

McCarran International Airport  
Terminal 3  
Las Vegas, NV



## Technical Assignment 1

### ASHRAE Standard 62.1-2007 Ventilation Compliance Evaluation

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## Executive Summary

This report is an analysis of the ventilation systems used for Terminal 3 at McCarran International Airport in Las Vegas, NV. This analysis is performed for all (88) air handling units located in Terminal 3 as well as for the (3) air handling units at the new central plant serving the terminal. Since Terminal 3 includes Variable Air Volume (VAV), Single Zone VAV, and Constant Volume systems; the calculations for some spaces vary slightly from those done for other spaces. The calculation procedure for each of these types of systems is explained in this report

The minimum requirements for the ventilation systems have been outlined in ASHRAE Standard 62.1-2007 which will serve as the base guidelines for system compliance. Ventilation compliance is only evaluated on the basis of sections 5 and 6 of the standard. Sections discussing items such as outdoor air quality are not being discussed in this particular report.

The results of this analysis indicate that the overall building complies with ASHRAE Standard 62.1-2007 Section 5, and that most of the air handling units comply with the ventilation requirements outlined in ASHRAE Standard 62.1-2007 Section 6. The only air handling units that do not meet the requirements outlined in Section 6 are those units serving the electrical substations. These units were designed to allow only for thermal conditioning of the space and therefore do not include any direct means of ventilation. Possible reasons for this design choice are discussed within this report.

## Architectural Background

Terminal 3 is a 1.8 million SF facility being developed on the northeast portion of the airport site. It will be a “unit” terminal at McCarran International Airport, as it will not be dependent on the existing terminals. The new terminal will provide 14 new gates serving both domestic and international flights. As a result, Terminal 3 will also include customs and border patrol services.

Terminal 3 consists of 5 levels. The below grade basement level includes mechanical and electrical rooms, storage, and Automated Transportation System (ATS) maintenance areas. Level 0 is below grade on the airside of the terminal, and at grade on the landside. It includes baggage claim, customs, an ATS station serving Satellite D, and back-of-house support facilities. This level also contains TSA passenger screening as Satellite D is a fully secure building. Level 1 is at grade on the airside of the terminal and above grade on the landside. It houses the baggage screening systems, airline support area, and other back-of-house facilities. This level is fully secure with the exception of a landing connecting Level 0 and Level 2. This landing will provide access from a new parking garage to be built with Terminal 3. Level 2 contains the new gates, concessions, gaming areas, concourses, ticketing counters, offices, and additional back-of-house facilities. Level 3 of the terminal consists only of mechanical penthouse spaces.

Special attention is drawn to the requirement for full separation of secure and non-secure areas of the new terminal. The following terms are used throughout this report, and are defined here for clarification. The landside portion of the terminal refers to the unsecure portions of the terminal that do not require one to first pass through Transportation Security Administration (TSA) screening areas. The airside portion of the terminal refers to those areas that can only be accessed after having passed through TSA screening lanes.

A new central plant is being constructed to serve Terminal 3. This central plant will be located to the east of the terminal. Since this central plant is crucial to future system analysis of the terminal, it is also being included in this report. As stated before, Terminal 3 also includes an ATS station with a tunnel connecting the terminal to the existing Satellite D facility. Three (3) air handling units are located at the Satellite D station to serve the loading and unloading areas, as well as a portion of the tunnel. These air handling units have been considered a portion of Satellite D, and therefore are not included in this report.

## Summary of Airside Mechanical Systems

Terminal 3 is served by (88) air handling units, with an additional (3) units serving the central plant. All of these air handling units are summarized in Table 1 on the following page. This table shows that with the exception of the baggage handling areas, electrical substations, and chiller rooms; all of the spaces have a carbon monoxide monitoring system. Similarly, the air handling units serving the baggage handling areas include a carbon dioxide monitoring system due to the operation of combustion engine driven baggage tugs. Each of these sensors allows for demand controlled ventilation in accordance with ASHRAE Standard 62.1-2007 Section 6.2.7. Almost all air handling units include variable speed drives as well. The exceptions to this are the units serving the electrical substations (AH-62 through AH-85), and those serving the chiller rooms at the central plant (CUP AH-1, CUP AH-2). The waterside components of the mechanical system are not discussed in this section as they are not included in this analysis contained in this report.

**Table 1 – Summary of Air Handling Units**

Air Handling Unit No.	Location	Service	Type	Total Supply Air	Design Outside Air	Carbon Monoxide Sensor	Carbon Dioxide Sensor
AH-1	01 Level	00 Level - Baggage Claim	VAV	40,000	16,000	--	X
AH-2	01 Level	01 Level - Building Services / Airline Ops	VAV	20,000	5,000	--	X
AH-3	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	36,000	32,000	X	--
AH-4	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	35,000	28,000	X	--
AH-5	01 Level	00 Level - Baggage Claim	VAV	40,000	16,000	--	X
AH-6	01 Level	00 Level - Landside Concourse	SZ VAV	30,000	7,500	--	X
AH-7	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	36,000	30,000	X	--
AH-8	01 Level	00 Level - Baggage Claim	VAV	40,000	175,000	--	X
AH-9	01 Level	00 Level - Landside Concourse	SZ VAV	30,000	95,000	--	X
AH-10	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	35,000	26,000	X	--
AH-11	01 Level	01 Level - Storage / Airline Ops	VAV	30,000	5,000	--	X
AH-12	01 Level	00 Level - Baggage Claim	VAV	40,000	17,000	--	X
AH-13	01 Level	00 Level - Baggage Claim	VAV	40,000	16,000	--	X
AH-14	01 Level	01 Level - TSA Bag Screening	SZ VAV	40,000	6,000	--	X
AH-15	01 Level	00 Level - Landside Concourse	SZ VAV	35,000	14,500	--	X
AH-16	01 Level	01 Level - TSA Bag Screening	SZ VAV	40,000	6,000	--	X
AH-17	01 Level	00 Level - Baggage Claim / Concessions	VAV	40,000	19,500	--	X
AH-18	0B Level	0B Level - ATS Maintenance	VAV	40,000	40,000	--	X
AH-19	0B Level	00 Level - ATS T3 Station	VAV	40,000	20,000	--	X
AH-20	0B Level	00 Level - ATS North Pedestrian Tunnel	SZ VAV	15,000	5,000	--	X
AH-21	01 Level	00 Level - TSA Screening, 01 Level Maintenance	VAV	40,000	15,000	--	X
AH-22	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	25,000	23,000	X	--
AH-23	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	25,000	21,000	X	--
AH-24	01 Level	00 Level - Landside Concourse	SZ VAV	35,000	12,500	--	X
AH-25	01 Level	00 Level - TSA Screening	VAV	40,000	10,000	--	X
AH-26	01 Level	00 Level - TSA Queue	VAV	40,000	26,000	--	X
AH-27	01 Level	01 Level - Maintenance	VAV	20,000	19,000	X	--
AH-28	01 Level	01 Level - TSA Bag Screening	SZ VAV	40,000	6,000	--	X
AH-29	01 Level	00 Level - Landside Concourse	SZ VAV	35,000	12,500	--	X
AH-30	01 Level	00 Level - Baggage Claim	VAV	40,000	18,000	--	X

Air Handling Unit No.	Location	Service	Type	Total Supply Air	Design Outside Air	Carbon Monoxide Sensor	Carbon Dioxide Sensor
AH-31	01 Level	00 Level - Baggage Claim	VAV	40,000	20,000	--	X
AH-32	01 Level	01 Level - TSA Bag Screening	SZ VAV	40,000	6,000	--	X
AH-33	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	36,000	28,500	X	--
AH-34	01 Level	00 Level - Landside Concourse	SZ VAV	35,000	11,000	--	X
AH-35	01 Level	00 Level - Customs and Border Patrol	VAV	35,000	16,500	--	X
AH-36	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	40,000	33,500	X	--
AH-37	01 Level	00 Level - Customs and Border Patrol	VAV	40,000	12,000	--	X
AH-38	01 Level	01 Level - Inbound / Outbound Baggage	SZ VAV	36,000	26,500	X	--
AH-39	01 Level	00 Level - Customs and Border Patrol	VAV	40,000	25,000	--	X
AH-40	01 Level	01 Level - Airline Operations	VAV	25,000	7,000	--	X
AH-41	02 Level	02 Level - Airside Concourse, Gate 14 & Gate 15	VAV	30,000	13,000	--	X
AH-42	02 Level	02 Level - DOA Back of House	VAV	35,000	14,000	--	X
AH-43	02 Level	02 Level - Airside Concourse, Gate 11 & Gate 12	VAV	45,000	21,000	--	X
AH-44	Penthouse	02 Level - Landside Concourse	SZ VAV	50,000	11,000	--	X
AH-45	Penthouse	02 Level - Airside Concourse, Gate 10	VAV	50,000	23,000	--	X
AH-46	Penthouse	02 Level - Ticketing (West)	VAV	50,000	30,000	--	X
AH-47	Penthouse	02 Level - Airside Concourse, Gate 8 & Gate 9	VAV	40,000	22,000	--	X
AH-48	Penthouse	02 Level - Landside Concourse	SZ VAV	55,000	12,000	--	X
AH-49a	Penthouse	02 Level - Landside Concourse	SZ VAV	25,000	7,500	--	X
AH-49b	Penthouse	02 Level - Landside Concourse	SZ VAV	25,000	7,500	--	X
AH-50a	Penthouse	02 Level - Airside Concourse, TSA Screening (West)	VAV	30,000	10,000	--	X
AH-50b	Penthouse	02 Level - Airside Concourse, TSA Screening (East)	VAV	30,000	10,000	--	X
AH-51a	Penthouse	02 Level - TSA Queue (West)	VAV	25,000	16,000	--	X
AH-51b	Penthouse	02 Level - TSA Queue (East)	VAV	30,000	19,500	--	X
AH-52	Penthouse	02 Level - VIP Lounge, Gate 6 & Gate 7	VAV	55,000	27,000	--	X
AH-53	Penthouse	02 Level - Landside Concourse	SZ VAV	40,000	10,000	--	X
AH-54	Penthouse	02 Level - Airside Concourse, Gate 4 & Gate 5	VAV	50,000	26,000	--	X
AH-55	Penthouse	02 Level - Landside Concourse	SZ VAV	55,000	12,500	--	X

