEL ON BOXWOOD

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

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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REVISED 8-6-01 SHEET 16 OF _____

FROM NOMO SHEET 26

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

$\odot$ 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 $n = 0.017$

$$d = 0.43$$

$$WP = 32.86$$

$$A = 6.04$$

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

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

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

• INSTALL TWO 8" 'A' INLETS ON BOXWOOD
ONE BETWEEN LOTS 13+14 BLOCK 1 AND
BETWEEN LOTS 12+13 BLOCK 2

FROM NOMO SHEET 27

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

$\odot$ PAST INLETS

$$= 29.43 - 2(7.6)$$

$$= 14.23 \text{ CFS}$$



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CHECKED _____ DATE _____
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 NODD 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 YUKA 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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REvised 8-6-01 SHEET 12 OF _____

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

$$Q = (11 \times 0.9951) + (2 \times 1.0947) + (2 \times 1.1933) + (6 \times 0.6822) \\ = 20.30 \text{ CFS}$$

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

$$WP = 28.74$$

$$A = 4.23$$

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

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

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

- 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 DRLA 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

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

$$Q \text{ THRU PALM YUCCA DR}$$

$$= 22.13 - 2(7.2)$$

$$= 7.73 \text{ CFS}$$

$$Q \text{ JUST WEST OF PALM YUCCA DR}$$

$$= 7.73 + 20.30 + 1.19$$

$$= 29.22 \text{ CFS}$$



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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 3,26% 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

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

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

$$= 29.90 - 2(11.5)$$

$$= 6.90 \text{ CFS}$$

- 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

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

- 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

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

$$d = 0.44$$

$$WP = 32.88$$

$$A = 6.41$$

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

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

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

- ADD 2 DBL "A" INLETS ON HAWTHORN NE

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

$$d = 0.40 \quad S = 3.75 \quad 32' \text{ FF}$$

$$WP = 16.15$$

$$A = 2.57$$

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

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

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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REVISED 8-6-01 SHEET 15 OF _____

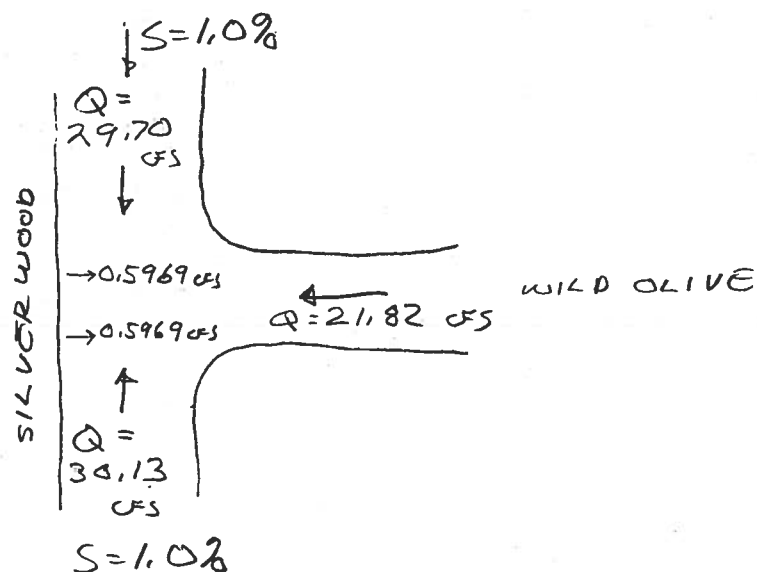
$$\begin{aligned} Q \text{ PAST INLETS IN HAWTHORN} \\ &= 26.76 - 2(7.4) \\ &= 11.96 \text{ CFS} \end{aligned}$$

• 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 OBL "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

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

$$d = 0.51$$

$$WP = 33.02$$

$$A = 8.65$$

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

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

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



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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

