

- 1. Read the IAQ
 Backgrounder and
 the Background
 Information for
 this checklist.
- 2. Keep the
 Background
 Information and
 make a copy of
 this checklist for
 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- Complete the Checklist.
 - Check the "yes,"
 "no," or
 "not applicable"
 box beside each
 item. (A "no"
 response
 requires further
 attention.)
- Make comments in the "Notes" section as necessary.
- Return the checklist portion of this document to the IAQ Coordinator.

Name: Jim NARGI	
School: 167 Para	
Unit Ventilator/AHU No: I PRIVE DRIVE MIDDLE GRADE	_ _
Room or A	_
Signature: Date Completed: 12-11-24	_
	-
1. OUTDOOR AIR INTAKES	
la. Marked locations of the	
example, a fire escape floor plan)	1/^
	٥
- Sportating in occupied"	
TOTAL TELESCOPE	
10. Ensured that outdoor air in 1	
or covers	
requently block an intake))
ACTIVITY 2: POT I TUTA NO.	1
- CHECKEH Granna I I	
docks, and bus-idling areas)	,
air-conditioning exhaust fans; puddles; and mist from	
Ig. Resolved any problem	
intakes (e.g., relocated dumpster or extended exhaust pipe)	
ACTIVITY 3: AIRFLOW	
In. Obtained about 1	
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)	
appropriately	
2. STSTEINI CLEANLINESS	
ACTIVITY 4: AIR FILTERS	
Za Kenjacod Cit	
around) the air filt	
2e. Confirmed proper installation of filters (correct direction for airflow).	

2. SYSTEM CLEANLINESS (continued)

	TIVITY 5: DRAIN PANS		
	Ensured that drain pans slant toward the drain (to prevent water from accumulating)		
2g.	Cleaned drain pans	VZ	
2h.	Checked drain pans for mold and mildew		
	TIVITY 6: COILS		_
2i.	Ensured that heating and cooling coils are clean		
	TIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS		
•	Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean	٥	
2k.	Ensured that ducts are clean	V	
	TIVITY 8: MECHANICAL ROOMS		
	Checked mechanical room for unsanitary conditions, leaks, and spills		
2m.	Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies		
	CONTROLS FOR OUTDOOR AIR SUPPLY		
3a.	Ensured that air dampers are at least partially open (minimum position)		
3b.	Ensured that minimum position provides adequate outdoor air for occupants		
AC	TIVITY 9: CONTROLS INFORMATION		
3c.	Obtained and reviewed all design inside/outside temperature and humidity		
	requirements, controls specifications, as-built mechanical drawings,		
	and controls operations manuals (often uniquely designed)	Ø	
	TIVITY 10: CLOCKS, TIMERS, SWITCHES	_	_
	Turned summer-winter switches to the correct position		de Œ
	Set time clocks appropriately		dz.
31.	Ensured that settings fit the actual schedule of building use (including night/weekend use)		
AC	TIVITY 11: CONTROL COMPONENTS		
3g.	Ensured appropriate system pressure by testing line pressure at both the occupied (day) setting and the unoccupied (night) setting		ťΖ
3h	Checked that the line dryer prevents moisture buildup	ū	dz
	Replaced control system filters at the compressor inlet based on the		
J1.	compressor manufacturer's recommendation (for example, when you blow down the tank)		∑
3j.	Set the line pressure at each thermostat and damper actuator at the proper		
٠,٠	level (no leakage or obstructions)		<u>J</u>
	TIVITY 12: OUTDOOR AIR DAMPERS		_
3k.	Ensured that the outdoor air damper is visible for inspection		
	Ensured that the recirculating relief and/or exhaust dampers are visible for inspection.		
3m		_	_
	outdoor air damper is within the normal operating range	u	_



NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.



3.	CONTROLS FOR OUTDOOR AIR SUPPLY (continued)			
3n.	Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler		No □	N/A
	Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on			
	If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F			ø
-	If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F.		<u> </u>	R
	 If the outdoor air damper does not move, confirmed the following items: The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight		0000	
Pro	ceed to Activities 13–16 if the damper seems to be operating properly.			
	TIVITY 13: FREEZE STATS Disconnected power to controls (for automatic reset only) to test continuity across terminals	. 🗆	¥	a
3t.	Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped) Assessed the feasibility of replacing all manual reset freeze-stats with		۵	蝤
NO:	automatic reset freeze-stats TE: HVAC systems with water coils need protection from the cold. The freeze te the outdoor air damper and disconnect the supply air when tripped. The ty	-stat	may l trip	ha.
rang	ge is 35°F to 42°F.			
	TIVITY 14: MIXED AIR THERMOSTATS			
3v.	Ensured that the mixed air stat for heating mode is set no higher than 65°F	. ロ		M
3w.	Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting		0	ď
AC	TIVITY 15: ECONOMIZERS			
	Confirmed proper economizer settings based on design specifications or local practices		P	-
NO	TE: The dry-bulb is typically set at 65°F or lower.			
3y. 3z.	Checked that sensor on the economizer is shielded from direct sunlight Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications		<u> </u>	<u> </u>
load Dry and	TE: Economizers use varying amounts of cool outdoor air to assist with the order of the room or rooms. There are two types of economizers, dry-bulb and enti-bulb economizers vary the amount of outdoor air based on outdoor temperor tenthalpy economizers vary the amount of outdoor air based on outdoor temperor that the provided in the control of the provided in the control of the provided in the control of the	cooli thalp ature)y. ?,	

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied Yes No N/A NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system perform as required.... 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) 4d. Ensured that supply and return vents are open and unblocked NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply...... 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents 4h. Ensured that unit ventilators are quiet enough to accommodate classroom 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, floor joints, pipe openings)..... 5. EXHAUST SYSTEMS ACTIVITY 19: EXHAUST FAN OPERATION 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) 🗖

If fans are running but air is not flowing toward the exhaust intake, check for the following:

- Obstructed, leaky, or disconnected ductwork
- Undersized or improperly installed fan
- Broken fan belt



ACTIVITY 20: EXHAUST AIRFLOW

	1011111 20: EXHAUST AIRFLOW		
l a	NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, kind labs by keeping them under negative pressure (as compared to surrounding sp	itche	ns,
5	b. Checked (using chemical smoke) that air is drawn into the room from Ye adjacent spaces		N/A
S	tand outside the room with the door slightly open while checking airflow high and the door opening (see "How to Measure Airflow").	low	in
	c. Ensured that air is flowing toward the exhaust intake	ď	, _□
A	CTIVITY 21: EXHAUST DUCTWORK		
56	d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition	₩	
	QUANTITY OF OUTDOOR AIR		
A(CTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NC	OTE: Refer to "How to Measure Airflow" for techniques.		
62	Mongare 141		
va.	Measured the quantity of outdoor air supplied (22a) to each ventilation		
	Calculated the number of occupants served (221) 1.		
6c.	Divided outdoor air supply (22a) by the number of occupants (22b) to		,
	determine the existing quantity of outdoor air supply per person (22c)		A
AC	TIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d.	Compared the existing outdoor air per person (22c) to the recommended		,
	quantities of outdoor air to ensure that outdoor air to ensure that outdoor	0	Ø
	the recommended levels in Table 1		



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- 3. Complete the Checklist.
 - Check the "yes,"
 "no," or
 "not applicable"
 box beside each
 item. (A "no"
 response
 requires further
 attention.)
 - Make comments in the "Notes" section as necessary.
- 4. Return the checklist portion of this document to the IAQ Coordinator.

Name: Jim NARGY		
School: 167 RIVERSION DRIVE MIDDLE GOLD	3OP	2
Unit Ventilator/AHU No:		_
Room or Area: Date Completed: 12-1/-02		_
Signature:		
1. OUTDOOR AIR INTAKES		
1a. Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan)	No.	N/A
1b. Ensured that the ventilation system was on and operating in "occupied"	_	_
modeb		
ACTIVITY 1: OBSTRUCTIONS		
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers	۵	
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves frequently block an intake)		
	_	
ACTIVITY 2: POLLUTANT SOURCES		*1
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas)		W/
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen,		•
toilet, or laboratory exhaust fans; puddles; and mist from air-conditioning cooling towers)		
1g. Resolved any problems with pollutant sources located near outdoor air	-	
intakes (e.g., relocated dumpster or extended exhaust pipe)	u	П
ACTIVITY 3: AIRFLOW		
 1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic). 1i. Confirmed that outdoor air is entering the intake appropriately 		
11. Commind that outdoor all is entering the make appropriately	_	_
2. SYSTEM CLEANLINESS		
ACTIVITY 4: AIR FILTERS		
 2a. Replaced filters per maintenance schedule 2b. Shut off ventilation system fans while replacing filters (prevents dirt from 		
blowing downstream)	o	
2c. Vacuumed filter areas before installing new filters		
2d. Confirmed proper fit of filters to prevent air from bypassing (flowing around) the air filter	ū	0
	о 0	0

2. SYSTEM CLEANLINESS (continued) **ACTIVITY 5: DRAIN PANS** Yes No N/A 2f. Ensured that drain pans slant toward the drain (to prevent water from 2g. Cleaned drain pans **ACTIVITY 6: COILS** ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS 2j. Ensured that the interior of air-handling unit(s) or unit ventilator ACTIVITY 8: MECHANICAL ROOMS 21. Checked mechanical room for unsanitary conditions, leaks, and spills 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, 3. CONTROLS FOR OUTDOOR AIR SUPPLY 3a. Ensured that air dampers are at least partially open (minimum position) 3b. Ensured that minimum position provides adequate outdoor air **ACTIVITY 9: CONTROLS INFORMATION** 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, **ACTIVITY 10: CLOCKS, TIMERS, SWITCHES** 3e. Set time clocks appropriately...... 3f. Ensured that settings fit the actual schedule of building use (including ACTIVITY 11: CONTROL COMPONENTS 3g. Ensured appropriate system pressure by testing line pressure at both the occupied (day) setting and the unoccupied (night) setting 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you 3j. Set the line pressure at each thermostat and damper actuator at the proper level (no leakage or obstructions) **ACTIVITY 12: OUTDOOR AIR DAMPERS** 3k. Ensured that the outdoor air damper is visible for inspection 31. Ensured that the recirculating relief and/or exhaust dampers are visible



