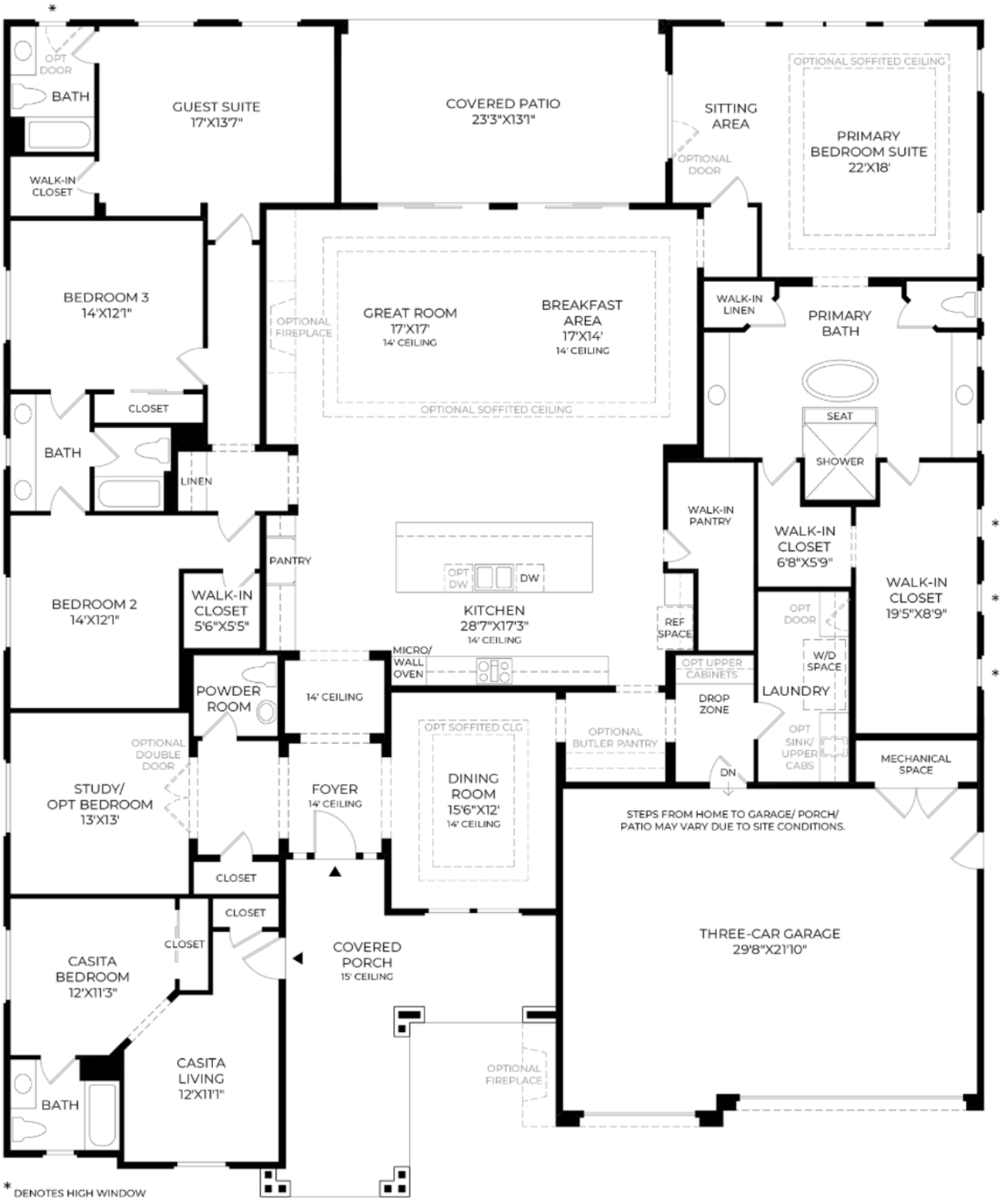
CMGT 235 – Electrical and Mechanical Systems

Department of Construction Management ❁ California State University, Chico

Exam #2 [100 points]

You may work with one person or individually. Every student SHALL complete their own answer sheet.

