

## I. INTRODUCTORY INFORMATION

Ventilation Verification for Actors' Equity agreements is a physical assessment of the existing Heating, Ventilation and Air Conditioning (HVAC) infrastructure at theatrical venues, rehearsal studios and employer-provided shared housing units. The assessment does apply to outdoor productions where there are indoor facilities the stage managers and actors utilize (i.e., rehearsal rooms, dressing rooms, bathrooms, the booth). If the Producer/Theater does not own any of the above buildings, the Producer/Theater has an obligation to the agreement they signed with Actors' Equity and should negotiate with their landlord that the venue must provide proof of adequate ventilation and filtration.

## II. Information for the Producer/Theater

### **Producers/Theaters are responsible for the following:**

- Engaging a contractor who employs skilled, trained, and certified technicians and providing them with **Appendix A and B** of this document to perform the initial site-specific Ventilation Verification assessment.
- Engaging a design professional and providing them with **Appendix A and B** of this document to review design ventilation rates, review the assessment report, and make recommendations.
- Making the recommended adjustments, repairs, or replacements.
- Submitting the final HVAC Verification Report to Actors' Equity, listing all remaining deficiencies, and a plan to correct the remaining deficiencies.
- Entering into an HVAC maintenance agreement in accordance with ASHRAE 62.1 –2022 Section 8 Operations and Maintenance and Table 8.1 Minimum Maintenance Activity and Frequency with a vendor and provide the vendor with **Appendix A and B** of this document.

The assessment, adjustments, and repairs shall be performed by a skilled, trained, and certified technician. Producers/Theaters must engage technicians with certifications at Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or Testing, Adjusting, and Balancing Bureau (TABB). If there are no certified professionals in your local area, the nearest ones should be contacted to arrange for an on-site appointment as soon as possible. When the appointment is set, provide a copy of the work order to Actors' Equity.

**The following is a summary of the minimum ventilation verification requirements that apply to existing theatrical venues, rehearsal studios, and employer-provided shared housing units:** (Minimum Requirements are detailed in Section II – Ventilation Verification Assessment)

- ✓ Filtration and Ventilation meets minimum adequate requirements and recommendations.
- ✓ HVAC components are functioning, and each unit is maintained to operate as designed.
- ✓ Verify air distribution and building pressure.

- ✓ HVAC operating schedule matches occupancy requirements.
- ✓ All zones shall be equipped with a functioning CO<sub>2</sub> monitor with required capabilities.
- ✓ Review of the Ventilation Verification Assessment by a Design Professional.
- ✓ Completion of Design Professionals recommended repairs and adjustments.
- ✓ Prepare and submit a final HVAC Verification Report to Actors' Equity.
  - Documentation of final conditions, remaining deficiencies, and a plan to address remaining deficiencies.
  - Identifying and providing of any grandfathered and/or landmarked establishments that may hinder changes to the HVAC infrastructure.
- ✓ Establish a Preventative Maintenance List and Agreement with a vendor.
  - Minimum Maintenance Requirements are detailed in Section III – Maintenance

Systems will be assessed to determine if they meet or exceed the current recommendations of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), along with any applicable local and state agency guidance. The resulting Ventilation Verification assessment shall be reviewed by a design professional to determine deficiencies, further adjustment, or recommended repairs, upgrades, and/or replacements based on reduced assumptions. Once adjustments are complete, a final HVAC Verification Report shall be submitted to Actors' Equity.

Actors' Equity does not review the assessment or provide recommendations. The final HVAC Verification Report will clearly identify the design professionals' recommendations, remaining deficiencies, and a plan to correct the remaining deficiencies. Actors' Equity should be informed of the plans that the Producer/Theater will be making and the timeline, including copies of work orders. If the timeline interferes with current and/or future productions, temporary mitigation as recommended by the design professionals must be in place.

Completing any replacements or adjustments to the system — such as increasing ventilation and filtration or installing new equipment — without a physical assessment by a skilled, trained, and certified professional may result in wasted funding, additional energy increases, and premature equipment failure while providing no assurance that the recommended strategies will reduce pathogen transmission and improvements to the indoor air quality were achieved.