3m. Ensured that air temperature in the indoor area(s) served by each



3.	CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
3n.	Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	No	N/A
	Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on		
	If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F	a	V
_	position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F	□	ia/
	 The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight Moving parts are free of impediments (e.g., rust, corrosion) 	0 0	0
	 Electrical wire or pneumatic tubing connects to the damper actuator□ The outside air thermostat(s) is functioning properly (e.g., in the right location, calibrated correctly)□ 		
Pro	ceed to Activities 13–16 if the damper seems to be operating properly.		
	TIVITY 13: FREEZE STATS		/
3s. OR	Disconnected power to controls (for automatic reset only) to test continuity across terminals	6	0
3t.		П	H
3u.	Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats	0	<u>-</u>
clos	TE: HVAC systems with water coils need protection from the cold. The freeze-stat e the outdoor air damper and disconnect the supply air when tripped. The typica ge is 35°F to 42°F.		
AC'	TIVITY 14: MIXED AIR THERMOSTATS		
	Ensured that the mixed air stat for heating mode is set no higher than 65°F		₽,
3w.	Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting	۵	. B
	Confirmed proper economizer settings based on design specifications or local practices		
NO:	TE: The dry-bulb is typically set at 65°F or lower.		
3y. 3z.	Checked that sensor on the economizer is shielded from direct sunlight Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications	<u>п</u>	n
load Dry and	TE: Economizers use varying amounts of cool outdoor air to assist with the coolid of the room or rooms. There are two types of economizers, dry-bulb and enthalpebulb economizers vary the amount of outdoor air based on outdoor temperature enthalpy economizers vary the amount of outdoor air based on outdoor temperature humidity level.	ıy. ,	J

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3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) Yes No N/A that move outside air indoors continuously operate during occupied NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning..... NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 4i. Ensured that classrooms are free of uncomfortable drafts produced by air **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example. 5. EXHAUST SYSTEMS **ACTIVITY 19: EXHAUST FAN OPERATION** 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) 🔾 If fans are running but air is not flowing toward the exhaust intake, check for the following: • Inoperable dampers

Obstructed, leaky, or disconnected ductworkUndersized or improperly installed fan

· Broken fan belt

4 of 5



ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathroom and labs by keeping them under negative pressure (as compared to surrounding			
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces		No/	Ń/A □
Stand outside the room with the door slightly open while checking airflow high the door opening (see "How to Measure Airflow").		/	1
5c. Ensured that air is flowing toward the exhaust intake	🗖	ta∕	
ACTIVITY 21: EXHAUST DUCTWORK		/	,
5d. Checked that the exhaust ductwork downstream of the exhaust fan (which i under positive pressure) is sealed and in good condition			
6. QUANTITY OF OUTDOOR AIR			
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATION	NS		
NOTE: Refer to "How to Measure Airflow" for techniques.		×	
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit		0	
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration	🖸		4
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)	🗖		
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITI			
	E.S		/
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1			u/
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet	_	_	_/
the recommended levels in Table 1			W



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- 3. Complete the Checklist.
 - Check the "yes,"
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 box beside each
 item. (A "no"
 response
 requires further
 attention.)
 - Make comments in the "Notes" section as necessary.
- Return the checklist portion of this document to the IAQ Coordinator.

Name: Jim NAREI		
School: 160 RIVENSIDE DRIVE		
Unit Ventilator/AHU No: 3	2	
Room or Area: Date Completed: 10-11-29	<u> </u>	
Signature:		90
1. OUTDOOR AIR INTAKES		
1a. Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan)	No □¥	N/A
1b. Ensured that the ventilation system was on and operating in "occupied" mode	T	_
ACTIVITY 1: OBSTRUCTIONS		
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs,	_	П
or covers	ч	
frequently block an intake)		
ACTIVITY 2: POLLUTANT SOURCES		-
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas)	•	10
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen,	_	_
toilet, or laboratory exhaust fans; puddles; and mist from air-conditioning cooling towers)		
1g. Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe)	П	П
mtakes (e.g., relocated dumpster of extended extradist pipe)	_	_
ACTIVITY 3: AIRFLOW 1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)		
1i. Confirmed that outdoor air is entering the intake appropriately		
2. SYSTEM CLEANLINESS		
ACTIVITY 4: AIR FILTERS 2a Replaced filters per maintenance schedule	_	_
2b. Shut off ventilation system fans while replacing filters (prevents dirt from	u	
blowing downstream)	0	
2d. Confirmed proper fit of filters to prevent air from bypassing (flowing	_	60
around) the air filter		
20. Commind propor mondification of theory (control and control and antion) minimise	_	_

2. SYSTEM CLEANLINESS (continued)

AC	TIVITY 5: DRAIN PANS		
	accumulating)	No	N/
2g.	Cleaned drain pans		
2h.	Checked drain pans for mold and mildew		
	TIVITY 6: COILS		
2i.	Ensured that heating and cooling coils are clean		
	TIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS		
2j.	Ensured that the interior of air-handling unit(s) or unit ventilator	_	_
	(air-mixing chamber and fan blades) is clean		
2k.	Ensured that ducts are clean		
	TIVITY 8: MECHANICAL ROOMS	_	_
	Checked mechanical room for unsanitary conditions, leaks, and spills		
2m.	Ensured that mechanical rooms and air-mixing chambers are free of trash,	_	_
	chemical products, and supplies		
3.	CONTROLS FOR OUTDOOR AIR SUPPLY		
3a.	Ensured that air dampers are at least partially open (minimum position)		
3b.	Ensured that minimum position provides adequate outdoor air		
	for occupants		
	TIVITY 9: CONTROLS INFORMATION		
3c.	Obtained and reviewed all design inside/outside temperature and humidity		
	requirements, controls specifications, as-built mechanical drawings,		_
	and controls operations manuals (often uniquely designed)		
	TIVITY 10: CLOCKS, TIMERS, SWITCHES		
	Turned summer-winter switches to the correct position		
	Set time clocks appropriately		
3f.	Ensured that settings fit the actual schedule of building use (including	_	_
	night/weekend use)		
AC	TIVITY 11: CONTROL COMPONENTS		
3g.	Ensured appropriate system pressure by testing line pressure at both the		
	occupied (day) setting and the unoccupied (night) setting		
3h.	Checked that the line dryer prevents moisture buildup		
3i.	Replaced control system filters at the compressor inlet based on the		
	compressor manufacturer's recommendation (for example, when you blow down the tank)		Q
3j.	Set the line pressure at each thermostat and damper actuator at the proper		
_	level (no leakage or obstructions)		
AC	TIVITY 12: OUTDOOR AIR DAMPERS		
3k.	Ensured that the outdoor air damper is visible for inspection		
	Ensured that the recirculating relief and/or exhaust dampers are visible		
	for inspection		
3m.	Ensured that air temperature in the indoor area(s) served by each	_	_
	outdoor air damper is within the normal operating range		



NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	3n. Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	No	N/A
	30. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on	۵	۵
	3p. If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F	۵	
	3q. If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F		_
	3r. If the outdoor air damper does not move, confirmed the following items:		
	• The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight		
	• Moving parts are free of impediments (e.g., rust, corrosion)		
	• Electrical wire or pneumatic tubing connects to the damper actuator		
	• The outside air thermostat(s) is functioning properly (e.g., in the right location, calibrated correctly)	-	۵
× 8	Proceed to Activities 13–16 if the damper seems to be operating properly.		
	ACTIVITY 13: FREEZE STATS		
	3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals		
	OR 3t. Confirmed (if applicable) that depressing the manual reset button (usually		
	red) trips the freeze stat (clicking sound indicates freeze stat was tripped)		
8 9	3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats	ū	ū
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-stat close the outdoor air damper and disconnect the supply air when tripped. The typica range is 35°F to 42°F.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher	_	_
	than 65°F	u	
a	3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting		
	ACTIVITY 15: ECONOMIZERS		
	3x. Confirmed proper economizer settings based on design specifications or local practices		
	NOTE: The dry-bulb is typically set at 65°F or lower.		
	3y. Checked that sensor on the economizer is shielded from direct sunlight \Box		
	3z. Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications		a
*	NOTE: Economizers use varying amounts of cool outdoor air to assist with the cooli load of the room or rooms. There are two types of economizers, dry-bulb and enthalp Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature and enthalpy economizers vary the amount of outdoor air based on outdoor tempera and humidity level.	y. ,	

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied Yes No N/A NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system perform as required...... 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor 4f. Modified existing HVAC systems to incorporate any room or zone layout 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents 4h. Ensured that unit ventilators are quiet enough to accommodate classroom 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, 5. EXHAUST SYSTEMS **ACTIVITY 19: EXHAUST FAN OPERATION** 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s)□ If fans are running but air is not flowing toward the exhaust intake, check for the following: • Inoperable dampers · Obstructed, leaky, or disconnected ductwork · Undersized or improperly installed fan

· Broken fan belt





ACTIVITY 20: EXHAUST AIRFLOW

ACTIVITI 20. EXHAUST ARREDOV		
NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, ki and labs by keeping them under negative pressure (as compared to surrounding spa		S,
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces	No □	N/
Stand outside the room with the door slightly open while checking airflow high and the door opening (see "How to Measure Airflow").	low i	n
5c. Ensured that air is flowing toward the exhaust intake \Box		
ACTIVITY 21: EXHAUST DUCTWORK 5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition	a	۵
6. QUANTITY OF OUTDOOR AIR		
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NOTE: Refer to "How to Measure Airflow" for techniques.		
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit		
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration		۵
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c) □	a	a
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1		۵
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet		_
4h d-d 1l- in T-bl- 1		



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- 3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
- 4. Return the checklist portion of this document to the IAQ Coordinator.

Name: JIM NACE	
School: 167 RIVENSIDE DRIVE MIDDLE GI	MAS
Unit Ventilator/AHU No:	, -
Room or Area: Date Completed: 10-1/024	
Signature:	Α,
4. OUTDOOD AID INITAKEO	
1. OUTDOOR AIR INTAKES	
	lo N/A Zi □
1b. Ensured that the ventilation system was on and operating in "occupied"	
mode	ם נ
ACTIVITY 1: OBSTRUCTIONS	
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers	ם כ
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves	
frequently block an intake)	. .
ACTIVITY 2: POLLUTANT SOURCES	8 9
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas)	o •d∕
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen,	1.6
toilet, or laboratory exhaust fans; puddles; and mist from air-conditioning cooling towers)	ם ב
1g. Resolved any problems with pollutant sources located near outdoor air	
intakes (e.g., relocated dumpster or extended exhaust pipe)	ם ב
ACTIVITY 3: AIRFLOW	
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)	ם כ
11. Commind that dutdoor an is entering the marks appropriately	_
2. SYSTEM CLEANLINESS	
ACTIVITY 4: AIR FILTERS	
2a. Replaced filters per maintenance schedule	ı U
blowing downstream)	ם ב
2c. Vacuumed filter areas before installing new filters	_ U
around) the air filter	ם ב
2e. Confirmed proper installation of filters (correct direction for airflow)	- -