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

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

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

$$\begin{aligned} d &= 0.40 \\ \text{WP} &= 16.15 \\ A &= 2.57 \\ V &= 4.59 \text{ F/S} \\ Q &= 23.54 \text{ cfs} \approx 21.82 \text{ OK} \end{aligned} \quad d + \frac{V^2}{2g} = 0.73' < 0.85' \text{ OK}$$

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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REUSED 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

$$P = 17$$

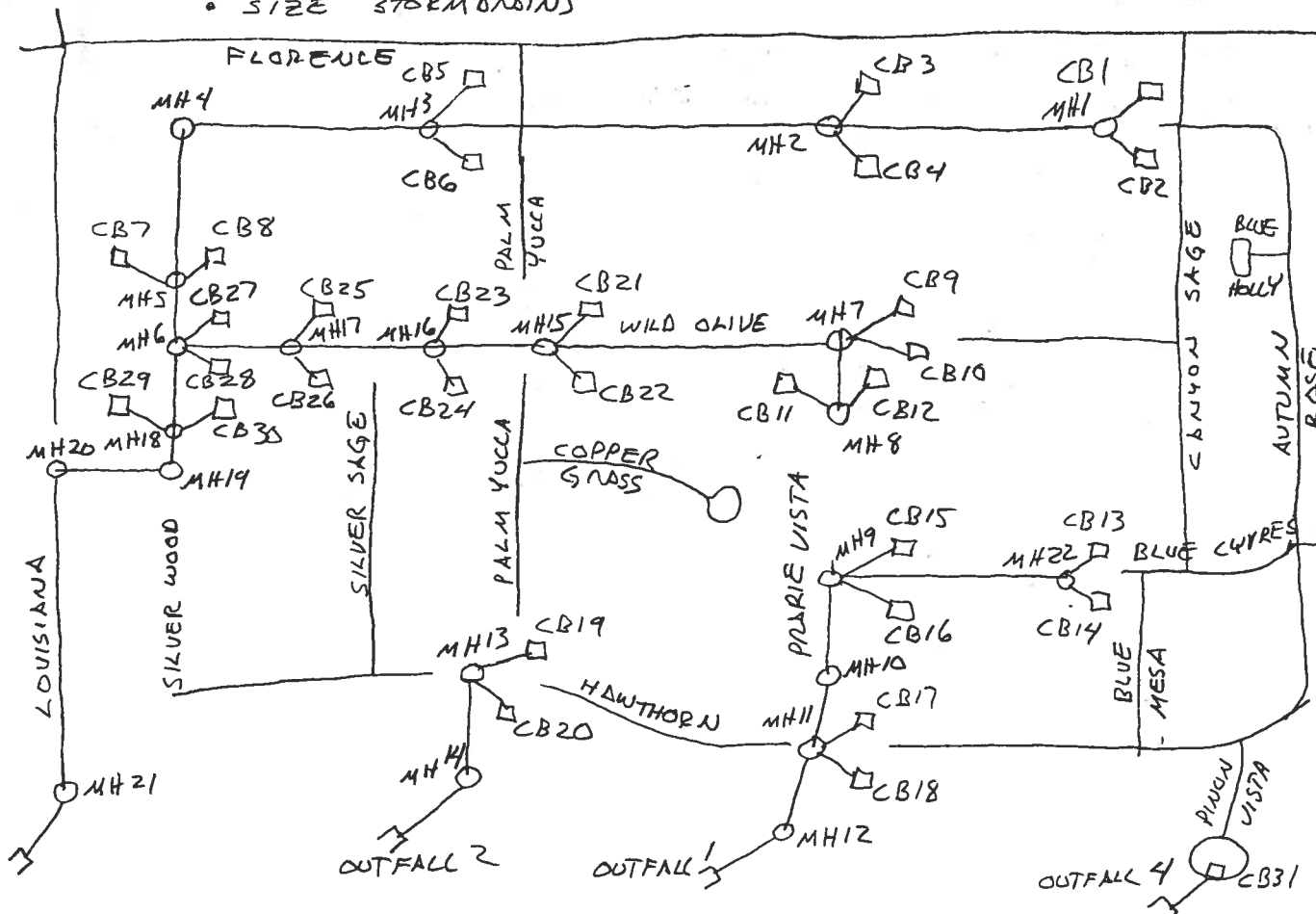
$$H = 0.78 < 0.85' \text{ OK}$$

• 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

$$\begin{aligned} Q &= 16.52 \text{ CFS} \\ &= 8.26 \text{ CFS PER SIDE} \end{aligned}$$

