

## HVAC System Questions for Building Evaluation

**1. Need to determine the type of system:**

- A. Package units.
- B. Variable volume control system.

**2. Capacity of system:**

Normal” average capacity is as follows:

- A. 10,000 sq. ft. bldg. - 300 sq. ft./ton.
- B. 10,000 to 20,000 sq. ft. bldg. - 350 sq. ft./ton.
- C. 20,000 to 50,000 sq. ft. bldg. - 375 to 400 sq. ft./ton.
- D. If cooling capacity is critical actual cooling loads should be calculated for a specific building.

**3. The requirement for 24 hour cooling loads for areas such as server rooms or labs is very critical. The tenant must identify the power or heat loads for this item:**

- A. One and two story buildings are usually “easy” to add new A/C units.
- B. Three or more story multi tenant buildings can be very difficult to add 24 hour A/C units - can be very costly or impossible.

**4. Inspection of air conditioning systems**

All existing air conditioning systems need to be inspected prior to a lease or purchase agreement to avoid major surprise

**5. HVAC systems that have operated 24 hours a day, 7 days a week may have a useful life of 10 years in lieu of the normal 20 years for a 60 hour per week operating system.**

**6. The budget for HVAC unit inspection is as follows:**

- A. 0 to 20,000 sq. ft. simple inspection is \$400 to \$800. Detailed unit check out is \$600 to \$1,500. Support for potential repairs is \$600 to \$1,500. 20,000 to 50,000 sq. ft. simple inspection is \$800 to \$1,600. Detailed unit check out and report for potential repairs is \$1,600 to \$3,000.



B. The above inspections are important. The replacement of (1) 7½ ton compressor could cost \$2,500 or more.

7. **A survey of the existing tenants facility can often identify special HVAC needs. If this survey is done by a mechanical engineer, the price could range from \$500 to \$2,000. If done as part of a design/build proposal, it is usually done for no cost.**

8A. **Should HVAC systems be done as design/build or plan and specification?**

The advantages of design/build are as follows:

- A. Guaranteed price before any money is spent.
- B. Single responsibility for design and installation.
- C. Maximum value for system cost.
- D. Ability to meet a fast schedule.
- E. No change orders.

8B. **The plan and specification system has the following features:**

- A. Engineer designs the system (for a fee before the system cost is known).
- B. Ability to have many bids, however, the low bidder will perform the minimum possible scope of work.
- C. Jobs may have several change orders due to construction changes or conflicts.
- D. The system performance is split between the engineer and the contractor, which makes it hard to settle disputes.
- E. Requires more design and bidding time than design/build projects.

The above information has been provided by Cal-Air Construction, with multiple offices in California.

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