Name:
Name:


OPT DOOR
BATH
GUEST SUITE
17'X13'7"
COVERED PATIO
23'3"X13'1"
SITTING AREA
OPTIONAL DOOR
OPTIONAL SOFFITED CEILING
PRIMARY BEDROOM SUITE
22'X18'
WALK-IN CLOSET
BEDROOM 3
14'X12'1"
OPTIONAL FIREPLACE
GREAT ROOM
17'X17'
14' CEILING
BREAKFAST AREA
17'X14'
14' CEILING
OPTIONAL SOFFITED CEILING
WALK-IN LINEN
PRIMARY BATH
SEAT
SHOWER
CLOSET
BATH
LINEN
PANTRY
WALK-IN PANTRY
WALK-IN CLOSET
6'8"X5'9"
WALK-IN CLOSET
19'5"X8'9"
OPT DW
DW
KITCHEN
28'7"X17'3"
14' CEILING
BEDROOM 2
14'X12'1"
WALK-IN CLOSET
5'6"X5'5"
REF SPACE
OPT DOOR
W/D SPACE
LAUNDRY
MICRO/ WALL OVEN
OPT UPPER CABINETS
POWDER ROOM
14' CEILING
DROP ZONE
OPT SINK/ UPPER CABS
OPTIONAL DOUBLE DOOR
OPT SOFFITED CLG
OPTIONAL BUTLER PANTRY
MECHANICAL SPACE
STUDY/ OPT BEDROOM
13'X13'
FOYER
14' CEILING
DINING ROOM
15'6"X12'
14' CEILING
DN
STEPS FROM HOME TO GARAGE/ PORCH/ PATIO MAY VARY DUE TO SITE CONDITIONS.
CLOSET
CLOSET
CLOSET
THREE-CAR GARAGE
29'8"X21'10"
CASITA BEDROOM
12'X11'3"
COVERED PORCH
15' CEILING
CASITA LIVING
12'X11'1"
OPTIONAL FIREPLACE
BATH
* DENOTES HIGH WINDOW

1. Complete the following steps for the dwelling plan provided. The owner has approved all options shown.

Step 1. Calculate the Available Water Pressure

MDSSPA = 60 psi

Highest Fixture = 10 feet above the source of supply

Meter Pressure loss = 5 psi

Water Softener Pressure Loss = 9 psi

Step 2. Determine the Effective Maximum Developed Length (DL) of Pipe

Length of pipe to the Furthest Fixture = 105 feet

Step 3. Complete the WSFU table below. [2016 CPC - Table 610.3]

Mark all fixtures shown on the plan using a yellow highlighter.

There is a total of five ½" hose bibbs: three on one supply segment and two on another supply segment.

