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CONSULTING ENGINEERS
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Telephone (505) 265-6631

Project DR. PETERSON'S Office Sheet 1 of 6
DRAINAGE CALCULATIONS Job No. 200
By _____ Chkd _____ Date 2/22/60

Area Under Consideration = .17 AC (7225 ft²)
Existing Slope = 0.0%
Natural Runoff Coefficient = 0.40
Time of Concentration = 40 min., use 10
Intensity (100 year storm) = 5.4 in./hr.
Intensity (1 year storm) = 1.62 in./hr.
50-year, 6-hour precipitation = 2.1 in.

Required Volume of ponds is equivalent to the 50 year developed runoff volume. Area under consideration to be paved, $\therefore C = 0.92$

$$V = 0.92 \times 2.1 \frac{1}{2} \times 7225 = 1163 \text{ ft}^3$$

Total positive discharge from ponds equal to undeveloped discharge generated from 1 year storm.

$$Q_p = CIA = 0.40 \times 1.62 \times 0.17 = 0.110 \text{ cfs}$$

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Project Dr. Peterson's Office Sheet 2 of 6
Drainage Calculation Job No. 200
By _____ CH&M _____ Date 2/22/80

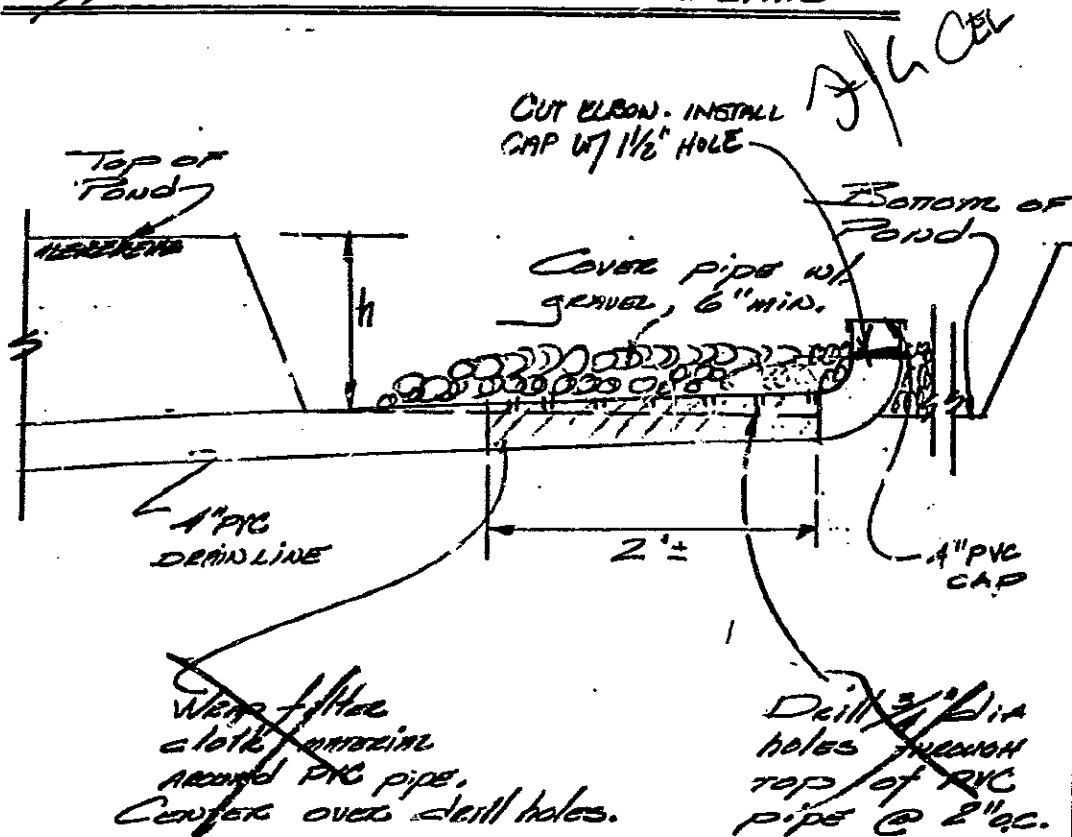
Provide overflow to carry developed
discharge generated from 100 year
storm

$$C_{100} = C I A = 0.92 \times 5.4 \times 0.17 = 0.845 \text{ cfs.}$$

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Project Dr. Peterson Offices Sheet 3 of 6
DRAINAGE CALCULATIONS Job No. 200
By _____ Chkd _____ Date 2/22/80

TYPICAL Pond Drain Detail



~~NOTE: See Sk. 1 & 5 for number of drill holes required for Ponds 2 & 1 respectively. Assume that one half of allowable discharge rate will be drained from each pond & that 2/3 of the area of the drill holes will be clogged.~~

Pond No 2

$$Q = CA \sqrt{2gh}$$

$$h = 15" = 1.25'$$

$$C = 0.62$$

$$Q = \frac{110}{2} = 0.055$$

then

$$A = \frac{Q}{C \sqrt{2gh}}$$

$$= \frac{0.055}{0.62 \sqrt{2 \times 32.2 \times 1.25}} = 0.010 \text{ ft}^2$$

$$= 1.424 \text{ in}^2$$

1 1/2" DIA. HOLE

Area of one 3/4" dia. drill hole = 0.442 in²

2/3 of Area of drill hole will be clogged

∴ Effective area of one drill hole = 0.147 in²

then Required No. of drill holes

$$= \frac{1.424}{0.147} = 9.67 \text{ holes}$$

USE 10 holes.

therefore drill ten (10), 3/4" dia. holes
in drain pipe for Pond No 2.

Pond No 1

$$Q = CA\sqrt{2gh}$$

$$h = 18" = 1.5 \text{ ft.}$$

$$C = 0.62$$

$$Q = \frac{0.110}{2} = 0.055 \text{ cfs}$$

then

$$A = \frac{Q}{C\sqrt{2gh}}$$

$$= \frac{0.055}{0.62\sqrt{2 \times 1.5}} = 0.009 \text{ ft}^2$$

$$= 1.300 \text{ in}^2$$

1 1/2" DIA. HOLE

Effective area of one 3/4" dia. drill hole = 0.147 in²
(see sk. 4)

∴ Required No of drill holes

$$= \frac{1.300}{0.147} = 8.84 \text{ holes}$$

use 9 holes

therefore drill nine (9), 3/4" dia. holes
in drain pipe @ Pond No 1

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Project DR. PETERSON OFFICES Sheet 6 of 6
DRAINAGE CALCULATIONS Job No. 200
By _____ Chk'd _____ Date 2/22/80

4" DRAIN LINE CONNECTION TO EXISTING CATCH BASIN