Air Handling Unit No.	Location	Service	Type	Total Supply Air	Design Outside Air	Carbon Monoxide Sensor	Carbon Dioxide Sensor
AH-56	Penthouse	02 Level - Ticketing (East)	VAV	45,000	27,000	--	X
AH-57	02 Level	02 Level - Airside Concourse, Gate 3	VAV	40,000	20,000	--	X
AH-58	02 Level	02 Level - Landside Concourse	SZ VAV	40,000	10,000	--	X
AH-59	02 Level	02 Level - Airside Concourse, Gate 2	VAV	40,000	23,000	--	X
AH-60	02 Level	02 Level - Airside Concourse, Gate 1	VAV	40,000	22,000	--	X
AH-61	02 Level	02 Level - Metro Substation	VAV	25,000	6,000	--	X
AH-62	0B Level	Electrical Substation	CV	4,000	--	--	--
AH-63	0B Level	Electrical Substation	CV	4,000	--	--	--
AH-64	0B Level	Electrical Substation	CV	5,000	--	--	--
AH-65	0B Level	Electrical Substation	CV	4,000	--	--	--
AH-66	0B Level	Electrical Substation	CV	4,000	--	--	--
AH-67	0B Level	Electrical Substation	CV	4,000	--	--	--
AH-68	0B Level	Electrical Substation	CV	4,000	--	--	--
AH-69	0B Level	Electrical Substation	CV	4,000	--	--	--
AH-70	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-71	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-72	01 Level	Electrical Substation	CV	5,000	--	--	--
AH-73	01 Level	Electrical Substation	CV	5,000	--	--	--
AH-74	01 Level	Electrical Substation	CV	5,000	--	--	--
AH-75	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-76	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-77	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-78	01 Level	Electrical Substation	CV	5,000	--	--	--
AH-79	01 Level	Electrical Substation	CV	5,000	--	--	--
AH-80	01 Level	Electrical Substation	CV	5,000	--	--	--
AH-81	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-82	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-83	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-84	01 Level	Electrical Substation	CV	4,000	--	--	--
AH-85	01 Level	Electrical Substation	CV	4,000	--	--	--
CUP AH-1	CUP	Chiller Room	CV	20,000	3,500	--	--
CUP AH-2	CUP	Chiller Room	CV	20,000	3,500	--	--
CUP AH-3	CUP	Upper Level Offices	VAV	11,000	5,000	--	X



## **Summary of Compliance with ASHRAE Standard 62.1-2007 Section 5**

ASHRAE Standard 62.1-2007 Section 5 outlines various requirements for systems and equipment. These requirements have been analyzed on an overall basis, and the results of this analysis are included in this section. It has been determined that all necessary requirements for this section have been met, and compliance has been achieved.

### *Natural Ventilation*

This section does not apply to Terminal 3 since natural ventilation is not used anywhere in the building.

### *Ventilation Air Distribution*

The ventilation air distribution system of Terminal 3 has been designed to achieve the minimum ventilation airflow at any load condition. This and other requirements for balancing and testing are specified in the construction documents for the project.

### *Exhaust Duct Location*

Exhaust ducts for Terminal 3 are not considered to convey serious harmful contaminants. Regardless, all exhaust ductwork is maintained at a negative pressure relative to the occupied spaces they pass through. This negative pressure is maintained until reaching the exhaust fans located in unoccupied mechanical room spaces.

### *Ventilation System Controls*

All air handling units serving occupied zones are provided with demand controlled ventilation. The sensors in these spaces ensure that the air handling units are operating when the space is occupied.

### *Airstream Surfaces*

HVAC material surfaces are resistant to mold growth in accordance with standard testing procedures. It is also noted that sheet metal surfaces are exempt from this requirement.

### *Outdoor Air Intakes*

All outdoor air intakes for Terminal 3 have been located on the landside portion of the terminal. This location ensures that the outdoor air is not contaminated by the operation of airline jet engines on the airside portion of the terminal. In addition, all exhaust and relief air outlets for Terminal 3 have been located on the airside of the building ensuring that outdoor air intakes are not contaminated with this exhaust. Finally, all cooling towers serving Terminal 3 are located at the central plant. This central plant is located at a distance far greater than the minimum 25 feet separation from air intakes.

All louvers on outdoor air intakes have been designed to limit velocity to 700 fpm over the net free area of the louver (350 fpm face velocity). In addition, the louvers used on Terminal 3 have been tested to limit water penetration in accordance with this section. All louvers on Terminal 3 are also provided with bird screens to prevent bird nesting in the outdoor air intakes.

### *Local Capture of Contaminants*

Exhaust air from all non-combustion equipment is ducted directly to the outdoors.

#### *Combustion Air*

Exhaust air from all combustion equipment is vented as directed by manufacturer and ducted directly to the outdoors.

#### *Particulate Matter Removal*

All air handling units are provided with air filters having a minimum efficiency reporting (MERV) value of MERV-7. These filters surpass the requirement of a minimum rating of MERV-6.

#### *Dehumidification Systems*

All occupied spaces of Terminal 3 have been designed to be limited to a relative humidity lower than 65%. The building is also maintained at a pressure that limits infiltration of unconditioned air.

#### *Drain Pans, Finned-Tube Coils and Heat Exchangers*

The condensate drain pans of all air handling units and other cooling coils have been designed to meet the requirements of UMC 2003. These design requirements also ensure that this section of the standard has been met.

#### *Humidifiers and Water-Spray Systems*

This section does not apply to Terminal 3 since the equipment described in this section is not used in the building.

#### *Access for Inspection, Cleaning, and Maintenance*

Equipment layouts within mechanical rooms have been designed to maintain necessary clearances to all equipment.

#### *Building Envelope*

Architectural details indicate that all elements of the building envelope have been designed to prevent water penetration into the building envelope.

#### *Building with Attached Parking Garages*

While the parking garage at Terminal 3 is attached by a pedestrian walkway, it is located at a distance from Terminal 3. This separation minimizes mitigation of air from the garage into Terminal 3.

#### *Air Classification and Recirculation*

Air classifications for Terminal 3 are class 3 in very limited areas, and otherwise do not exceed class 2. All class 3 air is exhausted directly to the outdoors, and is not recirculated any space. All class 2 air is limited to being recirculated to the same space type, and is not recirculated into spaces with an air classification of class 1.

#### *Requirements for Buildings Containing ETS Areas and ETS-Free Areas*

This section does not apply to Terminal 3 since smoking is prohibited in all areas of the building.

## Analysis of Compliance with ASHRAE Standard 62.1-2007 Section 6

### Background and Assumptions

ASHRAE Standard 62.1-2007 Section 6 prescribes two methods for the design of ventilation systems in a building. The analysis contained in this report is based on evaluation by Section 6.2, Ventilation Rate Procedure.

In order to analyze the ventilation systems in the building, some assumptions were made. These assumptions are as follows:

#### *Zone Air Distribution Effectiveness*

It is assumed that air will be distributed by ceiling supply of cool air in all spaces. Therefore, in accordance with ASHRAE Standard 62.1-2007 Table 6-2,  $E_z = 1.0$  for all spaces. This means that  $V_{oz} = V_{bz}$  for all zones.

#### *Zone Primary Airflow*

ASHRAE Standard 62.1-2007 Section 6.2.5.1 states that for VAV systems,  $V_{pz}$  is the design minimum airflow of the VAV terminal unit. The construction documents indicate that this design minimum is 50% of the maximum airflow.

#### *Occupant Diversity*

It is assumed that the occupant diversity,  $D$ , is equal to 1.0 for all systems. As a result, ASHRAE Standard 62.1-2007 Section 6.2.5.3 states that  $V_{ou} = \Sigma V_{bz}$ .

#### *100% Outdoor Air Systems*

AH-18 supplies 100% outdoor air to provide for makeup air equivalent to the under platform exhaust at the Satellite D ATS Station. ASHRAE Standard 62.1-2007 Section 6.2.4 states that  $V_{ot} = \Sigma V_{oz}$  for such a system.

#### *System Ventilation Efficiency*

ASHRAE Standard 62.1-2007 Table 6-3 allows for an alternative calculation of system ventilation efficiency,  $E_v$ . This alternative is presented in Appendix A of the standard, and is utilized for all system analysis contained in this report.

#### *Exhaust Ventilation*

Some spaces require exhaust airflow be provided in accordance with ASHRAE Standard 62.1-2007 Table 6-4. While detailed analysis of these requirements has not been included in this report, spot checks of the spaces requiring such ventilation indicate that the design conforms to these minimum exhaust rates. In addition, Section 6.2.8 of the standard states that there is no minimum outdoor air requirement for the makeup air provided to these exhausted spaces. This report therefore assumes that no outdoor air is required to be provided directly to the space. In reality, the air supplied directly to the space and the transfer air from adjacent spaces will provide for some outdoor air to the space. This should not have an effect on the calculations performed in this analysis.

### *Occupant Density*

The calculations done in this report group spaces based on function. The following clarifications and assumptions have been applied to ASHRAE Standard 62.1-2007 Table 6-1 in order to determine the occupant densities for the various spaces. Landside and Airside Concourses, as well as other large circulation areas have been classified as lobby spaces. The standard lists a default occupancy density of 10 people per 1,000 SF, or 100 SF per person. Baggage Claim areas have been classified as transportation waiting areas. In accordance with the egress drawings, the occupancy density for these areas has been determined to be 20 SF per person over the net floor area (excluding baggage handling equipment).

All other space classifications are clearly presented in the standard and applied to this report. In most situations, occupant densities are designed to match the densities used to calculate the building egress requirements. Exceptions to this include gaming areas, where zone population has been calculated based on fixed seating per architectural drawings, as well as restrooms where the fixture count is the basis for zone population.