2. SYSTEM CLEANLINESS (continued)

	TIVITY 5: DRAIN PANS		67	
	accumulating)	Yes . 🔯	No 	N//
2g.	Cleaned drain pans	.0/	′ ସ	
	Checked drain pans for mold and mildew			
AC'	TIVITY 6: COILS	./		
2i.	Ensured that heating and cooling coils are clean	.℧		
	TIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS	/		
2j.	Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean	.₩	/۵	′ _□
2k.	Ensured that ducts are clean	. 🗆	ø	
AC'	TIVITY 8: MECHANICAL ROOMS	/	1	
21.	Checked mechanical room for unsanitary conditions, leaks, and spills	.₽/຺		
2m.	Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies		۵	0
3.	CONTROLS FOR OUTDOOR AIR SUPPLY	1		
3a.	Ensured that air dampers are at least partially open (minimum position) Ensured that minimum position provides adequate outdoor air	.dr		
3b.	Ensured that minimum position provides adequate outdoor air for occupants	.v	o	
AC'	TIVITY 9: CONTROLS INFORMATION			
	Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, and controls operations manuals (often uniquely designed)	. 🗆	b	<i> </i>
AC'	TIVITY 10: CLOCKS, TIMERS, SWITCHES			
3d.	Turned summer-winter switches to the correct position	. 🗆		ᅜ
3e.	Set time clocks appropriately	.0 /		9
3f.	Ensured that settings fit the actual schedule of building use (including night/weekend use)		۵	٥
AC'	TIVITY 11: CONTROL COMPONENTS			
3g.	Ensured appropriate system pressure by testing line pressure at both the occupied (day) setting and the unoccupied (night) setting	۵.	۵	5
3h.	Checked that the line dryer prevents moisture buildup	. 🗆		
3i.	Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you blow down the tank)	. 🗆		2 /
3j.	Set the line pressure at each thermostat and damper actuator at the proper	-		
J).	level (no leakage or obstructions)	.0		¥
AC	TIVITY 12: OUTDOOR AIR DAMPERS)		
	Ensured that the outdoor air damper is visible for inspection	. ₽.		
31.	Ensured that the recirculating relief and/or exhaust dampers are visible for inspection	- 1		
3m	Ensured that air temperature in the indoor area(s) served by each	/	_	_
J111.	outdoor air damper is within the normal operating range	.₫		



NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	of shutting off appropriate air handler	No I	N/A
	when the air handler is turned on		
	thermostat is set to 85°F		Q /
2 (27)	to 60°F and mixed air thermostat is set to 45°F		6⁄
	screws or bolts are tight□ • Moving parts are free of impediments (e.g., rust, corrosion)□		000
	 Electrical wire or pneumatic tubing connects to the damper actuator	٥	
× ×	Proceed to Activities 13–16 if the damper seems to be operating properly.		
	ACTIVITY 13: FREEZE STATS 3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals		/ _
	OR 3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)		1
k 1 9	3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats		
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-stat close the outdoor air damper and disconnect the supply air when tripped. The typical range is 35°F to 42°F.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher than 65°F		a /
Tip.	3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting	۵	
	ACTIVITY 15: ECONOMIZERS 3x. Confirmed proper economizer settings based on design specifications or local practices		_
	NOTE: The dry-bulb is typically set at 65°F or lower.		
	3y. Checked that sensor on the economizer is shielded from direct sunlight	0	0
	NOTE: Economizers use varying amounts of cool outdoor air to assist with the coolir load of the room or rooms. There are two types of economizers, dry-bulb and enthalp Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature, and enthalpy economizers vary the amount of outdoor air based on outdoor temperature, and humidity level.	y.	

3.	CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	TIVITY 16: FANS Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied hours (even when room thermostat is satisfied)	No -	N/A
	TE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necess ure sufficient outdoor air supply.	sary i	to
4.	AIR DISTRIBUTION		
	TIVITY 17: AIR DISTRIBUTION		
	Ensured that supply and return air pathways in the existing ventilation system perform as required		
4b.	Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning	۵	
NO proj	TE: If ventilation system is closed or blocked to meet current fire codes, consult w fessional engineer for remedies.	vith a	
4c. 4d.	Made sure every occupied space has supply of outdoor air (mechanical system or operable windows)	_ _	_ _
NO.	TE: If outlets have been blocked intentionally to correct drafts or discomfort, inve correct the cause of the discomfort and reopen the vents.		te
4e.	Modified the HVAC system to supply outside air to areas without an outdoor air supply		
4f.	Modified existing HVAC systems to incorporate any room or zone layout and population changes		
	Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents	۵	a
4h.	Ensured that unit ventilators are quiet enough to accommodate classroom activities	ם י	
4i.	Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals	۵	
AC	TIVITY 18: PRESSURIZATION IN BUILDINGS		
mai	TE: To prevent infiltration of outdoor pollutants, the ventilation system is designed intain positive pressurization in the building. Therefore, ensure that the system, index exhaust fans, is operating on the "occupied" cycle when doing this activity.		ng
4j.	Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, floor joints, pipe openings)	d	
5.	EXHAUST SYSTEMS	/	
	TIVITY 19: EXHAUST FAN OPERATION Checked (using chemical smoke) that air flows into exhaust fan grille(s)	Ö	۵
	 ans are running but air is not flowing toward the exhaust intake, check for the following toward the exhaust intake, check for the following interest into the following into the following interest into the following in	owing	g:



ACTIVITY 20: EXHAUST AIRFLOW

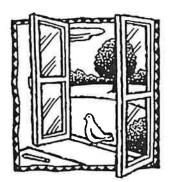
	TE: Prevent migration of indoor contaminants from areas such as bathrooms, kit I labs by keeping them under negative pressure (as compared to surrounding spa		,
5b.	Checked (using chemical smoke) that air is drawn into the room from adjacent spaces	No∕ ☑	N/A
the	nd outside the room with the door slightly open while checking airflow high and door opening (see "How to Measure Airflow").	low in	
5c.	Ensured that air is flowing toward the exhaust intake	0	
AC	TIVITY 21: EXHAUST DUCTWORK	1	
5d.	Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition		۵
6.	QUANTITY OF OUTDOOR AIR		
AC	TIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NO	TE: Refer to "How to Measure Airflow" for techniques.		
	Measured the quantity of outdoor air supplied (22a) to each ventilation unit	<u> </u>	
	Calculated the number of occupants served (22b) by the ventilation unit under consideration		Ø
6c.	Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)		d
AC	TIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
	Compared the existing outdoor air per person (22c) to the recommended		
	levels in Table 1		₹ Z
6e.	Corrected problems with ventilation units that supplied inadequate		1
	quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1		



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- 3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
- Return the checklist portion of this document to the IAQ Coordinator.

Name: Jim NA(6)		
School: 167 RIVERSIDE DRIVE MIDDLE CO	MA	05
Unit Ventilator/AHU No: 5		_
Room or Area: Date Completed:	4	
Signature:		
		_
1. OUTDOOR AIR INTAKES		
1a. Marked locations of all outdoor air intakes on a small floor plan (for	Ng.	N/A
example, a fire escape floor plan)	(E1	u
mode		
A CONTRACTOR 1. OR CONTRACTOR C		
ACTIVITY 1: OBSTRUCTIONS 1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs,		
or covers		
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves frequently block an intake)		
ACTIVITY 2: POLLUTANT SOURCES		
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading		./
docks, and bus-idling areas)		ď
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen, toilet, or laboratory exhaust fans; puddles; and mist from		
air-conditioning cooling towers)		
1g. Resolved any problems with pollutant sources located near outdoor air	_	_
intakes (e.g., relocated dumpster or extended exhaust pipe)	u	
ACTIVITY 3: AIRFLOW		
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)		
1i. Confirmed that outdoor air is entering the intake appropriately		
2. SYSTEM CLEANLINESS		
ACTIVITY 4: AIR FILTERS		
2a. Replaced filters per maintenance schedule		
2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream)	9	۵
 2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream) 2c. Vacuumed filter areas before installing new filters 	V Z	ū
24 Carefinand around 6th of filters to provent oil from hymogenia (flavying	_	-
around) the air filter		
20. Commind propor installation of finels (correct direction for annow)	_	_

2. SYSTEM CLEANLINESS (continued) **ACTIVITY 5: DRAIN PANS** 2f. Ensured that drain pans slant toward the drain (to prevent water from Yes No N/A \Box 2g. Cleaned drain pans...... 2h. Checked drain pans for mold and mildew ACTIVITY 6: COILS **ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS** 2j. Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean **ACTIVITY 8: MECHANICAL ROOMS** 21. Checked mechanical room for unsanitary conditions, leaks, and spills 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies 3. CONTROLS FOR OUTDOOR AIR SUPPLY 3a. Ensured that air dampers are at least partially open (minimum position) 3b. Ensured that minimum position provides adequate outdoor air **ACTIVITY 9: CONTROLS INFORMATION** 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, ACTIVITY 10: CLOCKS, TIMERS, SWITCHES 3e. Set time clocks appropriately 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) **ACTIVITY 11: CONTROL COMPONENTS** 3g. Ensured appropriate system pressure by testing line pressure at both the 凶 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you 3j. Set the line pressure at each thermostat and damper actuator at the proper level (no leakage or obstructions) **ACTIVITY 12: OUTDOOR AIR DAMPERS** 31. Ensured that the recirculating relief and/or exhaust dampers are visible for inspection 3m. Ensured that air temperature in the indoor area(s) served by each



NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.

outdoor air damper is within the normal operating range



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	· · · · · · · · · · · · · · · · · · ·	No	_
	of shutting off appropriate air handler		
	30. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on		۵
	3p. If in heating mode, checked that the outdoor air damper goes to its		
	minimum position (without completely closing) when the room thermostat is set to 85°F		⊌
	3q. If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F	۵	4
\$	3r. If the outdoor air damper does not move, confirmed the following items:		
	The damper actuator links to the damper shaft, and any linkage set		17
	screws or bolts are tight		Ŕ
	 Moving parts are free of impediments (e.g., rust, corrosion) 		4
	• Electrical wire or pneumatic tubing connects to the damper actuator□		Œ
	• The outside air thermostat(s) is functioning properly (e.g., in the right location, calibrated correctly)		₡/
8 8	Proceed to Activities 13–16 if the damper seems to be operating properly.		
4.0	ACTIVITY 13: FREEZE STATS		
	3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals		
	OR		
	3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)		Û
* 2	3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats		R
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-star close the outdoor air damper and disconnect the supply air when tripped. The typical range is 35°F to 42°F.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher		. /
	than 65°F		囡
ä	3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting		4
	ACTIVITY 15: ECONOMIZERS		
	3x. Confirmed proper economizer settings based on design specifications or local practices		
	NOTE: The dry-bulb is typically set at 65°F or lower.		
	3y. Checked that sensor on the economizer is shielded from direct sunlight		
	3z. Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications	۵	
io e	NOTE: Economizers use varying amounts of cool outdoor air to assist with the cool load of the room or rooms. There are two types of economizers, dry-bulb and enthalp Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature and enthalpy economizers vary the amount of outdoor air based on outdoor temperature and humidity level.	oy. ₽,	

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied Yes No N/A NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system! perform as required.... 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 🗹 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, 5. EXHAUST SYSTEMS ACTIVITY 19: EXHAUST FAN OPERATION 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s)□ If fans are running but air is not flowing toward the exhaust intake, check for the following: • Inoperable dampers · Obstructed, leaky, or disconnected ductwork · Undersized or improperly installed fan

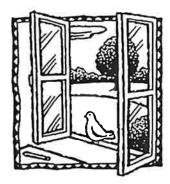
· Broken fan belt





ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, k and labs by keeping them under negative pressure (as compared to surrounding specific pressure).		S,
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces	No	N/A
Stand outside the room with the door slightly open while checking airflow high and the door opening (see "How to Measure Airflow").	low i	n
5c. Ensured that air is flowing toward the exhaust intake		
ACTIVITY 21: EXHAUST DUCTWORK 5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition	ď	<u> </u>
6. QUANTITY OF OUTDOOR AIR		
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NOTE: Refer to "How to Measure Airflow" for techniques.	-	
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit	a	ď
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration		
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)	<u> </u>	ø
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1		ď
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1	۵	萆



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 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes,"
 "no," or
 "not applicable"
 box beside each
 item. (A "no"
 response
 requires further
 attention.)
 - Make comments in the "Notes" section as necessary.
- Return the checklist portion of this document to the IAQ Coordinator.

