

## **PART 1        GENERAL**

### **1.1            SUMMARY**

- .1      TAB is used throughout this Section to describe the process, methods, and requirements of testing, adjusting, and balancing for HVAC.
- .2      TAB means to test, adjust, and balance to perform in accordance with requirements of Contract Documents and to do other work as specified in this section.

### **1.2            QUALIFICATIONS OF TAB PERSONNEL**

- .1      Submit names of personnel to perform TAB within 15 days of the contract award.
- .2      Provide documentation confirming qualifications and successful experience.
- .3      TAB must be performed in accordance with the requirements of standards under which TAB Firm's qualifications are approved:
  - .1      Associated Air Balance Council, (AABC) National Standards for Total System Balance, MN-1.
  - .2      National Environmental Balancing Bureau (NEBB) TABES, Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems.
  - .3      Sheet Metal and Air Conditioning Contractors' National Association (SMACNA), HVAC TAB HVAC Systems—Testing, Adjusting, and Balancing.
- .4      Recommendations and suggested practices contained in the TAB Standard: mandatory.
- .5      Use TAB Standard provisions, including checklists and report forms to satisfy Contract requirements.
- .6      Use TAB Standard for TAB, including qualifications for TAB Firm and Specialist and calibration of TAB instruments.
- .7      Where instrument manufacturer calibration recommendations are more stringent than those listed in TAB Standard, use manufacturer's recommendations.
- .8      TAB Standard quality assurance provisions, such as performance guarantees, form part of this contract.
  - .1      For systems or system components not covered in TAB Standard, use TAB procedures developed by TAB Specialist.
  - .2      Where new procedures and requirements are applicable to Contract requirements and have been published or adopted by the responsible authority for TAB of the Standard used (AABC, NEBB, or TABB), the requirements and recommendations contained in these procedures are mandatory.

### **1.3            PURPOSE OF TAB**

- .1      Test to verify proper and safe operation, determine actual point of performance, and evaluate qualitative and quantitative performance of equipment, systems and controls at design, as well as average and low loads using actual or simulated loads.

- .2 Adjust and regulate equipment and systems to meet specified performance requirements and to achieve specified interaction with other related systems under normal and emergency operating and load conditions.
- .3 Balance systems and equipment to regulate flow rates to match load requirements over full operating ranges.

#### **1.4 EXCEPTIONS**

- .1 TAB of systems and equipment regulated by particular codes and standards must be performed to satisfaction of authorities having jurisdiction.

#### **1.5 COORDINATION**

- .1 Schedule time required for TAB (including repairs, re-testing) into project construction and completion schedule to ensure completion before acceptance of project.
- .2 Do TAB of each system independently and subsequently and, where interlocked with other systems, in unison with those systems.

#### **1.6 START-UP**

- .1 Follow start-up procedures as recommended by equipment and systems' manufacturer, unless specified otherwise.
- .2 Follow special start-up procedures specified elsewhere in Division 23.

#### **1.7 START OF TAB**

- .1 Notify 7 days prior to start of TAB.
- .2 Start TAB when building is essentially completed, including:
  - .1 Installation of ceilings, doors, windows, and other construction affecting TAB.
  - .2 Application of weather stripping, sealing, and caulking is finished.
  - .3 Pressure, leakage, and other tests specified elsewhere Division 23.
  - .4 Provisions for TAB are installed and operational.
  - .5 Start-up, verification for proper, normal, and safe operation of mechanical and associated electrical and control systems affecting TAB including but not limited to:
    - .1 Proper thermal overload protection in place for electrical equipment.
    - .2 Air systems:
      - .1 Duct systems clean.
      - .2 Ducts, air shafts, and ceiling plenums are airtight within specified tolerances.
      - .3 Correct fan rotation.
      - .4 Fire, smoke, and volume control dampers installed and open.
      - .5 Access doors installed and closed.
      - .6 Outlets installed and volume control dampers open.

**1.8 APPLICATION TOLERANCES**

- .1 Do TAB to following tolerances of design values:
  - .1 HVAC systems: plus 5 %, minus 5 %.

**1.9 ACCURACY TOLERANCES**

- .1 Measured values accurate to within plus or minus 2 % of actual values.

**1.10 TAB REPORT**

- .1 TAB report must show results in SI units and include:
  - .1 Project record drawings.
  - .2 System schematics.
- .2 Submit 1 copy of TAB Report in PDF electronic form for verification and approval.

**1.11 SETTINGS**

- .1 After TAB is completed to Consultant's satisfaction, replace drive guards, close access doors, lock devices in set positions, and make sure that sensors are at required settings.
- .2 Permanently mark settings to allow restoration at any time during life of facility. Do not eradicate or cover markings.

**1.12 COMPLETION OF TAB**

- .1 TAB considered complete when final TAB Report received and approved by the Consultant.

**PART 2 PRODUCT**

**2.1 NOT APPLICABLE**

- .1 Not applicable.

**PART 3 EXECUTION**

**3.1 NOT APPLICABLE**

- .1 Not applicable.

**END OF SECTION**