### **Procedure**

This section explains the Ventilation Rate Procedure, ASHRAE Standard 62.1-2007 Section 6.2, through a summary of required calculation steps. These calculations are representative of those used throughout the analysis.

### *Classification of Spaces*

The first step in the calculation process is to classify all of the spaces based on function. This is important because different types of spaces have different ventilation requirements. Zone areas and occupant densities are also determined at this time.

### *Breathing Zone Outdoor Airflow, $V_{bz}$*

The next step is to determine the breathing zone outdoor airflow through the use of ASHRAE Standard 62.1-2007 Equation 6-1.

$$V_{bz} = R_p \cdot P_z + R_a \cdot A_z$$

Where:

$A_z$  = Zone floor area

$P_z$  = Zone population

$R_p$  = Outdoor airflow rate required per person

$R_a$  = Outdoor airflow rate required per unit area

### *Zone Outdoor Airflow, $V_{oz}$*

Once the breathing zone outdoor airflow is known, the design zone outdoor airflow can be solved using ASHRAE Standard 62.1-2007 Equation 6-2.

$$V_{oz} = \frac{V_{bz}}{E_z}$$

Where:

- $V_{bz}$  = Breathing zone outdoor airflow (found in the previous calculation)
- $E_z$  = Zone air distribution effectiveness (assumed to be 1.0 for all calculations)

The assumption that  $E_z = 1.0$  will result in  $V_{oz}$  being equal to  $V_{bz}$ .

*Outdoor Air Intake Flow,  $V_{ot}$ , for Single-Zone and 100% Outdoor Air Systems*

For single-zone systems and 100% outdoor air systems, the analysis is finished. For single zone systems, the outdoor air intake flow required is found by ASHRAE Standard 62.1-2007 Equation 6-3.

$$V_{ot} = V_{oz}$$

For 100% outdoor air systems, the outdoor air intake flow required is found by ASHRAE Standard 62.1-2007 Equation 6-4.

$$V_{ot} = \sum_{\text{All Zones}} V_{oz}$$

Where:

- $V_{oz}$  = Zone outdoor airflow (found in the previous calculation)

*Primary Outdoor Air Fraction,  $Z_p$*

For multi-zone VAV systems, further steps must be taken to determine the critical zone and account for overall system ventilation efficiency. The first step in this process is to determine  $Z_p$  by use of ASHRAE Standard 62.1-2007 Equation 6-5.

$$Z_p = \frac{V_{oz}}{V_{pz}}$$

Where:

- $V_{oz}$  = Zone outdoor air flow (found earlier)
- $V_{pz}$  = Zone primary airflow, or the minimum supply air quantity for the space

*System Ventilation Efficiency,  $E_v$*

The system ventilation efficiency may be found using ASHRAE Standard 62.1-2007 Table 6-3, or alternatively through the use of Appendix A in the standard. All calculations done in this analysis were performed using the equation in Appendix A of the standard.

$$E_{vz} = 1 + X_s - Z_d$$

Where:

- $X_s$  = Average outdoor air fraction

$$X_s = \frac{V_{ou}}{V_{ps}}, V_{ou} = \sum V_{bz}, \text{ and } V_{ps} = \sum V_{pz}$$

- $Z_d$  = Discharge outdoor air fraction

$$Z_d = \frac{V_{oz}}{V_{dz}} \text{ and } V_{dz} = V_{pz} \text{ (based on assumptions)}$$

Once  $E_{vz}$  values have been found for all zones in the system, the overall system ventilation efficiency ( $E_v$ ) can be defined as the minimum of these values.

#### *Outdoor Air Intake Flow, $V_{ot}$ , for Multi-Zone VAV Systems*

For multi-zone systems, the analysis is finished. The outdoor air intake flow required is found by ASHRAE Standard 62.1-2007 Equation 6-8.

$$V_{ot} = \frac{V_{ou}}{E_v}$$

Where:

$V_{ou}$  = Uncorrected outdoor air intake,  $V_{ou} = \Sigma V_{bz}$

$E_v$  = System ventilation efficiency (found in previous calculation)

### **Discussion of Results**

Table 2 summarizes the results of the analysis. This table lists the nominal outside air ( $\Sigma V_{oz}$ ) and required outdoor airflow ( $V_{ot}$ ) for each air handling unit, as well as for the entire building. Compliance with ASHRAE Standard 62.1-2007 Section 6 is determined by comparing the values of required outdoor airflow ( $V_{ot}$ ) to the design outdoor airflow. The design outdoor airflow is determined from the air handling unit schedule found in the construction documents for Terminal 3. If the design outdoor airflow is higher than the required outdoor airflow ( $V_{ot}$ ), then the system is compliant with ASHRAE Standard 62.1-2007 Section 6.

Overall, most of the systems comply with ASHRAE Standard 62.1-2007 Section 6. As Table 2 indicates, the only exceptions to this are the electrical substation rooms. These rooms were likely designed under the reasonable assumption that they would normally be unoccupied spaces. As a result, the air handling units were selected as 100% recirculated air to handle the space thermal loads only. Since the required outdoor air quantities for these spaces are relatively low, the non-compliance could likely be remedied through the use of transfer air from adjacent spaces.

Several spaces throughout the building also have design outdoor airflows that are relatively high compared to the outdoor air intake flow required. While this would typically indicate that the system is over designed and may be wasting energy, all of these systems include either carbon monoxide or carbon dioxide monitoring. As a result, the outdoor air intake flow required may be reset as design conditions change. This is permitted in accordance with ASHRAE Standard 62.1-2007. In the event of an extremely high occupant density in these areas, the system will still be able to meet the high ventilation requirement. It is also important to consider that Terminal 3 may undergo many tenant improvement projects throughout the building life. In preparation for this, it is important to size the system for adequate future outdoor airflow.

**Table 2 – Results of Ventilation Compliance Calculations**

Air Handling Unit No.	$\Sigma V_{oz}$ , Nominal Outdoor Airflow Required (cfm)	$V_{ot}$ , Outdoor Air Intake Flow Required (cfm)	$V_{oa}$ , Design Outdoor Airflow (cfm)	Complies with ASHRAE Standard 62.1-2007 Section 6
AH-1	7,677	15,822	16,000	Yes
AH-2	2,025	2,372	5,000	Yes
AH-3	31,287	31,287	32,000	Yes
AH-4	27,927	27,927	28,000	Yes
AH-5	12,501	13,790	16,000	Yes
AH-6	1,647	1,647	7,500	Yes
AH-7	23,252	23,252	30,000	Yes
AH-8	10,213	10,405	175,000	Yes
AH-9	2,048	2,048	95,000	Yes
AH-10	22,010	22,010	26,000	Yes
AH-11	1,887	4,162	5,000	Yes
AH-12	11,522	14,216	17,000	Yes
AH-13	9,496	10,189	16,000	Yes
AH-14	1,123	1,123	6,000	Yes
AH-15	3,107	3,153	14,500	Yes
AH-16	1,811	1,811	6,000	Yes
AH-17	7,746	17,334	19,500	Yes
AH-18	33,743	33,743	40,000	Yes
AH-19	13,668	14,398	20,000	Yes
AH-20	1,565	1,565	5,000	Yes
AH-21	7,012	7,526	15,000	Yes
AH-22	22,365	22,365	23,000	Yes
AH-23	18,237	18,237	21,000	Yes
AH-24	2,711	2,711	12,500	Yes
AH-25	9,302	9,338	10,000	Yes
AH-26	12,934	16,547	26,000	Yes
AH-27	14,487	14,487	19,000	Yes
AH-28	1,692	1,692	6,000	Yes
AH-29	2,620	2,664	12,500	Yes
AH-30	9,244	17,451	18,000	Yes
AH-31	11,850	14,611	20,000	Yes
AH-32	1,542	1,542	6,000	Yes
AH-33	25,709	25,709	28,500	Yes
AH-34	2,298	2,298	11,000	Yes
AH-35	10,627	14,603	16,500	Yes

Air Handling Unit No.	$\Sigma V_{oz}$ , Nominal Outdoor Airflow Required (cfm)	$V_{ot}$ , Outdoor Air Intake Flow Required (cfm)	$V_{oa}$ , Design Outdoor Airflow (cfm)	Complies with ASHRAE Standard 62.1-2007 Section 6
AH-36	32,294	32,294	33,500	Yes
AH-37	3,841	6,431	12,000	Yes
AH-38	24,294	24,294	26,500	Yes
AH-39	13,820	17,464	25,000	Yes
AH-40	2,818	4,777	7,000	Yes
AH-41	3,712	10,320	13,000	Yes
AH-42	2,778	4,494	14,000	Yes
AH-43	6,134	18,490	21,000	Yes
AH-44	2,021	2,021	11,000	Yes
AH-45	6,391	11,180	23,000	Yes
AH-46	13,451	24,988	30,000	Yes
AH-47	6,760	17,311	22,000	Yes
AH-48	2,360	2,360	12,000	Yes
AH-49a	1,473	1,473	7,500	Yes
AH-49b	1,516	1,516	7,500	Yes
AH-50a	5,021	7,850	10,000	Yes
AH-50b	5,790	8,781	10,000	Yes
AH-51a	9,625	9,852	16,000	Yes
AH-51b	9,269	10,578	19,500	Yes
AH-52	9,785	18,741	27,000	Yes
AH-53	1,722	1,722	10,000	Yes
AH-54	6,289	19,180	26,000	Yes
AH-55	2,341	2,341	12,500	Yes
AH-56	13,325	19,814	27,000	Yes
AH-57	6,314	8,855	20,000	Yes
AH-58	1,612	1,612	10,000	Yes
AH-59	5,169	7,523	23,000	Yes
AH-60	4,495	11,939	22,000	Yes
AH-61	2,832	3,232	6,000	Yes
AH-62	43	43	0	No
AH-63	43	43	0	No
AH-64	95	95	0	No
AH-65	106	106	0	No
AH-66	49	49	0	No
AH-67	49	49	0	No
AH-68	55	55	0	No