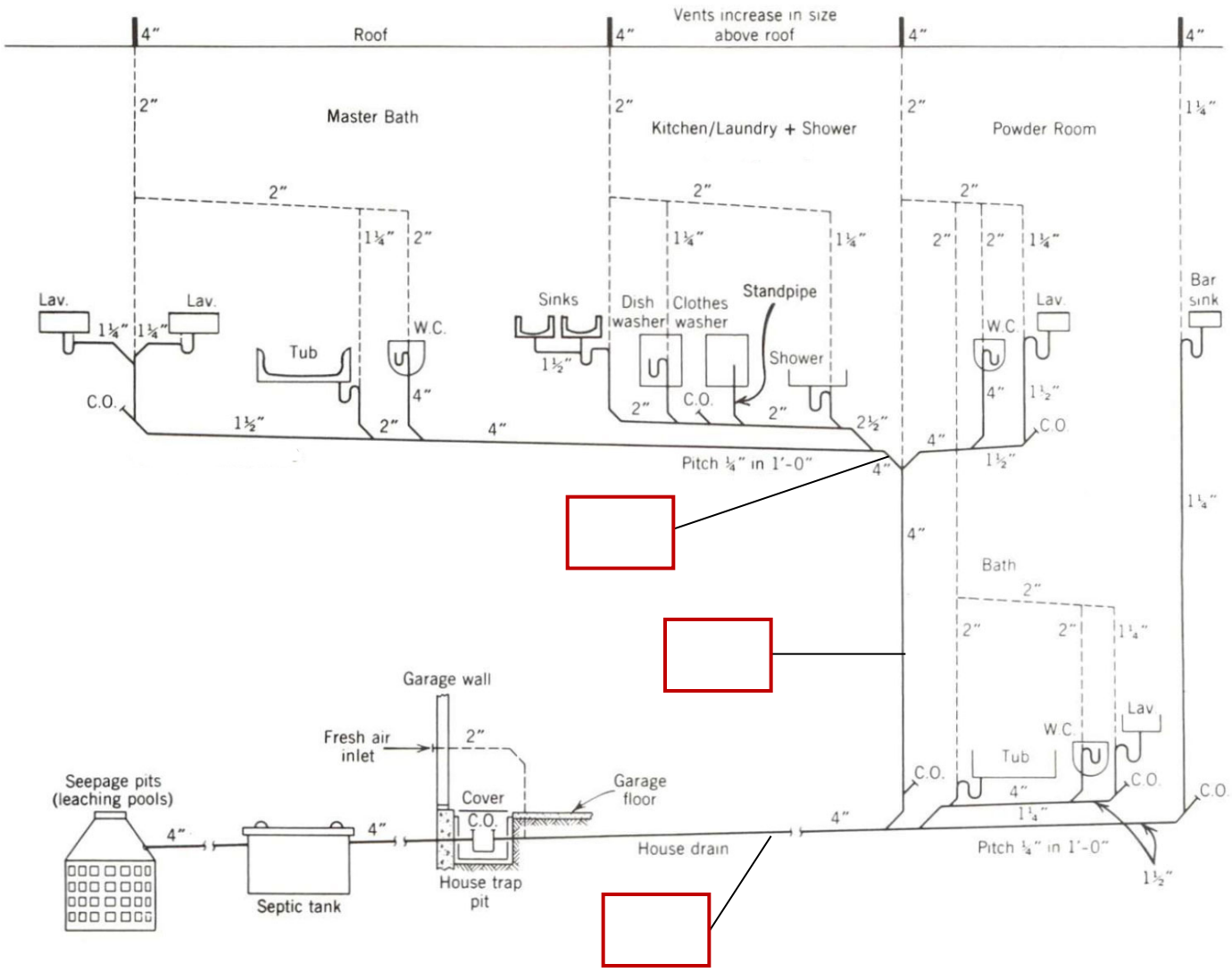
Water Supply Fixture Units							
Fixture	# of Fix.	HOT WSFU		COLD WSFU		TOTAL WSFU	
		EACH	THIS JOB	EACH	THIS JOB	EACH	THIS JOB
SHW							
BT							
BT/SHW							
LAV							
WC FT							
KS							
DW							
CW							
LT							
HB							
TOTALS							

Step 4. Use the 2016 CPC Table 610.4 complete the table below for your results:

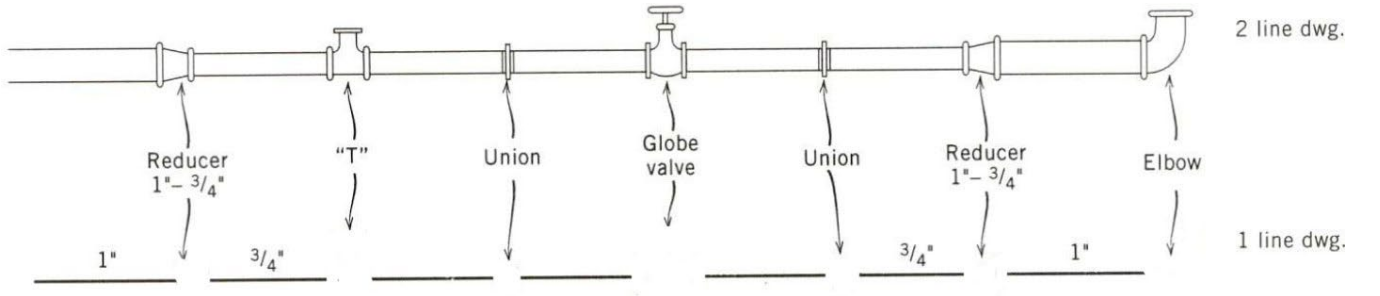
2016 CPC - Table 610.4

Pressure Range	
Maximum Allowable Length	
Distribution Piping	**Pipe Size (inches)**
Meter and Street Service	
Building Supply	
Cold Water Supply	
Hot Water Supply	