Physical verification — and thereby adjustment and/or replacement — of an HVAC system by a skilled, trained, and certified technician will ensure accurate ventilation rates, functioning filtration, and achievement of the desired outcome with money well spent to protect the health and safety of the building occupants.

**Attachments:**

**Appendix A** – Sample Specification Section

**Appendix B** – Sample MOP's and Forms

# Appendix A – Sample Specification Section



## I. VENTILATION VERIFICATION ASSESSMENT

### SECTION 00 00 01

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

###### A. Ventilation Verification Assessment of:

1. Air conditioning equipment including air distribution devices, supply ducts, air handling units, condensing units, fans, coils, and related equipment.
2. Hydronic systems including pumps, water distribution systems, chillers, boilers, heat exchangers, coils, and related equipment.

##### 1.02 REFERENCES

- A. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 111 – Practices for Measurement, Testing, Adjusting, and Balancing of Building Heating, Ventilation, Air-conditioning, and Refrigeration Systems.
- B. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 241 – Control of Infectious Aerosols
- C. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) – TAB Procedural Guide – Endorsed by Testing, Adjusting and Balancing Bureau (TABBB)
- D. Associated Air Balance Council (AABC) – National Standards for Total System Balance.
- E. National Environmental Balancing Bureau (NEBB) – Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.

##### 1.03 DEFINITIONS

For purposes of this article, the following definitions apply:

- A. "ANAB" means ANSI National Accreditation Board.
- B. "Certified TAB Technician" means a technician certified to perform testing, adjusting, and balancing of HVAC systems by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing, Adjusting and Balancing Bureau (TABBB).
- C. "Design Professional" means a licensed mechanical engineer, certified industrial hygienist (CIH), or mechanical design professional as defined by state or provincial guidelines.
- D. "HVAC" means heating, ventilation, and air conditioning.
- E. "MERV" means minimum efficiency reporting value, as established by the current edition of ASHRAE Standard 52.2- 2017 -- Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
- F. "ppm" means parts per million.
- G. "Qualified Testing Personnel" means either of the following:
  1. Certified TAB Technician; or
  2. A person certified to perform ventilation assessments of heating, ventilation, and air conditioning systems through a certification body accredited by ANAB.
- H. "Skilled and trained workforce" means a workforce where a majority of the construction workers are graduates of a registered apprenticeship program for the applicable occupation.
- I. "TAB" means testing, adjusting, and balancing of an HVAC system.

## 1.04 SUBMITTALS

### A. Reports:

1. Ventilation Verification Report: Submit the complete Ventilation Verification report to a Design Professional for review. The report shall include any drawings indicating air outlets, thermostats, and equipment identified to correspond with data sheets.
  - a. Reports shall be on TABB/SMACNA, AABC, or NEBB forms that indicate information addressing each of the testing methods, readings, and adjustments.
  - b. Reports may utilize attached sample forms, provided they include clear identification of the company providing the service as well as being stamped by an industry recognized certifying agency.
2. Following Repairs, Adjustments, Replacements and Upgrades prepare and submit a final HVAC Verification Report to Actors' Equity. The final HVAC Verification Report shall have the following components:
  - a. Verification that either MERV 13 filters have been installed or verification that the maximum MERV-rated filter that the system is able to effectively handle has been installed and identify what that MERV-rating is.
  - b. The verified ventilation rates for each facility meet the requirements set forth in the current version of the applicable ASHRAE 62 standard for Acceptable Indoor Air Quality or current locally adopted Mechanical Code during occupied periods. If ventilation rates do not meet applicable guidance, then an explanation for why the current system is unable to meet those rates shall be provided. **Note- The facility may choose to adopt the more stringent requirements found in ASHRAE Standard 241 if it is determined that the conditions exist under which infection risk management mode should be invoked.**
  - c. The verified exhaust for occupied areas and whether those rates meet the requirements set forth in the design intent.
  - d. Documentation of repairs, upgrades or replacements performed pursuant to the HVAC Assessment Report and Design Professional recommendations, including all work performed.
  - e. Verification of installation of carbon dioxide monitors, including make and model of monitors.
  - f. Verification that all work has been performed by qualified personnel, including the provision of the contractor's name, TAB technician name and certification number, and verification that all construction work has been performed by a skilled and trained workforce.
  - g. At a minimum, the design professional must provide a cover letter, with their credentials, documentation of remaining deficiencies and a plan for continued maintenance, repairs, replacement, or upgrades to improve energy efficiency, safety, or performance.

