**CMGT 235 – Electrical and Mechanical Systems**

Department of Construction Management 🏵 California State University, Chico

Homework #12 – Plumbing Systems

Points: 20

**USE 2-DECIMALS FOR GPM AND WSFU**

Due: 10/4/2022

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Calculate the Total Demand Load (GPM) for the home used in homework #10 using the flow rates given.

|  |  |  |  |
| --- | --- | --- | --- |
| Fixture | Number of Fixtures | Flow Rate (GPM) | Total (GPM) |
| Water Closet |  | 3.0 |  |
| LAV |  | 2.2 |  |
| Tub/Shower |  | 5.0 |  |
| Tub |  | 5.0 |  |
| Shower |  | 2.5 |  |
| Kitchen Sink |  | 2.2 |  |
| Dishwasher |  | 3.0 |  |
| Laundry Machine |  | 3.0 |  |
| Laundry Sink |  | 2.2 |  |
| ¾” Hose Bibb |  | 12.0 |  |
| Total |  |

1. Complete the total Water Supply Fixture Units (WSFU) for the home used in homework #10. Assume one segment of water distribution piping supplies two hose bibbs.

|  |  |  |  |
| --- | --- | --- | --- |
| Fixture | Number of Fixtures | WSFU | Total WSFU |
| Water Closet |  |  |  |
| LAV |  |  |  |
| Tub/Shower |  |  |  |
| Tub |  |  |  |
| Shower |  |  |  |
| Kitchen Sink |  |  |  |
| Dishwasher |  |  |  |
| Laundry Machine |  |  |  |
| Laundry Sink |  |  |  |
| ¾” Hose Bibb |  |  |  |
| Total |  |

1. Using the result for problem 2, determine the Demand Load Using Chart A 103.1 (2) Enlarged Scale Demand Load from the 2016 CPC. Show how you found the demand load on the chart below.

**Demand Load = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



1. Based upon a maximum desired velocity of 8ft.sec, determine the minimum diameter (Di-min) copper tubing for the demand loads found in problem 1 and problem 3. Show calculations (Answers, use 3-DECIMALS).

Di-min - Problem 1

Di-min - Problem 3

1. Using the copper tubing handbook determine the size of copper tube for Type L. Complete the table below.
Find pricing at: <https://www.plumbingsupply.com/copperpipe.html>

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Q (gpm) | v (fps) | Di-min | Copper Tube: Type L | Price per 4 ft |
| Problem 1 |  | 8 |  |  |  |
| Problem 3 |  | 8 |  |  |  |