Name: JIM NARGI		
School: 167 RIVENSIDE DRIVE MIDDLE GRAS	015	
Unit Ventilator/AHU No:		_
Room or Area: Date Completed: 10-11-04	1_	
Signature:		1
5.10		
1. OUTDOOR AIR INTAKES		
1a. Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan)	No Ø	N/A
1b. Ensured that the ventilation system was on and operating in "occupied" mode	۵	0
ACTIVITY 1: OBSTRUCTIONS		
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers		
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves frequently block an intake)	٥	
ACTIVITY 2: POLLUTANT SOURCES		
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading		*)
docks, and bus-idling areas)	a	۵V
toilet, or laboratory exhaust fans; puddles; and mist from		
air-conditioning cooling towers)		
1g. Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe)	a	
ACTIVITY 3: AIRFLOW		
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic).		
1i. Confirmed that outdoor air is entering the intake appropriately		
2. SYSTEM CLEANLINESS		
ACTIVITY 4: AIR FILTERS		_
2a. Replaced filters per maintenance schedule		
blowing downstream)		
 2c. Vacuumed filter areas before installing new filters		a
around) the air filter		
2e. Confirmed proper installation of filters (correct direction for airflow)		

2. SYSTEM CLEANLINESS (continued)

	IIVII Y 5: DRAIN PANS		
2f.	Ensured that drain pans slant toward the drain (to prevent water from	: No	N/.
	accumulating)		
2g.	Cleaned drain pans	Ø	
2h.	Checked drain pans for mold and mildew		
AC	TIVITY 6: COILS		
	Ensured that heating and cooling coils are clean		
ΔC	TIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS		
	Ensured that the interior of air-handling unit(s) or unit ventilator		
۷,	(air-mixing chamber and fan blades) is clean		
21-	Ensured that ducts are clean	_ @	
ZK.	Ensured that ducts are clean	4	_
4.0	TIMEN O. MECHANICAL DOOMS		
	TIVITY 8: MECHANICAL ROOMS	_	
21.	Checked mechanical room for unsanitary conditions, leaks, and spills	ч	Ч
2m.	Ensured that mechanical rooms and air-mixing chambers are free of trash,		
	chemical products, and supplies	ч	
3.	CONTROLS FOR OUTDOOR AIR SUPPLY		
3a	Ensured that air dampers are at least partially open (minimum position)		
	Ensured that minimum position provides adequate outdoor air		
50.	for occupants		
	201 000 apailto	_	
۸C	TIVITY 9: CONTROLS INFORMATION		
	Obtained and reviewed all design inside/outside temperature and humidity		
50.	requirements, controls specifications, as-built mechanical drawings,		_
	and controls operations manuals (often uniquely designed)	d	
AC	TIVITY 10: CLOCKS, TIMERS, SWITCHES		
	Turned summer-winter switches to the correct position		
	Set time clocks appropriately	_	
	Ensured that settings fit the actual schedule of building use (including	_	-
JI.	night/weekend use)		
	mgnt wookond uso)	_	
40	TIVITY 11: CONTROL COMPONENTS		
эg.	Ensured appropriate system pressure by testing line pressure at both the occupied (day) setting and the unoccupied (night) setting		1
21.	Checked that the line dryer prevents moisture buildup	_	M
			_
3i.	Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you		
	blow down the tank)		
2:	Set the line pressure at each thermostat and damper actuator at the proper	_	
<i>5</i>].	level (no leakage or obstructions)		16
	level (no leakage of obstructions)	_	
	TOTAL OF THE OWN AND THE TAXABLE POR		
	TIVITY 12: OUTDOOR AIR DAMPERS	ם	
3K.	Ensured that the outdoor air damper is visible for inspection	u	
3I.	Ensured that the recirculating relief and/or exhaust dampers are visible		
•	for inspection		U
3m	Ensured that air temperature in the indoor area(s) served by each	, _	
	outdoor air damper is within the normal operating range		_

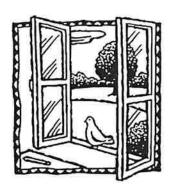


NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
		No	
	of shutting off appropriate air handler		
	30. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on		۵
	3p. If in heating mode, checked that the outdoor air damper goes to its	_	_
	minimum position (without completely closing) when the room		
	thermostat is set to 85°F		Ø
	3q. If in cooling mode, checked that the outdoor air damper goes to its minimum		
	position (without completely closing) when the room thermostat is set		11
	to 60°F and mixed air thermostat is set to 45°F		R
	3r. If the outdoor air damper does not move, confirmed the following items:		
	The damper actuator links to the damper shaft, and any linkage set		ta
	screws or bolts are tight		12d □2/
	• Moving parts are free of impediments (e.g., rust, corrosion)		uar □24*
	 Electrical wire or pneumatic tubing connects to the damper actuator □ The outside air thermostat(s) is functioning properly (e.g., in the right 	ч	4
	location, calibrated correctly)		J
		_	-
	Proceed to Activities 13–16 if the damper seems to be operating properly.		
S S	ACTIVITY 13: FREEZE STATS		
	3s. Disconnected power to controls (for automatic reset only) to test continuity		
	across terminals	Ø	
	OR		
	3t. Confirmed (if applicable) that depressing the manual reset button (usually		
	red) trips the freeze stat (clicking sound indicates freeze stat was tripped)		□
	3u. Assessed the feasibility of replacing all manual reset freeze-stats with		-
a N	automatic reset freeze-stats		Ø
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-state	man	
	close the outdoor air damper and disconnect the supply air when tripped. The typical	l trip	•
	range is 35°F to 42°F.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher		
	than 65°F		
	3w. Ensured that the mixed air stat for cooling mode is set no lower	_	_/
*	than the room thermostat setting	ш	M
	ACTIVITY 15: ECONOMIZERS		
	3x. Confirmed proper economizer settings based on design specifications or		
	local practices	ď	
	NOTE: The dry-bulb is typically set at 65°F or lower.	_	_
	3y. Checked that sensor on the economizer is shielded from direct sunlight		
	3z. Ensured that dampers operate properly (for outside air, return air,		
	exhaust/relief air, and recirculated air), per the design specifications		Q
2/ 196	NOTE: Economizers use varying amounts of cool outdoor air to assist with the cool		
	load of the room or rooms. There are two types of economizers, dry-bulb and enthalp		
	Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature and enthalpy economizers vary the amount of outdoor air based on outdoor temperature.		
	and enthalpy economizers vary the amount of outdoor air based on outdoor tempera and humidity level.		

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied Yes No N/A hours (even when room thermostat is satisfied) NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system perform as required 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) 4d. Ensured that supply and return vents are open and unblocked NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4i. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, 5. EXHAUST SYSTEMS **ACTIVITY 19: EXHAUST FAN OPERATION** 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) \square If fans are running but air is not flowing toward the exhaust intake, check for the following: Inoperable dampers · Obstructed, leaky, or disconnected ductwork · Undersized or improperly installed fan Broken fan belt





ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, and labs by keeping them under negative pressure (as compared to surrounding s			ς,
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces		No ⊈	N/
Stand outside the room with the door slightly open while checking airflow high ar the door opening (see "How to Measure Airflow").	d I	ow ii	n
5c. Ensured that air is flowing toward the exhaust intake	ב	M	
ACTIVITY 21: EXHAUST DUCTWORK			
5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition	ב	#	
6. QUANTITY OF OUTDOOR AIR			
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATION	S		
NOTE: Refer to "How to Measure Airflow" for techniques.		3	
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit	נ		Ø
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration	נ		Ż
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)	3	۵	
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES	3		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1	נ	۵	4
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1	נ	-	ė.



- 1. Read the IAQ
 Backgrounder and
 the Background
 Information for
 this checklist.
- 2. Keep the
 Background
 Information and
 make a copy of
 this checklist for
 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
- Return the checklist portion of this document to the IAQ Coordinator.

Name: Jim NARGI				
Ivame.	121 6296		·	_
School: 167 RIVERSIDE DRI	NE IN	LIDDLE	COCH	(ED)
Unit Ventilator/AHU No:		3 ,		_
Room or Area: Date Co	ompleted:	12-11-	24	
Signature:	(#)		1.5	- 06
Digitation .	ET.			
1. OUTDOOR AIR INTAKES				
la. Marked locations of all outdoor air intakes on a sr	nall floor plat	n (for Y	es No	NIF
example, a fire escape floor plan)				۵
b. Ensured that the ventilation system was on and op		•	n/ n	
mode	****************		u u	u
ACTIVITY 1: OBSTRUCTIONS			,	
c. Ensured that outdoor air intakes are clear of obstru	ictions, debri	s, clogs,		_
d. Installed corrective devices as necessary (e.g., if s			v u	U
d. Installed corrective devices as necessary (e.g., if s frequently block an intake)				
			s t a c=n	
ACTIVITY 2: POLLUTANT SOURCES				77
e. Checked ground-level intakes for pollutant source docks, and bus-idling areas)				D/
f. Checked rooftop intakes for pollutant sources (plu				
toilet, or laboratory exhaust fans; puddles; and mi		9	/ -	
air-conditioning cooling towers)g. Resolved any problems with pollutant sources loca			س س	Ц
intakes (e.g., relocated dumpster or extended exha				
CTIVITY 3: AIRFLOW			/	
h. Obtained chemical smoke (or a small piece of tiss	ue paper or li	ght plastic)	a / a	
i. Confirmed that outdoor air is entering the intake a			D / D	
2. SYSTEM CLEANLINESS				
CTIVITY 4: AIR FILTERS			1	
a. Replaced filters per maintenance schedule			6 0	
b. Shut off ventilation system fans while replacing fi				
blowing downstream)				
1 (7 6' 1 6'4 6'114 4	1			_
around) the air filter			a / <u> </u>	
e. Confirmed proper installation of filters (correct di	rection for air	rflow)	년 0	

