Another restaurant where the outside air design is unknown has a sign saying 92 people maximum occupancy and you want to know what the fresh air makeup should be. When measured the restaurant area is 110 ft. by 476 ft. The local code requirement is for 0.12 CFM per square ft. of restaurant area plus 7.5 CFM per person.

First the airflow for occupants is 92 × 7.5 = 690 CFM;

Second, the total square footage is 110 × 476 = 52,360 ft2

Third, CFM per square foot = 52,360 × 0.12 = 6283.2 CFM

Total outside/makeup air required is: 690 + 6283.2 = 6973.2 CFM

A kitchen has 6 workers in it and you want to know what the minimum fresh air makeup should be by code. When measured the restaurant area is 20 ft. by 100 ft. The local code requirement is for 0.18 CFM per square ft. of restaurant area plus 7.5 CFM per person.

First the airflow for occupants is 6 × 7.5 = 45 CFM;

Second, the total square footage is 100 × 20 = 2,000 ft2

Third, CFM per square foot = 2,000 × 0.18 = 360 CFM

Total outside/makeup air required is: 360 + 45 = 405 CFM

Find The U-Value for an insulating material with an R-Value of 30.

U-Value = 1 ÷ 30 = 0.3333…

Find The R-Value for an insulating material with a U-Value of 0.06666.

R-Value = 1 ÷ 0.06666 = 15

Field Notes:

Knowing the current local code requirements and *Manual N* local design requirements helps technicians identify errors made by engineers and installers for new equipment. However, it is important to remember the HVAC equipment often is limited in its capability and may meet the code requirements for when it was installed but not the new ones. Thus, care must be taken to apply the correct design requirements based on the code that was in place when the equipment was installed.