Air Handling Unit No.	$\Sigma V_{oz}$ , Nominal Outdoor Airflow Required (cfm)	$V_{ot}$ , Outdoor Air Intake Flow Required (cfm)	$V_{oa}$ , Design Outdoor Airflow (cfm)	Complies with ASHRAE Standard 62.1-2007 Section 6
AH-69	55	55	0	No
AH-70	64	64	0	No
AH-71	64	64	0	No
AH-72	77	77	0	No
AH-73	93	93	0	No
AH-74	93	93	0	No
AH-75	124	124	0	No
AH-76	54	54	0	No
AH-77	54	54	0	No
AH-78	103	103	0	No
AH-79	103	103	0	No
AH-80	111	111	0	No
AH-81	66	66	0	No
AH-82	66	66	0	No
AH-83	66	66	0	No
AH-84	32	32	0	No
AH-85	32	32	0	No
CUP AH-1	3,398	3,398	3,500	Yes
CUP AH-2	3,398	3,398	3,500	Yes
CUP AH-3	775	880	5,000	Yes
<b>Building Total</b>	<b>595,405</b>	<b>744,841</b>	<b>1,340,500</b>	--

## References

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## **Appendix A – ASHRAE Standard 62.1-2007 Section 6.2, Ventilation Rate Procedure Calculations**

The following tables are provided as supporting calculations to the results mentioned earlier. All systems analyzed are included in this appendix, with each table including all data necessary to perform the analysis as outlined in this report.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes	
AH-1	Baggage Claim	17,542	20	656	0.06	7.5	5,973	11,515	0.52	0.87			1	
	Offices	7,364	100	74	0.06	5	812	4,288	0.19	1.20				
	Break Rooms	879	40	22	0.06	5	163	330	0.49	0.89				
	Corridor	2,167			0.06		130	385	0.34	1.05				
	Loading Dock	1,127			0.12		135	150	0.90	0.49				
	Sally Port	769			0.12		92	125	0.74	0.65				
	Meeting Rooms	288	20	15	0.06	5	92	170	0.54	0.84				
	Trash Room	748					0	240	0.00	1.39			2	
	Restrooms	1,989		26			0	825	0.00	1.39			3	
	Electrical Closets	510				0.06		31	490	0.06	1.32			
	Storage	2,075				0.12		249	1,330	0.19	1.20			
<b>Total</b>	<b>35,458</b>			<b>793</b>			<b>7,677</b>	<b>19,848</b>	<b>0.90</b>		<b>0.49</b>	<b>15,822</b>		

- Notes:**
1. Gross Baggage Claim area = 17,542 SF; Net Baggage Claim area = 13,117 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Trash Room is ventilated at an exhaust rate of 1.00 cfm/SF according to Table 6-4 of ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.
  3. Restrooms 01403, 01404, 01406 are ventilated at an exhaust rate of 70 cfm/unit, and Janitor's Storage 01405 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-2	Offices	3,115	100	32	0.06	5	347	1,075	0.32	0.91			
	Break Rooms	1,616	40	41	0.06	5	302	1,800	0.17	1.07			
	Corridor	4,043			0.06		243	1,613	0.15	1.09			
	Loading Dock & Sally Port	1,478			0.12		177	465	0.38	0.85			
	Restrooms	1,989		15			0	300	0.00	1.24			1
	Storage	7,972				0.12		957	3,350	0.29	0.95		
	<b>Total</b>	<b>20,213</b>		<b>88</b>			<b>2,025</b>	<b>8,603</b>	<b>0.38</b>		<b>0.85</b>	<b>2,372</b>	

Notes: 1. Restrooms 10203, 10232, 01406 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 10234 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-3	Inbound / Outbound Baggage	20,858			1.50		31,287	32,700					1
	<b>Total</b>	<b>20,858</b>		<b>0</b>			<b>31,287</b>	<b>32,700</b>				<b>31,287</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-4	Inbound / Outbound Baggage	18,618			1.50		27,927	32,400					1
	<b>Total</b>	<b>18,618</b>		<b>0</b>			<b>27,927</b>	<b>32,400</b>				<b>27,927</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-5	Baggage Claim	32,514	20	1,331	0.06	7.5	11,933	15,675	0.76	0.91			1
	Offices	4,711	100	48	0.06	5	523	2,555	0.20	1.46			
	Electrical Closets	249			0.06		15	245	0.06	1.61			
	Storage	249			0.12		30	245	0.12	1.55			
	<b>Total</b>	<b>5,209</b>		<b>1,379</b>			<b>12,501</b>	<b>18,720</b>	<b>0.76</b>		<b>0.91</b>	<b>13,790</b>	

Notes: 1. Gross Baggage Claim area = 32,514 SF; Net Baggage Claim area = 26,614 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-6	Landside Concourse	14,942	100	150	0.06	5	1,647	29,330					1
	<b>Total</b>	<b>14,942</b>		<b>150</b>			<b>1,647</b>	<b>29,330</b>				<b>1,647</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-7	Inbound / Outbound Baggage	15,501			1.50		23,252	36,000					1
	<b>Total</b>	<b>15,501</b>		<b>0</b>			<b>23,252</b>	<b>36,000</b>				<b>23,252</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-8	Baggage Claim	27,750	20	1,093	0.06	7.5	9,863	18,480	0.53	0.98			1
	Gaming	3,840		24	0.06	5	350	825	0.42	1.09			2
	Restrooms	2,127		26			0	518	0.00	1.52			3
	<b>Total</b>	<b>33,717</b>		<b>1,143</b>			<b>10,213</b>	<b>19,823</b>	<b>0.53</b>		<b>0.98</b>	<b>10,405</b>	

Notes: 1. Gross Baggage Claim area = 27,750 SF; Net Baggage Claim area = 21,850 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.  
2. Gaming area occupancy is based on fixed seating per architectural plans.  
3. Restrooms 00319, 00410, 00411 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 00321 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-9	Landside Concourse	14,839	100	149	0.06	5	1,635	11,500	0.14	0.99			1
	Pedestrian Bridge Landing	3,715	100	38	0.06	5	413	3,450	0.12	1.02			1
	<b>Total</b>	<b>18,554</b>		<b>187</b>			<b>2,048</b>	<b>14,950</b>	<b>0.14</b>		<b>0.99</b>	<b>2,048</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-10	Inbound / Outbound Baggage	14,673			1.50		22,010	34,990					1
	<b>Total</b>	<b>14,673</b>		<b>0</b>			<b>22,010</b>	<b>34,990</b>				<b>22,010</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.



Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-11	Storage	1,678			0.12		201	2,650	0.08	1.05			
	EDS Screening	4,259			0.12		511	8,075	0.06	1.06			1
	Corridor	558			0.06		33	400	0.08	1.04			
	Break Rooms	2,374	40	60	0.06	5	442	2,233	0.20	0.93			
	Offices	6,318	100	64	0.06	5	699	1,038	0.67	0.45			
	Restrooms	535		6			0	425	0.00	1.13			2
	<b>Total</b>	<b>15,722</b>		<b>130</b>			<b>1,887</b>	<b>14,820</b>	<b>0.67</b>		<b>0.45</b>		<b>4,162</b>

- Notes:**
- EDS Screening ventilation is based on modeling the space as a shipping / receiving area.
  - Restrooms 10428 and 10430 are ventilated at an exhaust rate of 70 cfm/unit. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-12	Baggage Claim	28,738	20	1,142	0.06	7.5	10,289	13,400	0.77	0.81			1
	Offices	8,001	100	81	0.06	5	885	3,528	0.25	1.33			
	Gaming	1,920		40	0.06	5	315	2,475	0.13	1.45			2
	Passenger Screening Room	119	100	2	0.06	5	17	275	0.06	1.52			
	Electrical Closets	249			0.06		15	245	0.06	1.52			
	<b>Total</b>	<b>39,027</b>		<b>1,265</b>			<b>11,522</b>	<b>19,923</b>	<b>0.77</b>		<b>0.81</b>		<b>14,216</b>

- Notes:**
- Gross Baggage Claim area = 28,738 SF; Net Baggage Claim area = 22,838 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  - Gaming area occupancy is based on fixed seating per architectural plans.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-13	Baggage Claim	27,503	20	1,007	0.06	7.5	9,203	15,125	0.61	0.93			1
	Hotel / Casino Check-In	2,136	100	22	0.06	5	238	2,000	0.12	1.42			
	Electrical Closets	150			0.06		9	245	0.04	1.50			
	Storage	386			0.12		46	200	0.23	1.31			
	<b>Total</b>	<b>30,175</b>		<b>1,029</b>			<b>9,496</b>	<b>17,570</b>	<b>0.61</b>		<b>0.93</b>	<b>10,189</b>	

Notes: 1. Gross Baggage Claim area = 27,503 SF; Net Baggage Claim area = 20,128 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-14	EDS Screening	9,359			0.12		1,123	40,000					1
	<b>Total</b>	<b>9,359</b>		<b>0</b>			<b>1,123</b>	<b>40,000</b>				<b>1,123</b>	

Notes: 1. EDS Screening ventilation is based on modeling the space as a shipping / receiving area. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-15	Landside Concourse	24,490	100	245	0.06	5	2,694	14,000	0.19	0.99			1
	Pedestrian Bridge Landing	3,715	100	38	0.06	5	413	3,450	0.12	1.06			1
	<b>Total</b>	<b>28,205</b>		<b>283</b>			<b>3,107</b>	<b>17,450</b>	<b>0.19</b>		<b>0.99</b>	<b>3,153</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-16	EDS Screening	15,088			0.12		1,811	39,975					1
	<b>Total</b>	<b>15,088</b>		<b>0</b>			<b>1,811</b>	<b>39,975</b>				<b>1,811</b>	