2. SYSTEM CLEANLINESS (continued) **ACTIVITY 5: DRAIN PANS** Yes No N/A 2f. Ensured that drain pans slant toward the drain (to prevent water from accumulating) 2h. Checked drain pans for mold and mildew **ACTIVITY 6: COILS** ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS 2j. Ensured that the interior of air-handling unit(s) or unit ventilator 2k. Ensured that ducts are clean **ACTIVITY 8: MECHANICAL ROOMS** 21. Checked mechanical room for unsanitary conditions, leaks, and spills 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies 3. CONTROLS FOR OUTDOOR AIR SUPPLY 3a. Ensured that air dampers are at least partially open (minimum position) Q 3b. Ensured that minimum position provides adequate outdoor air for occupants **ACTIVITY 9: CONTROLS INFORMATION** 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, **ACTIVITY 10: CLOCKS, TIMERS, SWITCHES** 3e. Set time clocks appropriately.....□ 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) **ACTIVITY 11: CONTROL COMPONENTS** 3g. Ensured appropriate system pressure by testing line pressure at both the 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you blow down the tank)....... 3j. Set the line pressure at each thermostat and damper actuator at the proper level (no leakage or obstructions) **ACTIVITY 12: OUTDOOR AIR DAMPERS** 3k. Ensured that the outdoor air damper is visible for inspection...... 31. Ensured that the recirculating relief and/or exhaust dampers are visible



outdoor air damper is within the normal operating range

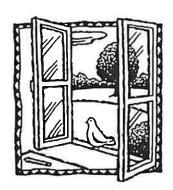
3m. Ensured that air temperature in the indoor area(s) served by each



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	3n. Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler		N/A
	30. Checked that the outdoor air damper opens (at least partially with no delay)	, u	
	when the air handler is turned on	ٰ ں	
	3p. If in heating mode, checked that the outdoor air damper goes to its		
	minimum position (without completely closing) when the room thermostat is set to 85°F		ita
	3q. If in cooling mode, checked that the outdoor air damper goes to its minimum	ч	UZ
The state of the s	position (without completely closing) when the room thermostat is set		,
	to 60°F and mixed air thermostat is set to 45°F		U
	3r. If the outdoor air damper does not move, confirmed the following items:		
	The damper actuator links to the damper shaft, and any linkage set		5 /
	screws or bolts are tight		D
	 Moving parts are free of impediments (e.g., rust, corrosion)□ Electrical wire or pneumatic tubing connects to the damper actuator□ 		- ₽/
	• The outside air thermostat(s) is functioning properly (e.g., in the right	_	_
	location, calibrated correctly)		ø/
e v	Proceed to Activities 13–16 if the damper seems to be operating properly.		
	ACTIVITY 13: FREEZE STATS		
	3s. Disconnected power to controls (for automatic reset only) to test continuity		/
	across terminals	Q [′]	
	OR 3t. Confirmed (if applicable) that depressing the manual reset button (usually		
	red) trips the freeze stat (clicking sound indicates freeze stat was		
	tripped)		₫⁄
ž 8	3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats	0	\(\sigma\)
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-sto	ıt maj	ν
	close the outdoor air damper and disconnect the supply air when tripped. The typic range is $35^{\circ}F$ to $42^{\circ}F$.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher	_	5
	than 65°F		U
a	than the room thermostat setting		□
	ACTIVITY 15: ECONOMIZERS		/
	3x. Confirmed proper economizer settings based on design specifications or local practices□	Ċ	_
	NOTE: The dry-bulb is typically set at 65°F or lower.	1	
	3y. Checked that sensor on the economizer is shielded from direct sunlight 🖾	/	
	3z. Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications	/ _	
.9 320	NOTE: Economizers use varying amounts of cool outdoor air to assist with the cool load of the room or rooms. There are two types of economizers, dry-bulb and entha	lpy.	
	Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature and enthalpy economizers vary the amount of outdoor air based on outdoor temperand humidity level.		

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) Yes No N/A that move outside air indoors continuously operate during occupied NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system/ 4b. Ensured that passive gravity relief ventilation systems and transfer grilles NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals ACTIVITY 18: PRESSURIZATION IN BUILDINGS NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, 5. EXHAUST SYSTEMS **ACTIVITY 19: EXHAUST FAN OPERATION** 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) \Box If fans are running but air is not flowing toward the exhaust intake, check for the following: • Inoperable dampers · Obstructed, leaky, or disconnected ductwork Undersized or improperly installed fan

Broken fan belt





ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, kit and labs by keeping them under negative pressure (as compared to surrounding space		,
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces	No/	N/A
Stand outside the room with the door slightly open while checking airflow high and lethe door opening (see "How to Measure Airflow").	ow in	
5c. Ensured that air is flowing toward the exhaust intake □	Ø	
ACTIVITY 21: EXHAUST DUCTWORK 5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition		
6. QUANTITY OF OUTDOOR AIR		
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NOTE: Refer to "How to Measure Airflow" for techniques.	3	
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit		A
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration		Ø
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c) □		Ø,
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1	0	Þ
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1		₩

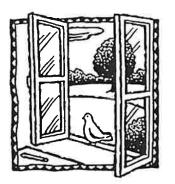


- 1. Read the IAQ
 Backgrounder and
 the Background
 Information for
 this checklist.
- 2. Keep the
 Background
 Information and
 make a copy of
 this checklist for
 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
- 4. Return the checklist portion of this document to the IAQ Coordinator.

Name: 1m NAKGI		
School: 167 RIVENSIDE MIDDLE GRAD	ど	_
Unit Ventilator/AHU No:		_
Room or Area: Signature: Date Completed:	74	
1. OUTDOOR AIR INTAKES		
1a. Marked locations of all outdoor air intakes on a small floor plan (for	No	N/A
example, a fire escape floor plan) 1b. Ensured that the ventilation system was on and operating in "occupied" mode	<u>a</u>	0
ACTIVITY 1: OBSTRUCTIONS		
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers		۵
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves frequently block an intake)		
ACTIVITY 2: POLLUTANT SOURCES		
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas)	П	o/
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen,	_	4
toilet, or laboratory exhaust fans; puddles; and mist from air-conditioning cooling towers)		
1g. Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe)		
ACTIVITY 3: AIRFLOW		
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)		
1i. Confirmed that outdoor air is entering the intake appropriately		
2. SYSTEM CLEANLINESS		
ACTIVITY 4: AIR FILTERS 2a. Replaced filters per maintenance schedule.		
2b. Shut off ventilation system fans while replacing filters (prevents dirt from		۵
blowing downstream)		о 0
2c. Vacuumed filter areas before installing new filters	u	ų.
around) the air filter	0	

2. SYSTEM CLEANLINESS (continued)

AC	TIVITY 5: DRAIN PANS		
2f.	Ensured that drain pans slant toward the drain (to prevent water from accumulating)	s No	N/
2g.	Cleaned drain pans		
2h.	Checked drain pans for mold and mildew		
AC	TIVITY 6: COILS		
2i.	Ensured that heating and cooling coils are clean		
AC	TIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS		
2j.	Ensured that the interior of air-handling unit(s) or unit ventilator		
	(air-mixing chamber and fan blades) is clean		
2k.	Ensured that ducts are clean		
	TIVITY 8: MECHANICAL ROOMS		
21.	Checked mechanical room for unsanitary conditions, leaks, and spills		
2m.	Ensured that mechanical rooms and air-mixing chambers are free of trash,		
	chemical products, and supplies	ES.	
3.	CONTROLS FOR OUTDOOR AIR SUPPLY		
	Ensured that air dampers are at least partially open (minimum position) \Box		
3b.	Ensured that minimum position provides adequate outdoor air for occupants		
	TYNITAL CONTROL CIRCUPALATIYON		
	TIVITY 9: CONTROLS INFORMATION		
3c.	Obtained and reviewed all design inside/outside temperature and humidity		
	requirements, controls specifications, as-built mechanical drawings, and controls operations manuals (often uniquely designed)		
	and controls operations mandais (often uniquely designed)	_	_
	TIVITY 10: CLOCKS, TIMERS, SWITCHES		
3d.	Turned summer-winter switches to the correct position		
	Set time clocks appropriately		
3f.	Ensured that settings fit the actual schedule of building use (including		
	night/weekend use)		
AC	TIVITY 11: CONTROL COMPONENTS		
3g.	Ensured appropriate system pressure by testing line pressure at both the		
	occupied (day) setting and the unoccupied (night) setting		
	Checked that the line dryer prevents moisture buildup		
3i.	Replaced control system filters at the compressor inlet based on the		
	compressor manufacturer's recommendation (for example, when you blow down the tank)	۵	
3j.	Set the line pressure at each thermostat and damper actuator at the proper		
•	level (no leakage or obstructions)		
AC	TIVITY 12: OUTDOOR AIR DAMPERS		
	Ensured that the outdoor air damper is visible for inspection		
	Ensured that the recirculating relief and/or exhaust dampers are visible		
	for inspection		
3m.	Ensured that air temperature in the indoor area(s) served by each	_	_
	outdoor air damper is within the normal operating range		



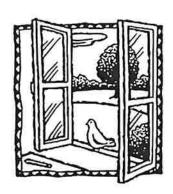
NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	3n. Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	No □	N/A
	30. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on		
	3p. If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room	_	_
	thermostat is set to 85°F		
	position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F		۵
	3r. If the outdoor air damper does not move, confirmed the following items:		
	• The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight		
	• Moving parts are free of impediments (e.g., rust, corrosion)□		
	• Electrical wire or pneumatic tubing connects to the damper actuator□		
	• The outside air thermostat(s) is functioning properly (e.g., in the right location, calibrated correctly)	0	
φ	Proceed to Activities 13–16 if the damper seems to be operating properly.		
	ACTIVITY 13: FREEZE STATS		
	3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals		
	OR		
	3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)		
8 10	3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats.	_ 	_
		_	_
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-staclose the outdoor air damper and disconnect the supply air when tripped. The typicarange is 35°F to 42°F.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher than 65°F	<u> </u>	۵
	3w. Ensured that the mixed air stat for cooling mode is set no lower		
2	than the room thermostat setting		
	ACTIVITY 15: ECONOMIZERS		
	3x. Confirmed proper economizer settings based on design specifications or local practices	-	
	NOTE: The dry-bulb is typically set at 65°F or lower.		
	3y. Checked that sensor on the economizer is shielded from direct sunlight□		
	3z. Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications	0	
H 16	NOTE: Economizers use varying amounts of cool outdoor air to assist with the cool load of the room or rooms. There are two types of economizers, dry-bulb and enthal Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature and enthalpy economizers vary the amount of outdoor air based on outdoor temperature and humidity level.	ру. г,	

