

Owner-Procured TAB Services

Test and balance services are vital for an HVAC system to operate properly and efficiently

The need for test and balance (TAB) firms and the services they provide has become more an absolute than a luxury in the overall HVAC design/construction/operation picture as system complexity and the desire to increase operational efficiency have increased. Because of these factors, the role of the TAB firm should be reconsidered by the owner or facilities manager if this method is not currently being used.

The issue of who is responsible for and who should manage TAB services is not new. However, the issues raised have become more prevalent in recent years since it has been acknowledged by facility owners and chief operating engineers that proper TAB is critical to proper system operation and to obtaining maximum efficiency.

One of the first steps in making TAB a working tool is to determine who (i.e., the contractor or the owner) will be responsible for specifying, procuring, and selecting TAB services. If adequate technical staff is available, it is highly recommended that the owner contract directly with the TAB firm. The following advantages are noted by communicating directly:

- The TAB firm has the flexibility to be neutral in areas of conflict. Generally, the TAB firm is re-

luctant to point out problem areas if hired by the contractor.

- The owner can, during progressive stages of the TAB work, discuss various issues with the TAB firm and gain insight into operational characteristics, etc., of the HVAC system prior to system operation.

- The owner can discuss in detail the TAB final report and any deficiencies noted. Normally, when the TAB firm is hired by the contractor, the final report is submitted after the HVAC system is completed.

We suggest that the TAB firm be viewed by the owner as a professional rather than solely as a contractor and that selection be based on professional qualifications and performance rather than on fee alone. The following TAB firm minimum qualifications should be addressed in the TAB specifications:

- Resumes of those individuals who will be assigned to the project with the price proposal.
- Representative completed project list.
- National TAB certification verification from the Associated Air Balance Council (AABC) or National Environmental Balancing Bureau (NEBB).

In many cases, the principals of a TAB firm are registered professional engineers (PEs). It is highly recommended that a PE be under full time employment of the TAB firm and that this individual sign and stamp the final TAB report.

Usually, this requirement alone tends to remove from consideration a TAB firm that may not be qualified to perform the work; it is essential on complicated HVAC or clean room systems. In some areas, a TAB firm may, by state law, be legally considered a professional (similar to an architect or engineer), thereby requiring the owner to review the professional qualifications of candidate firms and select one based on these qualifications instead of on the fee. A call to the state Board of Engineering Registration should clear up any question in this area.

The selection process varies, however; for a TAB firm to respond properly to a request for proposals, a TAB specification must be prepared. The specification should, at minimum, address the following:

- A preface stating that the owner is seeking proposals for TAB services and that the owner will contract directly with the TAB firm.
- Overall project scope of work.
- Project description and location.
- Minimum qualifications of the TAB firm.
- Insurance, bond, etc., requirements.
- Required test devices and calibration certification statement.
- Progress walk-throughs.
- Interface with the owner.
- Interface with the prime construction contractor.
- TAB agenda.
- Final reports.

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Included with this TAB specification package should be the actual project mechanical drawings and specifications. The owner should first contact the project architect or engineer to obtain this information.

If an owner chooses to solicit the services of the TAB firm directly, the prime construction contractor should be informed of this prior to bid time so that he can understand what the responsibilities of the TAB firm will be and what his responsibilities in preparation for TAB will be. The method to communicate this is to prepare and include the owner-procured TAB specification in the project specification document. This informs the prime construction contractor and subcontractors that TAB services will be procured by the owner and advises them as to the interface between the mechanical (sub)contractor and the TAB contractor.

In some cases, the selection of the TAB firm can be made prior to

the actual selection of the project prime construction contractor. Experience has shown that the sooner the TAB firm is brought into the project path the better.

Once the owner has selected the TAB firm, he should request the TAB firm to study the project mechanical documents and present a list of questions that may arise. This allows adequate time to address an issue properly and resolve it through normal channels, usually without construction delays and often avoiding prospective change orders.

The fact is, most qualified TAB firms could walk in on a nearly completed mechanical system "cold turkey" and perform adequate TAB. Unfortunately, this is normally the case when the TAB firm is not hired directly by the owner. However, it is advisable on new construction projects that a minimum of two on-site walk-throughs be required of the TAB firm prior to starting actual TAB

work to achieve the maximum benefit of this work. These can take place at any stage of completion, but experience has shown that these walk-throughs should take place at approximately 30 and 70 percent mechanical system completion. Following a walk-through, the owner should request the TAB firm to present a written report of findings, including photographs of recurring problem areas to add support documentation. This documentation may be a useful tool to the prime construction contractor to correct any deficiencies that may be present before a more expensive method has to be employed.

Once actual TAB work begins, it is important to provide the prime construction contractor with an informative listing of field deficiencies. Depending on the situation, it is suggested that the owner require the TAB firm to submit daily field reports listing problem areas. These field reports should be given to the prime construction contractor or, in some cases, the architect/engineer. Since TAB work actually begins at 90 to 95 percent of overall project completion, it is important to provide this information to the appropriate party as soon as possible.

Normally, initial TAB field work covers only one mode (*i.e.*, cooling or heating) of HVAC operation. Because of this, the TAB firm should be required to return to the project once seasonal changeover has been made and balance those items not addressed in the initial TAB work. This is particularly important if variable air volume systems are employed or if the initial TAB work was performed in the heating mode of operation.

Finally, to determine if retaining the TAB firm directly by the owner is appropriate for your situation, compare this method with previous construction experiences. If you conclude that you gained better insight into the characteristics of the HVAC system and noticed fewer problems with initial HVAC startup and operation, chances are this method would prove successful for you. Ω

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