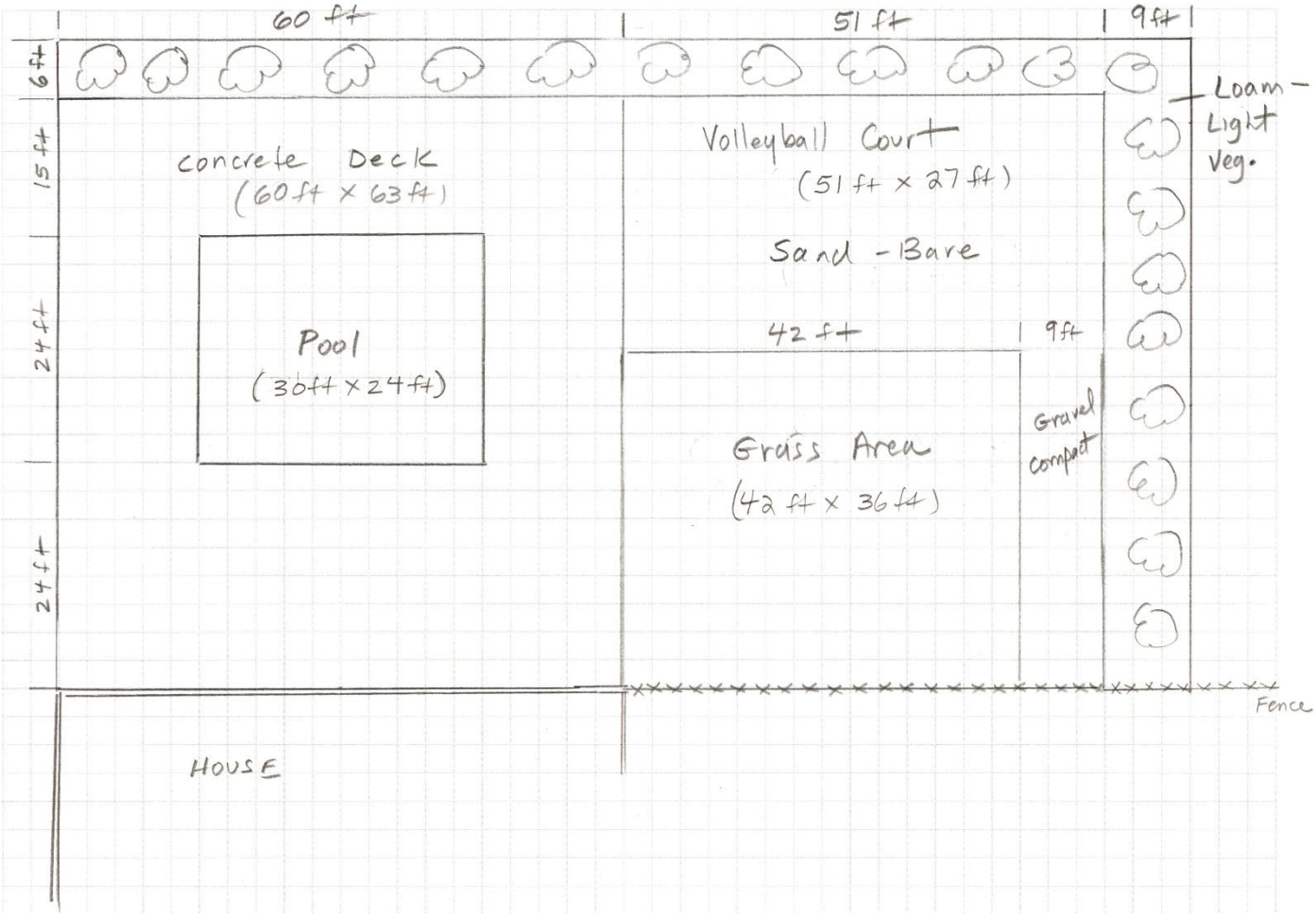
2. For the private residence shown write the individual DFU value above each fixture and determine the total DFU at the points indicated.



3. For the 2-line drawing shown complete the 1-line drawing by replacing each fitting in the locations shown with its corresponding symbol found on drawing P-011 located on lorisweb.com [CMGT 235 DIS 20].



4. For the residential site shown use the Rational Method to determine the peak runoff rate (gpm) and volume (gallons) for the drainage area given. The rainfall intensity is 8.0 in/hr.



5. For a building in Wilmington, NC, determine the minimum size roof drain, horizontal pipe, and leader pipe for the roof shown. Use the 2016 CPC Appendix D rainfall rate with no amendments.