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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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

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

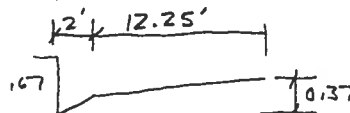
$$d = 0.37$$

$$WP = 14.62$$

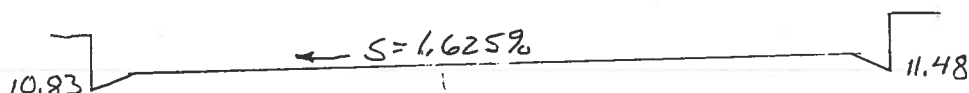
$$A = 2.1156$$

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

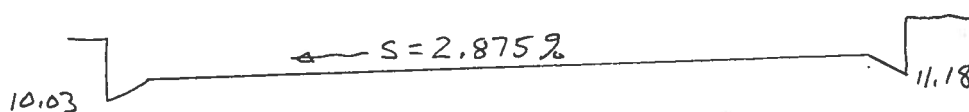
$$Q = 9.54 \text{ CFS} \approx 9.39 \text{ CFS} \quad \text{OK}$$



- 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

$$d = 0.47$$

$$WP = 14.47$$

$$A = 2.885$$

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

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



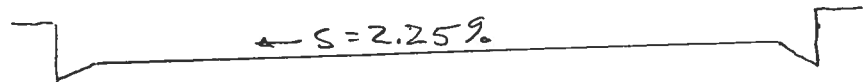
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SHEET 19C OF _____