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) ACTIVITY 16: FANS 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied Yes No N/A hours (even when room thermostat is satisfied)...... NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system perform as required....... 4b. Ensured that passive gravity relief ventilation systems and transfer grilles NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE. To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, floor joints, pipe openings)....... 5. EXHAUST SYSTEMS **ACTIVITY 19: EXHAUST FAN OPERATION** 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) \Box If fans are running but air is not flowing toward the exhaust intake, check for the following: • Inoperable dampers · Obstructed, leaky, or disconnected ductwork • Undersized or improperly installed fan

Broken fan belt





ACTIVITY 20: EXHAUST AIRFLOW

	TE: Prevent migration of indoor contaminants from areas such as bathrooms, k I labs by keeping them under negative pressure (as compared to surrounding spo		S,
5b.	Checked (using chemical smoke) that air is drawn into the room from adjacent spaces	No □	N/A
	nd outside the room with the door slightly open while checking airflow high and door opening (see "How to Measure Airflow").	low i	n
5c.	Ensured that air is flowing toward the exhaust intake		
	TIVITY 21: EXHAUST DUCTWORK		
5d.	Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition		
6.	QUANTITY OF OUTDOOR AIR		
AC	TIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NO	TE: Refer to "How to Measure Airflow" for techniques.		
	Measured the quantity of outdoor air supplied (22a) to each ventilation unit		
6b.	Calculated the number of occupants served (22b) by the ventilation unit under consideration	۵	0
6c.	Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)	a	
AC	TIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d.	Compared the existing outdoor air per person (22c) to the recommended levels in Table 1	۵	
6e.	Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1		_



Instructions

- 1. Read the IAQ
 Backgrounder and
 the Background
 Information for
 this checklist.
- 2. Keep the
 Background
 Information and
 make a copy of
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 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes,"
 "no," or
 "not applicable"
 box beside each
 item. (A "no"
 response
 requires further
 attention.)
 - Make comments in the "Notes" section as necessary.
- Return the checklist portion of this document to the IAQ Coordinator.

Ventilation Checklist

Name: ARGL	_
School: 167 PAPEDERIVERSINE DO MINDLE GRA	105
Unit Ventilator/AHU No:	-
The San Control of the Control of th	-
Room or Area: Date Completed: 10-11-04	-
Signature:	2
() 10	
1. OUTDOOR AIR INTAKES	
1a. Marked locations of all outdoor air intakes on a small floor plan (for	N/A
example, a fire escape floor plan)	
1b. Ensured that the ventilation system was on and operating in "occupied" mode	
	No.
ACTIVITY 1: OBSTRUCTIONS	
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs,	_
or covers	ш
frequently block an intake)	
1,,	
ACTIVITY 2: POLLUTANT SOURCES	. /
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading	· [
docks, and bus-idling areas)	W.
toilet, or laboratory exhaust fans; puddles; and mist from	
air-conditioning cooling towers)	
1g. Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe)	П
makes (e.g., relocated dumpster of extended exhaust pipe)	_
ACTIVITY 3: AIRFLOW	
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)	
1i. Confirmed that outdoor air is entering the intake appropriately ✓ □	
2. SYSTEM CLEANLINESS	17
ACTIVITY 4: AIR FILTERS	
2a. Replaced filters per maintenance schedule	
2b. Shut off ventilation system fans while replacing filters (prevents dirt from	724
blowing downstream)	
2c. Vacuumed filter areas before installing new filters	u
around) the air filter	
2e. Confirmed proper installation of filters (correct direction for airflow)	ū

2. SYSTEM CLEANLINESS (continued) **ACTIVITY 5: DRAIN PANS** Yes/No N/A 2f. Ensured that drain pans slant toward the drain (to prevent water from 2h. Checked drain pans for mold and mildew **ACTIVITY 6: COILS** 2i. Ensured that heating and cooling coils are clean **ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS** 2j. Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean **ACTIVITY 8: MECHANICAL ROOMS** 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies 3. CONTROLS FOR OUTDOOR AIR SUPPLY 3b. Ensured that minimum position provides adequate outdoor air for occupants **ACTIVITY 9: CONTROLS INFORMATION** 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, and controls operations manuals (often uniquely designed)...... **ACTIVITY 10: CLOCKS, TIMERS, SWITCHES** 3e. Set time clocks appropriately....... 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) **ACTIVITY 11: CONTROL COMPONENTS** 3g. Ensured appropriate system pressure by testing line pressure at both the 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you blow down the tank)....... Set the line pressure at each thermostat and damper actuator at the proper level (no leakage or obstructions) **ACTIVITY 12: OUTDOOR AIR DAMPERS** 3k. Ensured that the outdoor air damper is visible for inspection......



NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.

for inspection

31. Ensured that the recirculating relief and/or exhaust dampers are visible

3m. Ensured that air temperature in the indoor area(s) served by each



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	3n. Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	No I	N/A
	30. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on	۵	
	3p. If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F	_	_ `Q
	3q. If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F		p.
	 3r. If the outdoor air damper does not move, confirmed the following items: The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight	<u> </u>	Ø
	• Moving parts are free of impediments (e.g., rust, corrosion)		0
	 Electrical wire or pneumatic tubing connects to the damper actuator		
N V	Proceed to Activities 13–16 if the damper seems to be operating properly.		-
	ACTIVITY 13: FREEZE STATS		
	3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals	4	٥
	3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)	۵	D /
Ç SE	3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats		Ø
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-stat close the outdoor air damper and disconnect the supply air when tripped. The typical range is 35°F to 42°F.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher than 65°F	П	iα
	3w. Ensured that the mixed air stat for cooling mode is set no lower	_	
>	than the room thermostat setting		₩
	ACTIVITY 15: ECONOMIZERS	,	•
	3x. Confirmed proper economizer settings based on design specifications or local practices	6	0
	NOTE: The dry-bulb is typically set at 65°F or lower.		
	 3y. Checked that sensor on the economizer is shielded from direct sunlight 3z. Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications		<u> </u>
	NOTE: Economizers use varying amounts of cool outdoor air to assist with the coolin load of the room or rooms. There are two types of economizers, dry-bulb and enthalpy Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature, and enthalpy economizers vary the amount of outdoor air based on outdoor temperature and humidity level.	y.	

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) Yes No N/A that move outside air indoors continuously operate during occupied NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) 4d. Ensured that supply and return vents are open and unblocked NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor 4f. Modified existing HVAC systems to incorporate any room or zone layout 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of 4h. Ensured that unit ventilators are quiet enough to accommodate classroom 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, 5. EXHAUST SYSTEMS ACTIVITY 19: EXHAUST FAN OPERATION 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) \square If fans are running but air is not flowing toward the exhaust intake, check for the following: Inoperable dampers

Obstructed, leaky, or disconnected ductwork
Undersized or improperly installed fan

· Broken fan belt

1 of 5



ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, kit and labs by keeping them under negative pressure (as compared to surrounding space		
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces.	No/	N/A
Stand outside the room with the door slightly open while checking airflow high and the door opening (see "How to Measure Airflow").	low in	!
5c. Ensured that air is flowing toward the exhaust intake	ĊΩ	
ACTIVITY 21: EXHAUST DUCTWORK		
5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition	g z	
6. QUANTITY OF OUTDOOR AIR		
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		9
NOTE: Refer to "How to Measure Airflow" for techniques.	(4)	
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit	ū	
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration		
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)		Þ
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1	0	4
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1	<u> </u>	M



Instructions

- Read the IAC Backgrounder and the Background Information for this checklist.
- 2. Keep the
 Background
 Information and
 make a copy of
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 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
- Return the checklist portion of this document to the IAQ Coordinator.

Ventilation Checklist

		_	
Na	me: Jim NARG)		_
Sc	hool: 167 RIVERSIDE DR MIDDLE GR	(Old	2
Un	nit Ventilator/AHU No: 10		_
	oom or Area: Date Completed: $\sqrt{\partial -1/\sqrt{\partial -1}}$	14	_
Sid	gnature:		
318	shature.		
1.	OUTDOOR AIR INTAKES		
la.	Marked locations of all outdoor air intakes on a small floor plan (for Yes	_	N/A
	example, a file escape floor planty	ं	ч
lb.	Ensured that the ventilation system was on and operating in "occupied" mode		
	TIVITY 1: OBSTRUCTIONS		
lc.	Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers		
1d.	Installed corrective devices as necessary (e.g., if snowdrifts or leaves		
	frequently block an intake)	u	ч
AC	TIVITY 2: POLLUTANT SOURCES		
	Checked ground-level intakes for pollutant sources (dumpsters, loading		-
	docks, and bus-idling areas)	ш	Y
lf.	Checked rooftop intakes for pollutant sources (plumbing vents; kitchen, toilet, or laboratory exhaust fans; puddles; and mist from		
	air-conditioning cooling towers)		
1g.	Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe)		۵
	intakes (e.g., relocated dumpster of extended exhibits paper)		
	TIVITY 3: AIRFLOW		
1h.	Obtained chemical smoke (or a small piece of tissue paper or light plastic).		
l1.	Confirmed that outdoor air is entering the intake appropriately	_	_
2.	SYSTEM CLEANLINESS		
AC	CTIVITY 4: AIR FILTERS		
2a.	Replaced filters per maintenance schedule		
2b.	Shut off ventilation system fans while replacing filters (prevents dirt from		
20	blowing downstream)		
2d.	Confirmed proper fit of filters to prevent air from bypassing (flowing	_	_
	around) the air filter		
2e.	Confirmed proper installation of filters (correct direction for airflow)		

2. SYSTEM CLEANLINESS (continued)

	FIVITY 5: DRAIN PANS			
2f.	Ensured that drain pans slant toward the drain (to prevent water from accumulating)		No	
2g.	Cleaned drain pans	. □		
2h.	Checked drain pans for mold and mildew	. 🕪		
	TIVITY 6: COILS	_	_	
2i.	Ensured that heating and cooling coils are clean	. V A	u	
	TIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS			
2j.	Ensured that the interior of air-handling unit(s) or unit ventilator			
	(air-mixing chamber and fan blades) is clean		<u> </u>	
2k.	Ensured that ducts are clean	. •	Ø	
	TIVITY 8: MECHANICAL ROOMS	_		_
	Checked mechanical room for unsanitary conditions, leaks, and spills	. 12		
2m.	Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies	. K		
3.	CONTROLS FOR OUTDOOR AIR SUPPLY			
	Ensured that air dampers are at least partially open (minimum position)	. ½		
3b.	Ensured that minimum position provides adequate outdoor air	de se		
	for occupants	. U	Ц	
	TIVITY 9: CONTROLS INFORMATION			
3c.	Obtained and reviewed all design inside/outside temperature and humidity			
	requirements, controls specifications, as-built mechanical drawings, and controls operations manuals (often uniquely designed)			
	and controls operations manuals (often uniquely designed)		1/2-	
	TIVITY 10: CLOCKS, TIMERS, SWITCHES			A
	Turned summer-winter switches to the correct position		0	
	Set time clocks appropriately Ensured that settings fit the actual schedule of building use (including	. •	_	
31.	night/weekend use)	. 🗗		
AC	TIVITY 11: CONTROL COMPONENTS			
3g.	Ensured appropriate system pressure by testing line pressure at both the		_	مد
	occupied (day) setting and the unoccupied (night) setting		u	4
	Checked that the line dryer prevents moisture buildup	🗀		40
3i.	Replaced control system filters at the compressor inlet based on the			
	compressor manufacturer's recommendation (for example, when you blow down the tank)	. 🗆		
3j.	Set the line pressure at each thermostat and damper actuator at the proper			1 1/
	level (no leakage or obstructions)	🗆		ď
	TIVITY 12: OUTDOOR AIR DAMPERS	,		
	Ensured that the outdoor air damper is visible for inspection			
31.	Ensured that the recirculating relief and/or exhaust dampers are visible			
2	for inspection	. ya		u.
Зm.	Ensured that air temperature in the indoor area(s) served by each outdoor air damper is within the normal operating range	D'		
	outdoor an damper is within the normal operating range	y 🕶	_	_



NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.