Notes: 1. EDS Screening ventilation is based on modeling the space as a shipping / receiving area. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-17	Baggage Claim	1,343	20	68	0.06	7.5	591	1,925	0.31	1.14			1
	Computer Rooms	930	100	10	0.06	5	106	600	0.18	1.27			
	Corridor	991			0.06		59	210	0.28	1.16			
	Concessions	6,910	100	70	0.18	7.5	1,769	1,769	1.00	0.45			
	Offices	150	100	2	0.06	5	19	363	0.05	1.39			
	Meeter / Greeter Circulation	15,914	20	796	0.06	5	4,935	8,935	0.55	0.89			2
	Restrooms	3,335		43			0	688	0.00	1.45			3
	Hotel / Casino Check-In	1,764	100	18	0.06	5	196	1,500	0.13	1.32			
	Electrical Closets	150			0.06		9	245	0.04	1.41			
	Storage	526			0.12		63	1,100	0.06	1.39			
<b>Total</b>	<b>32,013</b>		<b>1,007</b>			<b>7,746</b>	<b>17,334</b>	<b>1.00</b>		<b>0.45</b>	<b>17,334</b>		

- Notes:
1. Gross Baggage Claim area = 1,343 SF; Net Baggage Claim area = 1,343 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Circulation area ventilation is based on an occupancy of 20 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Restrooms 01705, 01707, 01709, 10605, 10607 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 01708, 10608 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-18	Offices	1,347	100	14	0.06	5	151	1,400					
	Restrooms	1,329		14			0	400					1
	Storage	2,000			0.12		240	975					
	ATS Maintenance	32,633			1.00		32,633	32,633					2
	Electrical Closets	207			0.06		12	1,050					
	Break Rooms	914	40	23	0.06	5	170	500					
	Meeting Rooms	471	20	24	0.06	5	148	300					
	Corridor	6,470			0.06		388	1,100					
<b>Total</b>	<b>45,371</b>			<b>75</b>			<b>33,743</b>	<b>38,358</b>			<b>0.00</b>	<b>33,743</b>	3

- Notes:**
- Restrooms BT206, BT207 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage BT214 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.
  - ATS Maintenance is ventilated at an exhaust rate of 1.00 cfm/SF. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. The calculated value of outdoor airflow is provided as make-up air for the underplatform exhaust at the D-Gates Station.
  - This air handling unit provides 100% OA for make-up to the underplatform exhaust at the D-Gates Station. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.4,  $V_{ot} = \sum V_{oz}$ .

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-19	Station Loading	6,700		400	0.06	7.5	3,402	4,560	0.75	0.95			1
	Station Unloading	11,161		400	0.06	7.5	3,670	5,103	0.72	0.98			1
	Circulation	17,284	20	865	0.06	5	5,362	7,493	0.72	0.98			2
	Concessions	4,817	100	49	0.18	7.5	1,235	2,500	0.49	1.20			
	<b>Total</b>	<b>39,962</b>		<b>1,714</b>			<b>13,668</b>	<b>19,656</b>	<b>0.75</b>		<b>0.95</b>	<b>14,398</b>	

Notes: 1. Loading and Unloading ventilation is based on an occupancy of 400 people in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.  
2. Circulation area ventilation is based on an occupancy of 20 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-20	ATS Pedestrian Tunnel	11,584	100	116	0.06	7.5	1,565	26,000					1
	<b>Total</b>	<b>11,584</b>		<b>116</b>			<b>1,565</b>	<b>26,000</b>				<b>1,565</b>	

Notes: 1. ATS Tunnel ventilation is based on an occupancy of 100 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-21	TSA Circulation	19,585	20	980	0.06	5	6,075	12,790	0.47	0.93			1
	Offices	4,855	100	49	0.06	5	536	1,985	0.27	1.14			
	Corridor	1,479			0.06		89	340	0.26	1.15			
	Electrical Closets	171			0.06		10	295	0.03	1.37			
	Break Rooms	1,614	40	41	0.06	5	302	1,833	0.16	1.24			
	<b>Total</b>	<b>27,704</b>		<b>1,070</b>			<b>7,012</b>	<b>17,243</b>	<b>0.47</b>		<b>0.93</b>	<b>7,526</b>	

Notes: 1. TSA Circulation ventilation is based on an occupancy of 20 SF per person. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-22	Inbound / Outbound Baggage	14,910			1.50		22,365	24,900					1
	<b>Total</b>	<b>14,910</b>		<b>0</b>			<b>22,365</b>	<b>24,900</b>				<b>22,365</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-23	Inbound / Outbound Baggage	12,158			1.50		18,237	25,000					1
	<b>Total</b>	<b>12,158</b>		<b>0</b>			<b>18,237</b>	<b>25,000</b>				<b>18,237</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-24	Landside Concourse	24,603	100	247	0.06	5	2,711	30,290					1
	<b>Total</b>	<b>24,603</b>		<b>247</b>			<b>2,711</b>	<b>30,290</b>				<b>2,711</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-25	TSA Exit / Bypass Lanes	756	100	8	0.06	5	85	290	0.29	1.23			1
	TSA Screening Lanes	8,692	5	1739	0.06	5	9,217	17,450	0.53	1.00			1
	<b>Total</b>	<b>9,448</b>		<b>1,747</b>			<b>9,302</b>	<b>17,740</b>	<b>0.53</b>		<b>1.00</b>	<b>9,338</b>	

Notes: 1. TSA Screening Lanes ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.



Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-26	TSA Circulation	12,293	20	615	0.06	5	3,813	5,515	0.69	1.09			1
	TSA Exit / Bypass Lanes	1,662	100	17	0.06	5	185	985	0.19	1.59			
	TSA Screening Queue	7,734	5	1547	0.06	5	8,199	8,199	1.00	0.78			2
	Break Rooms	456	40	12	0.06	5	87	295	0.30	1.49			
	Offices	2,791	100	28	0.06	5	307	590	0.52	1.26			
	Corridor	5,718			0.06		343	563	0.61	1.17			
	Restrooms	897		9			0	400	0.00	1.78			3
<b>Total</b>		<b>31,551</b>		<b>2,228</b>			<b>12,934</b>	<b>16,547</b>	<b>1.00</b>		<b>0.78</b>	<b>16,547</b>	

- Notes:**
1. TSA Circulation ventilation is based on an occupancy of 20 SF per person. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  1. TSA Screening Lanes ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Restrooms 10821, 10824 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 10823 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-27	Inbound / Outbound Baggage	9,658			1.50		14,487	20,000					1
	<b>Total</b>	<b>9,658</b>		<b>0</b>			<b>14,487</b>	<b>20,000</b>				<b>14,487</b>	

- Notes:**
1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-28	EDS Screening	14,103			0.12		1,692	37,400					1
	<b>Total</b>	<b>14,103</b>		<b>0</b>			<b>1,692</b>	<b>37,400</b>				<b>1,692</b>	

Notes: 1. EDS Screening ventilation is based on modeling the space as a shipping / receiving area. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-29	Landside Concourse	20,034	100	201	0.06	5	2,207	13,210	0.17	0.98			1
	Pedestrian Bridge Landing	3,715	100	38	0.06	5	413	4,200	0.10	1.05			1
	<b>Total</b>	<b>23,749</b>		<b>239</b>			<b>2,620</b>	<b>17,410</b>	<b>0.17</b>		<b>0.98</b>	<b>2,664</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-30	Corridor	3,547			0.06		213	830	0.26	1.20			
	Offices	4,809	100	49	0.06	5	534	578	0.92	0.53			
	Break Rooms	2,339	40	59	0.06	5	435	1,320	0.33	1.12			
	Baggage Claim	21,700	20	790	0.06	7.5	7,227	14,220	0.51	0.95			1
	Landside Concourse	3,081	100	31	0.06	5	340	1,425	0.24	1.22			2
	Meeting Rooms	1,590	20	80	0.06	5	495	1,493	0.33	1.12			
	Restrooms	1,114		11			0	515	0.00	1.45			3
<b>Total</b>	<b>27,485</b>		<b>1,020</b>				<b>9,244</b>	<b>20,380</b>	<b>0.92</b>		<b>0.53</b>	<b>17,451</b>	

- Notes:**
1. Gross Baggage Claim area = 21,700 SF; Net Baggage Claim area = 15,800 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Restrooms 00824, 00831, 00832, 00833, 00834 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 00835 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-31	Baggage Claim	32,218	20	1,280	0.06	7.5	11,533	18,815	0.61	0.97			1
	Offices	1,547	100	16	0.06	5	173	225	0.77	0.81			
	Restrooms	2,537		33			0	923	0.00	1.58			2
	Corridor	2,400			0.06		144	500	0.29	1.29			
	<b>Total</b>	<b>38,702</b>			<b>1,329</b>			<b>11,850</b>	<b>20,463</b>	<b>0.77</b>		<b>0.81</b>	<b>14,611</b>

- Notes:
1. Gross Baggage Claim area = 32,218 SF; Net Baggage Claim area = 25,581 SF. Baggage Claim ventilation is based on an occupancy of 20 SF per person over the net floor area (excluding baggage handling equipment). Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Restrooms 00902, 00906, 00907, 02106, 02110 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 00904, 02111 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-32	EDS Screening	12,852			0.12		1,542	40,000					1
	<b>Total</b>	<b>12,852</b>		<b>0</b>			<b>1,542</b>	<b>40,000</b>				<b>1,542</b>	

- Notes:
1. EDS Screening ventilation is based on modeling the space as a shipping / receiving area. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-33	Inbound / Outbound Baggage	17,139			1.50		25,709	36,000					1
	<b>Total</b>	<b>17,139</b>		<b>0</b>			<b>25,709</b>	<b>36,000</b>				<b>25,709</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-34	Landside Concourse	20,891	100	209	0.06	5	2,298	33,180					1
	<b>Total</b>	<b>20,891</b>		<b>209</b>			<b>2,298</b>	<b>33,180</b>				<b>2,298</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-35	Storage	853			0.12		102	190	0.54	1.09			
	CBP Secondary Inspection	5,037	20	252	0.06	5	1,562	4,185	0.37	1.26			1
	CBP Circulation / Exit	10,459	20	523	0.06	5	3,243	3,585	0.90	0.73			
	CBP Secondary Queue	4,621	5	925	0.06	5	4,902	5,860	0.84	0.80			2
	Corridor	733			0.06		44	450	0.10	1.53			
	Offices	5,400	100	54	0.06	5	594	2,320	0.26	1.38			
	Meeting Rooms	572	20	29	0.06	5	179	220	0.82	0.82			
	<b>Total</b>	<b>27,675</b>		<b>1,783</b>			<b>10,627</b>	<b>16,810</b>	<b>0.90</b>		<b>0.73</b>		<b>14,603</b>