## 1.05 QUALITY ASSURANCE

### A. Qualifications:

1. Ventilation Verification shall be performed by Qualified Testing Personnel.
2. Adjustments to the HVAC system shall be performed by a Certified TAB Technician.

3. All HVAC ventilation verification, adjustments, repairs, upgrades, or replacements shall be performed by a skilled and trained workforce.

## PART 2 EXECUTION

### 2.01 EXAMINATION

- A. Ventilation Verification testing shall include all of the following (if applicable):

#### 1. Ventilation Verification Assessment

- Filtration** - Use a combination of filters and air cleaners that achieve Minimum Efficiency Reporting Value (MERV) 13, or better, levels of performance for air recirculated by HVAC units. Qualified Testing Personnel shall review system capacity and airflow to determine the highest MERV filtration that can be installed without adversely impacting equipment. A Design Professional can recommend further mitigation if MERV 13 is not feasible with the existing HVAC equipment.
  - Ventilation Rate** - Ventilation Rate - Building systems can operate to provide the minimum ventilation rate requirements, during occupied periods, set forth in the current version of the applicable ASHRAE 62 standard for Acceptable Indoor Air Quality or current locally adopted Mechanical Code, whichever is more stringent. **Note- The facility may choose to adopt the more stringent requirements found in ASHRAE Standard 241 if it is determined that the conditions exist under which infection risk management mode should be invoked.**
    - ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality
    - ASHRAE Standard 62.2 Ventilation and Acceptable Indoor Air Quality in Residential Buildings.
    - American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 241 – Control of Infectious Aerosols
  - Ventilation System Operation** - Physically test all ventilation components for proper operation.
  - Air Distribution** - Survey all inlets and outlets. Verify all ventilation is reaching the served zone and there is adequate distribution.
  - Building Pressure** - Verify the building pressure is per design and a negative pressure is maintained for contaminant rooms temporarily occupied by sick occupants.
  - Operational Controls** - Review control sequences to verify systems will maintain intended ventilation, temperature, and humidity conditions during building operation. Verify a daily flush is scheduled in accordance with current ASHRAE recommendations and any applicable local or state guidance.
  - CO2 Monitoring** - As an indicator of proper ventilation throughout building occupation, all occupied areas shall be equipped with a CO2 monitor within each zone of the building.
  - Limited or No Existing Mechanical Ventilation** - In cases where there is limited or no existing mechanical ventilation, the assessment would then focus on available options and provide the design professional with documentation to provide ventilation options.
2. **Design Professional Review** – Submit the Ventilation Verification assessment report, with clearly noted deficiencies, to a qualified design professional (licensed mechanical engineer, certified industrial hygienist (CIH), or mechanical design professional as defined by state or provincial guidelines).
    - At the advice of the Design Professional, In-Room HEPA air cleaners may be considered as a supplemental component of central HVAC systems or as

temporary mitigation until installation of a permanent solution. HEPA air purifiers shall be selected according to current ASHRAE Guidelines.<sup>1</sup>

3. **Repairs, Adjustments, Replacements and Upgrades** – Work with the design professional to determine cost effective options to improve ventilation, filtration, and energy efficiencies for the building occupants that depend on a healthy working environment.
4. **HVAC Verification Report** - Prepare and submit a final HVAC Verification Report to Actors' Equity.