3.	CONTROLS FOR OUTDOOR AIR SUPPLY (continued)			
3n.	Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	. /	No	N/A
	Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on	.1		
	If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F		0	₫
	If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F		<u> </u>	ď
	 If the outdoor air damper does not move, confirmed the following items: The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight			A A A
	ceed to Activities 13–16 if the damper seems to be operating properly.			
	TIVITY 13: FREEZE STATS Disconnected power to controls (for automatic reset only) to test continuity across terminals	. 🗖	A	
3t.	Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)	. 🗆		12
3u.	Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats	, 🗆		Ċ
clos	TE: HVAC systems with water coils need protection from the cold. The freeze se the outdoor air damper and disconnect the supply air when tripped. The tyge is $35^{\circ}F$ to $42^{\circ}F$.	-stat pica	' may d trip)
AC	TIVITY 14: MIXED AIR THERMOSTATS			
3v.	Ensured that the mixed air stat for heating mode is set no higher than 65°F	. 🗆		
3w.	Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting	. 🗖		₽′
	CTIVITY 15: ECONOMIZERS Confirmed proper economizer settings based on design specifications or local practices	. 🗅	ď	۵
	TE: The dry-bulb is typically set at 65°F or lower.	. 1		
3y. 3z.	Checked that sensor on the economizer is shielded from direct sunlight Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications			0
loa Dry and	OTE: Economizers use varying amounts of cool outdoor air to assist with the of d of the room or rooms. There are two types of economizers, dry-bulb and envy-bulb economizers vary the amount of outdoor air based on outdoor temperate enthalpy economizers vary the amount of outdoor air based on outdoor temperate that the properties will be an outdoor temperate the properties of the properti	cooli thalp ature)y. ?,	

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) Yes No N/A that move outside air indoors continuously operate during occupied hours (even when room thermostat is satisfied)...... NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system perform as required 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply 🖵 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, floor joints, pipe openings)....... 5. EXHAUST SYSTEMS **ACTIVITY 19: EXHAUST FAN OPERATION** 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s)□ If fans are running but air is not flowing toward the exhaust intake, check for the following: • Inoperable dampers · Obstructed, leaky, or disconnected ductwork

• Undersized or improperly installed fan

· Broken fan belt





ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, kits and labs by keeping them under negative pressure (as compared to surrounding space)	chens ces).	š,
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces	No.	N/A
Stand outside the room with the door slightly open while checking airflow high and lethe door opening (see "How to Measure Airflow").	low ir	1
5c. Ensured that air is flowing toward the exhaust intake	R	
ACTIVITY 21: EXHAUST DUCTWORK 5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition	4	0
6. QUANTITY OF OUTDOOR AIR ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NOTE: Refer to "How to Measure Airflow" for techniques.		
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit		Q [*]
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration		Ø
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c) □		Ø
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1		Ų,
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet	_	æ.f

the recommended levels in Table 1



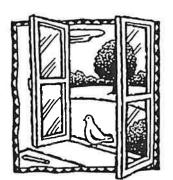
Instructions

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 Backgrounder and
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 this checklist.
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 Background
 Information and
 make a copy of
 this checklist for
 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes,"
 "no," or
 "not applicable"
 box beside each
 item. (A "no"
 response
 requires further
 attention.)
 - Make comments in the "Notes" section as necessary.
- 4. Return the checklist portion of this document to the IAQ Coordinator.

Ventilation Checklist

Name: Jim WARGI	_
School: 167 RIVENSIVE DRIVE	
Unit Ventilator/AHU No:	-/
Room or Area: Date Completed: 10-11-05	7
Signature:	٠
//0/-	
1. OUTDOOR AIR INTAKES	^
1a. Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan)	N/A
1b. Ensured that the ventilation system was on and operating in "occupied" mode	П
mode a	J
ACTIVITY 1: OBSTRUCTIONS	
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers	۵
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves	_
frequently block an intake)	Ц
ACTIVITY 2: POLLUTANT SOURCES	50
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas)	Ы
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen,	W
toilet, or laboratory exhaust fans; puddles; and mist from	
air-conditioning cooling towers)	
intakes (e.g., relocated dumpster or extended exhaust pipe)	
ACTIVITY 3: AIRFLOW	
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic) \(\overline{\sqrt{2}}\sqrt{\sqrt{2}}\)	
1i. Confirmed that outdoor air is entering the intake appropriately	
2. SYSTEM CLEANLINESS	
ACTIVITY 4: AIR FILTERS	
2a. Replaced filters per maintenance schedule	
2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream)	П
2c. Vacuumed filter areas before installing new filters	ū
2d. Confirmed proper fit of filters to prevent air from bypassing (flowing	197
around) the air filter	
	_

2. SYSTEM CLEANLINESS (continued) **ACTIVITY 5: DRAIN PANS** Yes No N/A 2f. Ensured that drain pans slant toward the drain (to prevent water from 2g. Cleaned drain pans 2h. Checked drain pans for mold and mildew **ACTIVITY 6: COILS** 2i. Ensured that heating and cooling coils are clean _____ **ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS** 2j. Ensured that the interior of air-handling unit(s) or unit ventilator **ACTIVITY 8: MECHANICAL ROOMS** 21. Checked mechanical room for unsanitary conditions, leaks, and spills 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies 3. CONTROLS FOR OUTDOOR AIR SUPPLY 3a. Ensured that air dampers are at least partially open (minimum position) 3b. Ensured that minimum position provides adequate outdoor air for occupants **ACTIVITY 9: CONTROLS INFORMATION** 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, and controls operations manuals (often uniquely designed)...... **ACTIVITY 10: CLOCKS, TIMERS, SWITCHES** 3e. Set time clocks appropriately...... 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) **ACTIVITY 11: CONTROL COMPONENTS** 3g. Ensured appropriate system pressure by testing line pressure at both the 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you 3j. Set the line pressure at each thermostat and damper actuator at the proper **ACTIVITY 12: OUTDOOR AIR DAMPERS** 31. Ensured that the recirculating relief and/or exhaust dampers are visible 3m. Ensured that air temperature in the indoor area(s) served by each outdoor air damper is within the normal operating range



NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.



3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
3n. Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	No No	N/A
30. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on	/	
3p. If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F		M
3q. If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F		⊌⁄
 3r. If the outdoor air damper does not move, confirmed the following items: The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight	j 0	000
Proceed to Activities 13–16 if the damper seems to be operating properly.		
ACTIVITY 13: FREEZE STATS 3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals OR	ı 🗹	/
3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)		6) 12
NOTE: HVAC systems with water coils need protection from the cold. The freeze-sclose the outdoor air damper and disconnect the supply air when tripped. The typic range is 35°F to 42°F.		
ACTIVITY 14: MIXED AIR THERMOSTATS		
3v. Ensured that the mixed air stat for heating mode is set no higher than 65°F	ם נ	V
3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting) -	4
ACTIVITY 15: ECONOMIZERS		
3x. Confirmed proper economizer settings based on design specifications or local practices	ı 🗹	
NOTE: The dry-bulb is typically set at 65°F or lower.	7	
 3y. Checked that sensor on the economizer is shielded from direct sunlight 3z. Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications 		0
NOTE: Economizers use varying amounts of cool outdoor air to assist with the co load of the room or rooms. There are two types of economizers, dry-bulb and enthe Dry-bulb economizers vary the amount of outdoor air based on outdoor temperate and enthalpy economizers vary the amount of outdoor air based on outdoor temperate and humidity level.	alpy. ıre,	

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied Yes No N/A NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system/ 4b. Ensured that passive gravity relief ventilation systems and transfer grilles NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) 4d. Ensured that supply and return vents are open and unblocked NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, floor joints, pipe openings)..... 5. EXHAUST SYSTEMS ACTIVITY 19: EXHAUST FAN OPERATION 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) \square If fans are running but air is not flowing toward the exhaust intake, check for the following: Inoperable dampers Obstructed, leaky, or disconnected ductwork Undersized or improperly installed fan

Broken fan belt

4 of 5



ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, ki and labs by keeping them under negative pressure (as compared to surrounding spa		5,
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces	No∕ ☑	N/N
Stand outside the room with the door slightly open while checking airflow high and the door opening (see "How to Measure Airflow").	low in	<u>;</u>
5c. Ensured that air is flowing toward the exhaust intake	Q	
ACTIVITY 21: EXHAUST DUCTWORK 5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition		<u> </u>
6. QUANTITY OF OUTDOOR AIR		
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NOTE: Refer to "How to Measure Airflow" for techniques.	3	
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit		b
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration		V
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)		d
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1		d
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1		\alpha



Instructions

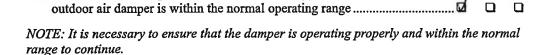
- 1. Read the IAQ

 Backgrounder and the Background Information for this checklist.
- 2. Keep the
 Background
 Information and
 make a copy of
 this checklist for
 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes,"
 "no," or
 "not applicable"
 box beside each
 item. (A "no"
 response
 requires further
 attention.)
 - Make comments in the "Notes" section as necessary.
- 4. Return the checklist portion of this document to the IAQ Coordinator.