- Notes:**
1. CBP Inspection is based on an occupancy of 20 SF per person. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  1. CBP Queue ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-36	Inbound / Outbound Baggage	21,529			1.50		32,294	40,000					1
	<b>Total</b>	<b>21,529</b>		<b>0</b>			<b>32,294</b>	<b>40,000</b>				<b>32,294</b>	

- Notes:**
1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-37	Offices	12,391	100	124	0.06	5	1,363	6,698	0.20	1.07			
	Corridor	3,951			0.06		237	350	0.68	0.60			
	Restrooms	1,828		15			0	948	0.00	1.27			1
	CBP Circulation	8,334	100	84	0.06	5	920	1,820	0.51	0.77			2
	Storage	4,447			0.12		534	1,798	0.30	0.98			
	Break Rooms	1,638	40	41	0.06	5	303	685	0.44	0.83			
	Meeting Rooms	966	20	49	0.06	5	303	700	0.43	0.84			
	Exercise Room	682	100	7	0.06	20	181	660	0.27	1.00			
	CBP Hold Rooms / Janitor	510		11			0	330	0.00	1.27			3
<b>Total</b>	<b>34,747</b>		<b>331</b>			<b>3,841</b>	<b>13,988</b>	<b>0.68</b>		<b>0.60</b>	<b>6,431</b>		

- Notes:**
- Restrooms 02304, 02305, 02307, 02308 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 00835 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.
  - Circulation ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  - CBP Hold Rooms 01305, 01306, 01307 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 01066 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-38	Inbound / Outbound Baggage	16,196			1.50		24,294	36,000					1
	<b>Total</b>	<b>16,196</b>		<b>0</b>			<b>24,294</b>	<b>36,000</b>				<b>24,294</b>	

Notes: 1. Air handling unit is provided with 1.5 cfm/SF of outside air due to operation of combustion engine driven baggage tugs. Carbon monoxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.



Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-39	CBP Inspection Lanes	3,604	20	181	0.06	5	1,121	2,420	0.46	1.33			1
	CBP Circulation / Exit	17,104	20	856	0.06	5	5,306	5,306	1.00	0.79			2
	CBP Inspection Queue	6,391	5	1279	0.06	5	6,778	6,840	0.99	0.80			3
	Kennels	428	100	5	0.18	7.5	115	275	0.42	1.37			
	Offices	3,495	100	35	0.06	5	385	840	0.46	1.33			
	Restrooms	2,062		36			0	1,008	0.00	1.79			4
	Trash Room	1,663					0	415	0.00	1.79			
	Sally Port	958			0.12		115	360	0.32	1.47			
<b>Total</b>	<b>35,705</b>		<b>2,392</b>			<b>13,820</b>	<b>17,464</b>	<b>1.00</b>		<b>0.79</b>	<b>17,464</b>		

- Notes:**
1. CBP Inspection is based on an occupancy of 20 SF per person. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Circulation ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. CBP Queue ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  4. Restrooms 01204, 01206, 01207, 01218, 01233 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 01205 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-40	Offices	3,637	100	37	0.06	5	403	2,340	0.17	1.06			
	Storage	9,877			0.12		1,185	4,225	0.28	0.96			
	Corridor	6,273			0.06		376	1,618	0.23	1.00			
	Loading Dock	2,018			0.12		242	375	0.65	0.59			
	Restrooms	1,792		17			0	550	0.00	1.24			1
	Trash Room	1,031					0	313	0.00	1.24			2
	Break Rooms	2,452	40	62	0.06	5	457	2,238	0.20	1.03			
	Meeting Rooms	485	20	25	0.06	5	154	300	0.51	0.72			
<b>Total</b>	<b>27,565</b>		<b>141</b>			<b>2,818</b>	<b>11,958</b>	<b>0.65</b>		<b>0.59</b>		<b>4,777</b>	

- Notes:
- Restrooms 11116, 11117, 11119, 11120 are ventilated at an exhaust rate of 70 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.
  - Trash Room is ventilated at an exhaust rate of 1.00 cfm/SF according to Table 6-4 of ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-41	Airside Concourse	9,430	100	95	0.06	5	1,041	4,500	0.23	1.04			1
	Electrical Closets	166			0.06		10	280	0.04	1.24			
	Gate 14 Hold Room	1,796	15	120	0.06	5	708	3,000	0.24	1.04			2
	Gate 14 Loading	831	8	104	0.06	5	570	700	0.81	0.46			3
	Gate 15 Hold Room	1,884	15	126	0.06	5	743	4,300	0.17	1.10			2
	Gate 15 Loading	933	8	117	0.06	5	641	700	0.92	0.36			3
	<b>Total</b>	<b>15,040</b>		<b>562</b>			<b>3,712</b>	<b>13,480</b>	<b>0.92</b>		<b>0.36</b>		<b>10,320</b>

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-42	Concessions	4,655	100	47	0.18	7.5	1,190	3,000	0.40	0.92			
	Storage	4,712			0.12		565	1,553	0.36	0.96			
	Meeting Rooms	2,026	20	102	0.06	5	632	900	0.70	0.62			
	Corridor	6,517			0.06		391	1,975	0.20	1.12			
	Restrooms	2,974		33			0	1,255	0.00	1.32			1
	<b>Total</b>	<b>20,884</b>		<b>182</b>			<b>2,778</b>	<b>8,683</b>	<b>0.70</b>		<b>0.62</b>		<b>4,494</b>

- Notes:**
1. Restrooms 20207, 20210, 20212 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 20211 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-43	Airside Concourse	13,252	100	133	0.06	5	1,460	10,773	0.14	1.14			1
	Concessions	8,156	100	82	0.18	7.5	2,083	2,200	0.95	0.33			
	Electrical Closets	111			0.06		7	200	0.03	1.24			
	Gate 11 Hold Room	626	15	42	0.06	5	248	2,450	0.10	1.18			2
	Gate 11 Loading	715	8	90	0.06	5	493	720	0.68	0.59			3
	Gate 12 Hold Room	3,252	15	217	0.06	5	1,280	4,700	0.27	1.01			2
	Gate 12 Loading	702	8	88	0.06	5	482	720	0.67	0.61			3
	Corridor	1,360			0.06		82	255	0.32	0.96			
<b>Total</b>	<b>28,174</b>		<b>652</b>			<b>6,134</b>	<b>22,018</b>	<b>0.95</b>		<b>0.33</b>		<b>18,490</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-44	Landside Concourse	18,342	100	184	0.06	5	2,021	43,575					1
	<b>Total</b>	<b>18,342</b>		<b>184</b>			<b>2,021</b>	<b>43,575</b>				<b>2,021</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-45	Airside Concourse	10,758	100	108	0.06	5	1,185	6,750	0.18	1.14			1
	Concessions	11,747	100	118	0.18	7.5	2,999	5,750	0.52	0.80			
	Electrical Closets	88			0.06		5	80	0.07	1.25			
	Gaming	1,355		32	0.06	5	241	1,700	0.14	1.17			2
	Gate 10 Hold Room	1,852	15	124	0.06	5	731	1,700	0.43	0.89			3
	Gate 10 Loading	777	8	98	0.06	5	537	720	0.75	0.57			4
	Gate 11 Hold Room	1,417	15	95	0.06	5	560	1,700	0.33	0.99			3
	Corridor	2,191			0.06		131	510	0.26	1.06			
	Restrooms	3,373		50			0	1,255	0.00	1.32			5
<b>Total</b>	<b>33,558</b>		<b>625</b>			<b>6,391</b>	<b>20,165</b>	<b>0.75</b>		<b>0.57</b>	<b>11,180</b>		

- Notes:
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gaming area occupancy is based on fixed seating per architectural plans.
  3. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  4. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  4. Restrooms 20410, 20413, 20415 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 20414 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-46	Offices	5,356	100	54	0.06	5	591	3,433	0.17	1.37			
	Airline Ticket Counters	8,665	100	87	0.06	5	955	5,025	0.19	1.35			
	Concessions	1,484	100	15	0.18	7.5	380	2,000	0.19	1.35			
	Corridor	2,456			0.06		147	348	0.42	1.11			
	Ticket Counter Queue	9,974	5	1995	0.06	5	10,573	10,573	1.00	0.54			1
	Restrooms	2,706		54			0	1,288	0.00	1.54			2
	Break Rooms	2,227	40	56	0.06	5	414	1,438	0.29	1.25			
	Meeting Rooms	989	20	50	0.06	5	309	788	0.39	1.15			
	Storage	680			0.12		82	98	0.84	0.70			
<b>Total</b>	<b>34,537</b>		<b>2,311</b>			<b>13,451</b>	<b>24,988</b>	<b>1.00</b>		<b>0.54</b>	<b>24,988</b>		

1. Ticket Queue ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
2. Restrooms 21707, 21708, 21710 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 21709 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-47	Airside Concourse	11,030	100	111	0.06	5	1,217	8,748	0.14	1.15			1
	Concessions	9,270	100	93	0.18	7.5	2,366	5,000	0.47	0.81			
	Gaming	1,347		32	0.06	5	241	1,700	0.14	1.14			2
	Gate 8 Hold Room	1,643	15	110	0.06	5	649	2,500	0.26	1.03			3
	Gate 8 Loading	1,175	8	147	0.06	5	806	900	0.90	0.39			4
	Gate 9 Hold Room	1,872	15	125	0.06	5	737	3,300	0.22	1.06			3
	Gate 9 Loading	874	8	110	0.06	5	602	900	0.67	0.62			4
	Corridor	2,263			0.06		136	550	0.25	1.04			
	Electrical Closets	110			0.06		7	80	0.08	1.20			
<b>Total</b>	<b>29,584</b>		<b>728</b>			<b>6,760</b>	<b>23,678</b>	<b>0.90</b>		<b>0.39</b>	<b>17,311</b>		

