

Homework #16

Points: 20

Due: 10/18/2022

Name: ANSWER

1. Determine the number of roof drains required for ideal drainage for a roof area that has a width of 240 feet and a length of 570 feet located in Little Rock, Arkansas. Round drain number up to the next whole number.

A. Use the handout **Roof Drain to Roof Area Sizing Schedule**

Calculate the Roof Area

$$\text{Area} = 240 \text{ ft} \times 570 \text{ ft} = 136,800 \text{ ft}^2$$

$$\text{Rainfall} = \underline{6 \text{ inches per hour}}$$

Calculate the number of 5" Roof Drains

$$\text{No. of Drains} = 136,800 \text{ ft}^2 / 5,765 = 23.7 = 24 \text{ drains}$$

Calculate the Number of 8" Roof Drains

$$\text{No. of Drains} = 136,800 \text{ ft}^2 / 19,315 = 7.083 = 8 \text{ drains}$$

B. Use **2016 CPC Appendix D – Table D 101.1 and Table 1101.12**

$$\text{Rainfall} = \underline{3.7 \text{ inches per hour}}$$

Calculate the number of 5" Roof Drains

$$\text{No. of Drains} = 136,800 \text{ ft}^2 / 34,600/3.7 = 14.6 = 15 \text{ drains}$$

Calculate the Number of 8" Roof Drains

$$\text{No. of Drains} = 136,800 \text{ ft}^2 / 116,000/3.7 = 4.4 = 5 \text{ drains}$$

2. For the BMP shown below answer the following:



What is the BMP called? Earth Dikes/Drainage Swales and Lined Ditches

What BMP objectives does it address?

Soil Stabilization



What is the Standard Symbol used on site drawings? _____

3. For the BMP shown below answer the following:

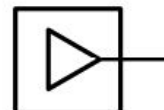


What is the BMP called? Outlet Protection/Velocity Dissipation Devices

What BMP objectives does it address?

Soil Stabilization

Sediment Control



What is the Standard Symbol used on site drawings? _____

4. Using the Web site www.usclimatedata.com complete the following:

City	Portland
State	Oregon
Total Annual Rainfall (inches)	36.03
Average per month (inches)	3.00
Highest Month (inches)	5.63

If rainfall is collected from a 12,500 square foot roof determine the following:
Average Volume of Runoff that can be Captured

$$V = 12,500 \text{ ft}^2 \times 3.00 \text{ inches} \times 1 \text{ ft} / 12 \text{ inches} \times 0.9 \times 7.5 \text{ gal} / \text{ft}^3$$
$$V = 21,094 \text{ gallons}$$

Highest Month Volume of Runoff that can be captured

$$V = 12,500 \text{ ft}^2 \times 5.63 \text{ inches} \times 1 \text{ ft} / 12 \text{ inches} \times 0.9 \times 7.5 \text{ gal} / \text{ft}^3$$
$$V = 39,586 \text{ gallons}$$