## 2.02 AIR SYSTEMS PROCEDURE

A. Adhere to one of the following procedures:

1. TABB – SMACNA TAB Procedural Guide, with particular focus on the following chapters:
  - a. Preliminary TAB Procedures.
  - b. General Air System TAB Procedures.
  - c. TABB Procedures for Specific Air Systems.
2. AABC – National Standards for Total System Balance.
3. NEBB – Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.

## 2.03 HYDRONIC SYSTEMS PROCEDURE

A. Adhere to one of the following procedures:

1. TABB – SMACNA TAB Procedural Guide, with particular focus on the following chapter:
  - a. Hydronic System TAB Procedures.
2. AABC – National Standards for Total System Balance.
3. NEBB – Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.

## 2.04 ADJUSTING

- A. Recorded data shall represent actual measured or observed conditions. Adjustments are to be done only by certified testing, adjusting, and balancing technicians after consultation with a design professional.

# II. Maintenance

## SECTION 00 00 02

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<sup>1</sup> ASHRAE, In-Room Air Cleaner Guidance for Reducing COVID 19 in Air in Your Space/Room. (January 21, 2021) (<https://www.ashrae.org/file%20library/technical%20resources/covid-19/in-room-air-cleaner-guidance-for-reducing-covid-19-in-air-in-your-space-or-room.pdf>)

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

#### A. Preventative Maintenance Assessment of:

1. HVAC Systems

### 1.02 REFERENCES

- A. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 180 – Standard Practice for inspection and Maintenance of Commercial Building HVAC Systems.
- B. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 62.1 – Standard for Acceptable Indoor Air Quality.
- C. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 241 – Control of Infectious Aerosols

### 1.03 DEFINITIONS

For purposes of this article, the following definitions apply:

- A. “Certified TAB Technician” means a technician certified to perform testing, adjusting, and balancing of HVAC systems by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing, Adjusting and Balancing Bureau (TABB).
- B. “HVAC” means heating, ventilation, and air conditioning.
- C. “Skilled and trained workforce” means a workforce where a majority of the construction workers are graduates of a registered apprenticeship program for the applicable occupation.
- D. “Qualified Testing Personnel” means either of the following:
  1. Certified TAB Technician; or
  2. A person certified to perform ventilation assessments of heating, ventilation and air conditioning system through a certification body accredited by ANAB.

### 1.04 SUBMITTALS

- A. Preventative Maintenance List and Agreement
  1. Establish a Preventative Maintenance List and Agreement with a vendor. Minimum HVAC and maintenance agreement shall be based on the current edition of ASHRAE 180 and ASHRAE 62.1 Section 8 Table 8.1.
  2. Submit signed agreement to Actors’ Equity.
- B. Maintenance logs must be kept and include date, time, name of person conducting the work, and what work is being done.

### 1.05 QUALITY ASSURANCE

#### A. Qualifications:

1. HVAC Preventative Maintenance, adjustments, repairs, upgrades, or replacements shall be performed by a skilled and trained workforce.
2. Verification of ventilation rates shall be performed by Qualified Testing Personnel.
3. Adjustments to the HVAC system shall be performed by a Certified TAB Technician.

## **PART 2 EXECUTION**

### **2.01 EXAMINATION**

- A. Qualified contractor shall develop a site-specific HVAC Preventative Maintenance schedule based on the current edition of ASHRAE 180 and ASHRAE 62.1 Section 8 Table 8.1.
- B. The following maintenance verifications and procedures shall be included along with the scheduled general maintenance.
  - 1. Verification of the ventilation rate must take place after each show loads in.
  - 2. If a facility's carbon dioxide concentration exceeds 1,100 ppm more than once a week as observed by the facility staff, the corresponding ventilation rates shall be adjusted by Certified TAB Technician, to ensure that peak carbon dioxide concentrations in the zone remain below the maximum allowable carbon dioxide ppm set point. Facilities shall keep a log of all incidents where the carbon dioxide concentration exceeds 1,100 ppm.
  - 3. Maintenance must include reviewing previous TAB reports to confirm any changes and that established setpoints are maintained.
  - 4. Review of Maintenance log from previous service to ensure deficiencies have been addressed. SAMPLE

**END OF SECTION**