- Notes:
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gaming area occupancy is based on fixed seating per architectural plans.
  3. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  4. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-48	Landside Concourse	21,411	100	215	0.06	5	2,360	48,700					1
	<b>Total</b>	<b>21,411</b>		<b>215</b>			<b>2,360</b>	<b>48,700</b>				<b>2,360</b>	

- Notes:
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-49a	Landside Concourse	13,384	100	134	0.06	5	1,473	21,475					1
	<b>Total</b>	<b>13,384</b>		<b>134</b>			<b>1,473</b>	<b>21,475</b>				<b>1,473</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-50a	Airside Concourse	4,710	100	48	0.06	5	523	1,753	0.30	1.14			1
	Airside Escalators	2,101	100	22	0.06	5	236	4,160	0.06	1.38			1
	TSA Screening Lanes	3,983	5	797	0.06	5	4,224	5,300	0.80	0.64			2
	Corridor	392			0.06		24	200	0.12	1.32			
	Storage	126			0.12		15	88	0.17	1.26			
	<b>Total</b>	<b>11,312</b>			<b>867</b>			<b>5,021</b>	<b>11,500</b>	<b>0.80</b>		<b>0.64</b>	<b>7,850</b>

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.  
2. TSA Screening Lanes ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.



Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-51a	TSA Screening Queue	4,449	5	890	0.06	5	4,717	4,800	0.98	0.99			1
	Corridor	1,116			0.06		67	200	0.33	1.64			
	Storage	680			0.12		82	93	0.88	1.09			
	TSA Screening Lanes	4,487	5	898	0.06	5	4,759	4,759	1.00	0.98			1
	<b>Total</b>	<b>10,732</b>			<b>1,788</b>			<b>9,625</b>	<b>9,852</b>	<b>1.00</b>		<b>0.98</b>	<b>9,852</b>

Notes: 1. TSA Screening Lanes ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-49b	Landside Concourse	13,764	100	138	0.06	5	1,516	19,925					1
	<b>Total</b>	<b>13,764</b>		<b>138</b>			<b>1,516</b>	<b>19,925</b>				<b>1,516</b>	

Notes: 1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-50b	Airside Concourse	4,710	100	48	0.06	5	523	1,350	0.39	1.11			1
	Airside Escalators	2,101	100	22	0.06	5	236	4,160	0.06	1.44			1
	TSA Screening Lanes	4,726	5	946	0.06	5	5,014	5,953	0.84	0.66			2
	Offices	126	100	2	0.06	5	18	80	0.22	1.28			
	<b>Total</b>	<b>11,663</b>		<b>1,018</b>			<b>5,790</b>	<b>11,543</b>	<b>0.84</b>		<b>0.66</b>	<b>8,781</b>	

- Notes:
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. TSA Screening Lanes ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-51b	TSA Screening Queue	4,449	5	890	0.06	5	4,717	5,100	0.92	0.88			1
	Corridor	1,008			0.06		60	200	0.30	1.50			
	Storage	284			0.12		34	93	0.37	1.43			
	Restrooms	3,196		54			0	1,288	0.00	1.80			2
	TSA Screening Lanes	4,204	5	841	0.06	5	4,457	4,890	0.91	0.89			1
	<b>Total</b>	<b>13,141</b>		<b>1,785</b>			<b>9,269</b>	<b>11,570</b>	<b>0.92</b>		<b>0.88</b>	<b>10,578</b>	

- Notes:
1. TSA Screening Lanes ventilation is based on an occupancy of 5 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Restrooms 21905, 21906, 21908 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 21907 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-52	Airside Concourse	12,916	100	130	0.06	5	1,425	8,063	0.18	1.19			1
	Concessions	3,928	100	40	0.18	7.5	1,007	3,668	0.27	1.09			
	Electrical Closets	189			0.06		11	160	0.07	1.29			
	Gate 5 Loading	122	8	16	0.06	5	87	1,170	0.07	1.29			2
	Gate 5 & 6 Sterile Corridor	2,318	15	155	0.06	5	914	3,105	0.29	1.07			3
	Gate 7 Loading	1,261	8	158	0.06	5	866	1,060	0.82	0.55			2
	Gate 6 & 7 Hold Room	3,953	15	264	0.06	5	1,557	4,400	0.35	1.01			3
	Gate 6 Loading	733	8	92	0.06	5	504	600	0.84	0.52			2
	Corridor	2,446			0.06		147	255	0.58	0.79			
	VIP Lounge	10,523	20	527	0.06	5	3,266	4,545	0.72	0.64			
<b>Total</b>	<b>38,389</b>			<b>1,382</b>			<b>9,785</b>	<b>27,025</b>	<b>0.84</b>		<b>0.52</b>	<b>18,741</b>	

- Notes:
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-53	Landside Concourse	15,618	100	157	0.06	5	1,722	34,350					1
	<b>Total</b>	<b>15,618</b>		<b>157</b>			<b>1,722</b>	<b>34,350</b>				<b>1,722</b>	

- Notes:
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-54	Airside Concourse	11,282	100	113	0.06	5	1,242	8,050	0.15	1.10			1
	Concessions	6,627	100	67	0.18	7.5	1,695	6,670	0.25	1.00			
	Gate 4 Loading	805	8	101	0.06	5	553	600	0.92	0.34			2
	Gate 4 & 5 Sterile Corridor	1,557	15	104	0.06	5	613	1,700	0.36	0.90			3
	Gate 4 & 5 Hold Room	4,274	15	285	0.06	5	1,681	5,375	0.31	0.95			3
	Gate 5 Loading	539	8	68	0.06	5	372	400	0.93	0.33			2
	Corridor	2,194			0.06		132	255	0.52	0.74			
	Restrooms	3,173		50			0	1,255	0.00	1.26			4
<b>Total</b>	<b>30,451</b>		<b>788</b>			<b>6,289</b>	<b>24,305</b>	<b>0.93</b>		<b>0.33</b>		<b>19,180</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  4. Restrooms 20823, 20826, 20828 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 20827 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-55	Landside Concourse	21,271	100	213	0.06	5	2,341	55,000					1
	<b>Total</b>	<b>21,271</b>		<b>213</b>			<b>2,341</b>	<b>55,000</b>				<b>2,341</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-56	Ticket Counter Queue	10,606	5	2122	0.06	5	11,246	11,246	1.00	0.67			1
	Airline Ticket Counters	9,894	100	99	0.06	5	1,089	4,523	0.24	1.43			
	Offices	5,066	100	51	0.06	5	559	3,000	0.19	1.49			
	Break Rooms	1,729	40	44	0.06	5	324	900	0.36	1.31			
	Corridor	1,786			0.06		107	145	0.74	0.93			
	<b>Total</b>	<b>29,081</b>		<b>2,316</b>			<b>13,325</b>	<b>19,814</b>	<b>1.00</b>		<b>0.67</b>	<b>19,814</b>	

1. Ticket Queue ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-57	Airside Concourse	8,792	100	88	0.06	5	968	5,625	0.17	1.14			1
	Concessions	9,478	100	95	0.18	7.5	2,419	6,300	0.38	0.93			
	Offices	128	100	2	0.06	5	18	65	0.27	1.04			
	Gate 3 Hold Room	4,622	15	309	0.06	5	1,822	5,100	0.36	0.96			2
	Gate 3 Loading	703	8	88	0.06	5	482	800	0.60	0.71			3
	Corridor	1,778			0.06		107	425	0.25	1.06			
	Gate 3 Sterile Corridor	1,243	15	83	0.06	5	490	1,650	0.30	1.02			2
	Storage	80			0.12		10	30	0.32	1.00			
<b>Total</b>		<b>26,824</b>		<b>665</b>			<b>6,314</b>	<b>19,995</b>	<b>0.60</b>		<b>0.71</b>	<b>8,855</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-58	Landside Concourse	14,617	100	147	0.06	5	1,612	29,200					1
	<b>Total</b>	<b>14,617</b>		<b>147</b>			<b>1,612</b>	<b>29,200</b>				<b>1,612</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-59	Airside Concourse	8,800	100	88	0.06	5	968	5,625	0.17	1.09			1
	Concessions	5,616	100	57	0.18	7.5	1,438	4,730	0.30	0.96			
	Gate 2 Loading	667	8	84	0.06	5	460	800	0.58	0.69			2
	Gate 2 Sterile Corridor	800	15	54	0.06	5	318	1,725	0.18	1.08			3
	Gate 2 & 3 Hold Room	4,785	15	319	0.06	5	1,882	5,200	0.36	0.90			3
	Corridor	1,711			0.06		103	510	0.20	1.06			
	Restrooms	3,146		44			0	1,130	0.00	1.26			4
<b>Total</b>		<b>25,525</b>		<b>646</b>			<b>5,169</b>	<b>19,720</b>	<b>0.58</b>		<b>0.69</b>	<b>7,523</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  4. Restrooms 20823, 20826, 20828 are ventilated at an exhaust rate of 70 cfm/unit and Janitor's Storage 20827 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-60	Airside Concourse	9,250	100	93	0.06	5	1,020	5,625	0.18	1.08			1
	Gate 1 Sterile Corridor	1,949	15	130	0.06	5	767	2,550	0.30	0.96			2
	Gate 1 Hold Room	3,206	15	214	0.06	5	1,262	5,400	0.23	1.03			2
	Gate 1 Loading	773	8	97	0.06	5	531	600	0.89	0.38			3
	Corridor	1,405			0.06		84	510	0.17	1.10			
	Storage	75			0.12		9	30	0.30	1.02			
	Concessions	3,129	100	32	0.18	7.5	803	2,000	0.40	0.86			
	Offices	131	100	2	0.06	5	18	65	0.27	1.23			
	Trash Room	142					0	50	0.00	1.50			4
<b>Total</b>		<b>20,060</b>		<b>568</b>			<b>4,495</b>	<b>16,830</b>	<b>0.89</b>		<b>0.38</b>	<b>11,939</b>	

- Notes:**
1. Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  2. Gate Hold Room ventilation is based on an occupancy of 15 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  3. Gate Loading ventilation is based on an occupancy of 7 SF per person in accordance with the egress drawings. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  4. Trash Room is ventilated at an exhaust rate of 1.00 cfm/SF according to Table 6-4 of ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.



Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-61	Storage	1,356			0.12		163	1,000	0.16	1.11			
	Meeting Rooms	1,533	20	77	0.06	5	477	1,815	0.26	1.01			
	Corridor	4,270			0.06		256	925	0.28	1.00			
	Restrooms	1,762		26			0	713	0.00	1.28			1
	Offices	14,243	100	143	0.06	5	1,570	3,913	0.40	0.88			
	Break Rooms	774	40	20	0.06	5	146	1,040	0.14	1.14			
	Airside Concourse	819	100	9	0.06	5	94	440	0.21	1.06			2
	Trash Room	239					0	50	0.00	1.28			3
	Exercise Room	429	100	5	0.06	20	126	315	0.40	0.88			
<b>Total</b>		<b>25,425</b>		<b>280</b>			<b>2,832</b>	<b>10,210</b>	<b>0.40</b>		<b>0.88</b>	<b>3,232</b>	

- Notes:
- Restrooms 22335, 22340, 22342 are ventilated at an exhaust rate of 70 cfm/unit, and Janitor's Storage 22336 at a rate of 1.00 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. Janitor's Storage rooms have been assumed to be ventilated at an exhaust rate of 70 cfm/unit, resulting in a higher outdoor airflow rate than required by ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.
  - Concourse ventilation is based on an occupancy of 100 SF per person, with the space being treated similar to a main entrance lobby. Carbon dioxide sensors are provided to reduce outdoor air quantities in compliance with ASHRAE Standard 62.1-2007 Section 6.2.7.
  - Trash Room is ventilated at an exhaust rate of 1.00 cfm/SF according to Table 6-4 of ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-62	Electrical Substation	711			0.06		43	4,000					
	<b>Total</b>	<b>711</b>		<b>0</b>			<b>43</b>	<b>4,000</b>				<b>43</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-63	Electrical Substation	711			0.06		43	4,000					
	<b>Total</b>	<b>711</b>		<b>0</b>			<b>43</b>	<b>4,000</b>				<b>43</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-64	Electrical Substation	1,584			0.06		95	5,000					
	<b>Total</b>	<b>1,584</b>		<b>0</b>			<b>95</b>	<b>5,000</b>				<b>95</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-65	Electrical Substation	1,762			0.06		106	4,000					
	<b>Total</b>	<b>1,762</b>		<b>0</b>			<b>106</b>	<b>4,000</b>				<b>106</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-66	Electrical Substation	818			0.06		49	4,000					
	<b>Total</b>	<b>818</b>		<b>0</b>			<b>49</b>	<b>4,000</b>				<b>49</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-67	Electrical Substation	818			0.06		49	4,000					
	<b>Total</b>	<b>818</b>		<b>0</b>			<b>49</b>	<b>4,000</b>				<b>49</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-68	Electrical Substation	911			0.06		55	4,000					
	<b>Total</b>	<b>911</b>		<b>0</b>			<b>55</b>	<b>4,000</b>				<b>55</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-69	Electrical Substation	911			0.06		55	4,000					
	<b>Total</b>	<b>911</b>		<b>0</b>			<b>55</b>	<b>4,000</b>				<b>55</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-70	Electrical Substation	1,065			0.06		64	4,000					
	<b>Total</b>	<b>1,065</b>		<b>0</b>			<b>64</b>	<b>4,000</b>				<b>64</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-71	Electrical Substation	1,065			0.06		64	4,000					
	<b>Total</b>	<b>1,065</b>		<b>0</b>			<b>64</b>	<b>4,000</b>				<b>64</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-72	Electrical Substation	1,279			0.06		77	5,000					
	<b>Total</b>	<b>1,279</b>		<b>0</b>			<b>77</b>	<b>5,000</b>				<b>77</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-73	Electrical Substation	1,558			0.06		93	5,000					
	<b>Total</b>	<b>1,558</b>		<b>0</b>			<b>93</b>	<b>5,000</b>				<b>93</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-74	Electrical Substation	1,558			0.06		93	5,000					
	<b>Total</b>	<b>1,558</b>		<b>0</b>			<b>93</b>	<b>5,000</b>				<b>93</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-75	Electrical Substation	2,067			0.06		124	4,000					
	<b>Total</b>	<b>2,067</b>		<b>0</b>			<b>124</b>	<b>4,000</b>				<b>124</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-76	Electrical Substation	899			0.06		54	4,000					
	<b>Total</b>	<b>899</b>		<b>0</b>			<b>54</b>	<b>4,000</b>				<b>54</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-77	Electrical Substation	899			0.06		54	4,000					
	<b>Total</b>	<b>899</b>		<b>0</b>			<b>54</b>	<b>4,000</b>				<b>54</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-78	Electrical Substation	1,720			0.06		103	5,000					
	<b>Total</b>	<b>1,720</b>		<b>0</b>			<b>103</b>	<b>5,000</b>				<b>103</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-79	Electrical Substation	1,720			0.06		103	5,000					
	<b>Total</b>	<b>1,720</b>		<b>0</b>			<b>103</b>	<b>5,000</b>				<b>103</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-80	Electrical Substation	1,855			0.06		111	5,000					
	<b>Total</b>	<b>1,855</b>		<b>0</b>			<b>111</b>	<b>5,000</b>				<b>111</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-81	Electrical Substation	1,108			0.06		66	4,000					
	<b>Total</b>	<b>1,108</b>		<b>0</b>			<b>66</b>	<b>4,000</b>				<b>66</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-82	Electrical Substation	1,106			0.06		66	4,000					
	<b>Total</b>	<b>1,106</b>		<b>0</b>			<b>66</b>	<b>4,000</b>				<b>66</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-83	Electrical Substation	1,106			0.06		66	4,000					
	<b>Total</b>	<b>1,106</b>		<b>0</b>			<b>66</b>	<b>4,000</b>				<b>66</b>	

Notes:



Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-84	Electrical Substation	536			0.06		32	4,000					
	<b>Total</b>	<b>536</b>		<b>0</b>			<b>32</b>	<b>4,000</b>				<b>32</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
AH-85	Electrical Substation	536			0.06		32	4,000					
	<b>Total</b>	<b>536</b>		<b>0</b>			<b>32</b>	<b>4,000</b>				<b>32</b>	

Notes:

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
CUP AH-1	Chiller Room	6,796			0.50		3,398	19,925					1
	<b>Total</b>	<b>6,796</b>		<b>0</b>			<b>3,398</b>	<b>19,925</b>				<b>3,398</b>	

Notes: 1. Ventilation requirements for Chiller Room are based on ASHRAE Standard 15. This standard requires a minimum of 0.5 cfm/SF, which is the basis for this calculation. Emergency ventilation is controlled through the use of exhaust fans in the space, with the air handling unit sized to provide the necessary amount of make up air.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
CUP AH-2	Chiller Room	6,796			0.50		3,398	19,925					1
	<b>Total</b>	<b>6,796</b>		<b>0</b>			<b>3,398</b>	<b>19,925</b>				<b>3,398</b>	

Notes: 1. Ventilation requirements for Chiller Room are based on ASHRAE Standard 15. This standard requires a minimum of 0.5 cfm/SF, which is the basis for this calculation. Emergency ventilation is controlled through the use of exhaust fans in the space, with the air handling unit sized to provide the necessary amount of make up air.

Air Handling Unit No.	Space Type	A <sub>z</sub> , Zone Floor Area(SF)	Occupant Load Factor (SF/Person)	P <sub>z</sub> , Zone Population	R <sub>a</sub> , Area Outdoor Air Rate (cfm/SF)	R <sub>p</sub> , People Outdoor Air Rate (cfm/Person)	V <sub>oz</sub> , Zone Outdoor Airflow (cfm)	V <sub>pz</sub> , Zone Primary Airflow (cfm)	Z <sub>p</sub> , Primary Outdoor Air Fraction	E <sub>vz</sub> , Zone Ventilation Efficiency	E <sub>v</sub> , System Ventilation Efficiency	V <sub>ot</sub> , Outdoor Air Intake Flow (cfm)	Notes
CUP AH-3	Storage	604			0.12		72	575	0.13	1.01			
	Restrooms / Lockers	2,396		12			0	1,638	0.00	1.14			1
	Offices	1,861	100	19	0.06	5	207	965	0.21	0.93			
	Corridor	2,193			0.06		132	1,100	0.12	1.02			
	Refrigerant Storage Room	195			0.50		98	100					2
	Meeting Rooms	324	20	17	0.06	5	104	400	0.26	0.88			
	Break Rooms	865	40	22	0.06	5	162	720	0.22	0.92			
	<b>Total</b>	<b>8,438</b>		<b>70</b>			<b>775</b>	<b>5,498</b>	<b>0.26</b>		<b>0.88</b>		<b>880</b>

Notes: 1. Restrooms 109, 113, 205, 206 are ventilated at an exhaust rate of 70 cfm/unit according to Table 6-4 of ASHRAE Standard 62.1-2007. In accordance with ASHRAE Standard 62.1-2007 Section 6.2.8, there is no minimum value of outdoor airflow required to this space. It is assumed that makeup air will be provided as a combination of supply air direct from the air handler, and transfer air from adjacent spaces.

2. Ventilation requirements for Refrigerant Storage Room are based on ASHRAE Standard 15. This standard requires a minimum of 0.5 cfm/SF, which is the basis for this calculation. Emergency ventilation is controlled through the use of exhaust fans in the space, with the air handling unit sized to provide the necessary amount of make up air.