• FIND d HALFWAY BETWEEN NORTH AND SOUTH ENDS

$S = 1.2429\%$ STD C+G



$$d = 0.45$$

$$WP = 16.89$$

$$A = 3.12$$

$$V = 3.16 \text{ F/s}$$

$$Q = 9.86 \text{ cfs} \approx 9.39 \text{ cfs} \quad \text{OK}$$

FROM NOMO SHEET 41

$$Q_{\text{GRATE}} = 6.0 \text{ cfs} \quad \text{OBL "A"}$$

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

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

• FIND NEW d AT SOUTH END $S = 1.2429\%$

$S = 2.875\%$ X SLOPE

$$d = 0.33$$

$$WP = 9.46$$

$$A = 1.266$$

$$V = 2.55 \text{ F/s}$$

$$Q = 3.23 \text{ cfs} \approx 3.19 \text{ cfs} \quad \text{OK}$$

FROM NOMO SHEET 42

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

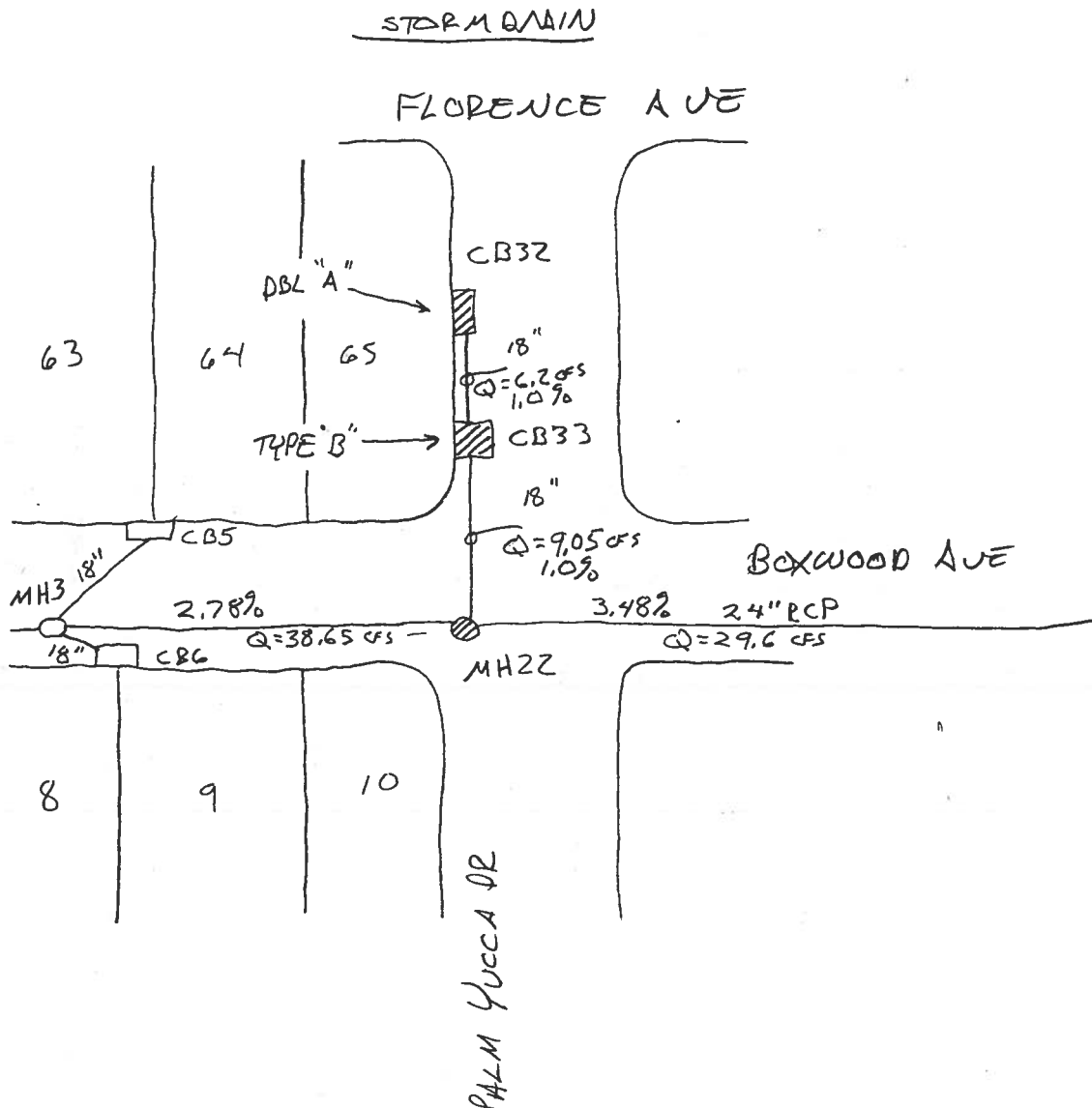
$$Q_{\text{PAST INLET}}$$

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

ADD THIS TO FLOW IN BOXWOOD WEST OF PALM YUCCA

$$Q = 31.20 + 0.34$$

$$= 31.54 \text{ cfs} \approx 31.58 \text{ cfs} = \text{CAPACITY} \quad \text{OK}$$



SEE REVISED SHEETS 18 + 19 FOR FLOW & SLOPE CHANGES

- FIND A IN LOUISIANA BETWEEN MODESTO & FLORENCE

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

TYPE D $\Rightarrow$ 5.5/2

TYPE B = 24.49 %

FROM AHYMO OUTPUT SHEETS 38-40

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

$= 5.25$ CFS 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

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

$$d = 0.31$$

$$WP = 20.625$$

$$A = 2.206$$

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

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

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