Ventilation Checklist

Name: //m //A/G)	
School: 160 PIVERSIDE DRIVE MIDDLE GAR	DES
Unit Ventilator/AHU No: / a	
Room or Area: Date Completed: 10-11-6	24
Signature:	2
1. OUTDOOR AIR INTAKES	
1a. Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan)	10 /N/A 12 0
1b. Ensured that the ventilation system was on and operating in "occupied" mode	
mode = = = = = = = = = = = = = = = = = = =	u u
ACTIVITY 1: OBSTRUCTIONS	
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers	
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves frequently block an intake)	0 0
ACTIVITY 2: POLLUTANT SOURCES	
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading	
docks, and bus-idling areas)	
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen, toilet, or laboratory exhaust fans; puddles; and mist from	
air-conditioning cooling towers)	
1g. Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe)	0 0
ACTIVITY 3: AIRFLOW	
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)	a
1i. Confirmed that outdoor air is entering the intake appropriately	a a
2. SYSTEM CLEANLINESS	
ACTIVITY 4: AIR FILTERS	
2a. Replaced filters per maintenance schedule	
2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream)	a a
2c. Vacuumed filter areas before installing new filters	a
2d. Confirmed proper fit of filters to prevent air from bypassing (flowing around) the air filter.	
2e. Confirmed proper installation of filters (correct direction for airflow)	<u> </u>

2. SYSTEM CLEANLINESS (continued) **ACTIVITY 5: DRAIN PANS** Yes No N/A 2f. Ensured that drain pans slant toward the drain (to prevent water from accumulating) 2g. Cleaned drain pans 2h. Checked drain pans for mold and mildew **ACTIVITY 6: COILS** ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS 2j. Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean 2k. Ensured that ducts are clean **ACTIVITY 8: MECHANICAL ROOMS** 21. Checked mechanical room for unsanitary conditions, leaks, and spills 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies 3. CONTROLS FOR OUTDOOR AIR SUPPLY 3a. Ensured that air dampers are at least partially open (minimum position) 3b. Ensured that minimum position provides adequate outdoor air for occupants **ACTIVITY 9: CONTROLS INFORMATION** 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, **ACTIVITY 10: CLOCKS, TIMERS, SWITCHES** 3e. Set time clocks appropriately....... 3f. Ensured that settings fit the actual schedule of building use (including **ACTIVITY 11: CONTROL COMPONENTS** 3g. Ensured appropriate system pressure by testing line pressure at both the 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you

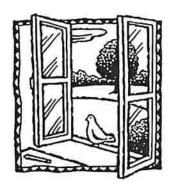


for inspection

3m. Ensured that air temperature in the indoor area(s) served by each

3i. Set the line pressure at each thermostat and damper actuator at the proper

ACTIVITY 12: OUTDOOR AIR DAMPERS





	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)	
	3n. Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	
	30. Checked that the outdoor air damper opens (at least partially with no delay)	_
	when the air handler is turned on	
	minimum position (without completely closing) when the room thermostat is set to 85°F	i p/
	3q. If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F	b /
9	3r. If the outdoor air damper does not move, confirmed the following items:	
	The damper actuator links to the damper shaft, and any linkage set	/
	screws or bolts are tight	0.00
	• Electrical wire or pneumatic tubing connects to the damper actuator	
	• The outside air thermostat(s) is functioning properly (e.g., in the right location, calibrated correctly)	ta
э э	Proceed to Activities 13–16 if the damper seems to be operating properly.	
	ACTIVITY 13: FREEZE STATS	,
	3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals	
	3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)	ia/
*	3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats	
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-stat maclose the outdoor air damper and disconnect the supply air when tripped. The typical triprange is 35°F to 42°F.	
	ACTIVITY 14: MIXED AIR THERMOSTATS	
	3v. Ensured that the mixed air stat for heating mode is set no higher than 65°F	₽/
18)	3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting	b /
	ACTIVITY 15: ECONOMIZERS	
	3x. Confirmed proper economizer settings based on design specifications or local practices	/ _
	NOTE: The dry-bulb is typically set at 65°F or lower.	
	 3y. Checked that sensor on the economizer is shielded from direct sunlight	
*	NOTE: Economizers use varying amounts of cool outdoor air to assist with the cooling load of the room or rooms. There are two types of economizers, dry-bulb and enthalpy. Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature, and enthalpy economizers vary the amount of outdoor air based on outdoor temperature and humidity level.	;

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued) **ACTIVITY 16: FANS** 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied Ye∕s No N/A hours (even when room thermostat is satisfied) NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply. 4. AIR DISTRIBUTION **ACTIVITY 17: AIR DISTRIBUTION** 4a. Ensured that supply and return air pathways in the existing ventilation system 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies. 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows) NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents. 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals **ACTIVITY 18: PRESSURIZATION IN BUILDINGS** NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity. 4i. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, 5. EXHAUST SYSTEMS **ACTIVITY 19: EXHAUST FAN OPERATION** 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) \square If fans are running but air is not flowing toward the exhaust intake, check for the following: • Inoperable dampers · Obstructed, leaky, or disconnected ductwork

· Undersized or improperly installed fan

· Broken fan belt



ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, kit and labs by keeping them under negative pressure (as compared to surrounding spaces)		,
5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces□	No/ ♥	N/A
Stand outside the room with the door slightly open while checking airflow high and the door opening (see "How to Measure Airflow").	low in	1
5c. Ensured that air is flowing toward the exhaust intake	Ø	
ACTIVITY 21: EXHAUST DUCTWORK 5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition		_
6. QUANTITY OF OUTDOOR AIR		
ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS		
NOTE: Refer to "How to Measure Airflow" for techniques.	9)	
6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit	a	D
6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration		V
6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)□	-	ø
ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES		
6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1		d
6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1		M



Instructions

- 1. Read the IAQ
 Backgrounder and
 the Background
 Information for
 this checklist.
- 2. Keep the
 Background
 Information and
 make a copy of
 this checklist for
 each ventilation
 unit in your school,
 as well as a
 copy for future
 reference.
- 3. Complete the Checklist.
 - Check the "yes,"
 "no," or
 "not applicable"
 box beside each
 item. (A "no"
 response
 requires further
 attention.)
 - Make comments in the "Notes" section as necessary.
- 4. Return the checklist portion of this document to the IAQ Coordinator.

Ventilation Checklist

Name: Jim /VAIR61		_
School: 167 PIUFRSIDE DRIVE MIDDLE	6	PAR
Unit Ventilator/AHU No: 13		_
Room or Area: Date Completed: 10-11-2	2,	6
Signature:	10.	
1. OUTDOOR AIR INTAKES		,C + 2
1a. Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan)	No 10	A/X
1b. Ensured that the ventilation system was on and operating in "occupied"		
mode	ч	ч
ACTIVITY 1: OBSTRUCTIONS		
1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers	. 🗆	
1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves		722
frequently block an intake)	П	ш
ACTIVITY 2: POLLUTANT SOURCES		10
1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas)		ťΩ
1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen,	_	
toilet, or laboratory exhaust fans; puddles; and mist from air-conditioning cooling towers)	D	П
1g. Resolved any problems with pollutant sources located near outdoor air	(amount)	
intakes (e.g., relocated dumpster or extended exhaust pipe)		
ACTIVITY 3: AIRFLOW		
1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic)	0	0
11. Confirmed that outdoor air is entering the intake appropriately	u	ч
2. SYSTEM CLEANLINESS		
ACTIVITY 4: AIR FILTERS		
 2a. Replaced filters per maintenance schedule 2b. Shut off ventilation system fans while replacing filters (prevents dirt from 		
blowing downstream)		
2c. Vacuumed filter areas before installing new filters		
2d. Confirmed proper fit of filters to prevent air from bypassing (flowing around) the air filter	ū	
2e. Confirmed proper installation of filters (correct direction for airflow)	Q	

2. SYSTEM CLEANLINESS (continued) **ACTIVITY 5: DRAIN PANS** Yes No N/A 2f. Ensured that drain pans slant toward the drain (to prevent water from 2h. Checked drain pans for mold and mildew **ACTIVITY 6: COILS** 2i. Ensured that heating and cooling coils are clean ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS 2i. Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean 2k. Ensured that ducts are clean ACTIVITY 8: MECHANICAL ROOMS 21. Checked mechanical room for unsanitary conditions, leaks, and spills 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies 3. CONTROLS FOR OUTDOOR AIR SUPPLY 3a. Ensured that air dampers are at least partially open (minimum position) 3b. Ensured that minimum position provides adequate outdoor air ACTIVITY 9: CONTROLS INFORMATION 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, **ACTIVITY 10: CLOCKS, TIMERS, SWITCHES** 3e. Set time clocks appropriately...... 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) ACTIVITY 11: CONTROL COMPONENTS 3g. Ensured appropriate system pressure by testing line pressure at both the 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you 3i. Set the line pressure at each thermostat and damper actuator at the proper level (no leakage or obstructions) ACTIVITY 12: OUTDOOR AIR DAMPERS 31. Ensured that the recirculating relief and/or exhaust dampers are visible



3m. Ensured that air temperature in the indoor area(s) served by each



	3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	of shutting off appropriate air handler	No	N/A
	30. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on		
	3p. If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F□ 3q. If in cooling mode, checked that the outdoor air damper goes to its minimum		
	position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F	۵	b
	 3r. If the outdoor air damper does not move, confirmed the following items: The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight	0 0 0	N CO CO
± 5	Proceed to Activities 13–16 if the damper seems to be operating properly.		
	ACTIVITY 13: FREEZE STATS 3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals	Ы	_
	3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)□ 3u. Assessed the feasibility of replacing all manual reset freeze-stats with	<u> </u>	¥
n S	automatic reset freeze-stats		
	NOTE: HVAC systems with water coils need protection from the cold. The freeze-stat close the outdoor air damper and disconnect the supply air when tripped. The typica range is 35°F to 42°F.		
	ACTIVITY 14: MIXED AIR THERMOSTATS		
	3v. Ensured that the mixed air stat for heating mode is set no higher than 65°F		Ħ
	3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting		V
	ACTIVITY 15: ECONOMIZERS		721
	3x. Confirmed proper economizer settings based on design specifications or local practices		
	NOTE: The dry-bulb is typically set at 65°F or lower.		
	 3y. Checked that sensor on the economizer is shielded from direct sunlight	<u> </u>	<u> </u>
* 12	NOTE: Economizers use varying amounts of cool outdoor air to assist with the cooli load of the room or rooms. There are two types of economizers, dry-bulb and enthalp Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature and enthalpy economizers vary the amount of outdoor air based on outdoor tempera and humidity level.	y. ,	

3.	CONTROLS FOR OUTDOOR AIR SUPPLY (continued)		
	TIVITY 16: FANS Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied hours (even when room thermostat is satisfied)	No	N/A
	TE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necess ure sufficient outdoor air supply.	ary 1	to
4.	AIR DISTRIBUTION		
4a.	Ensured that supply and return air pathways in the existing ventilation system perform as required	<u> </u>	0
	TE: If ventilation system is closed or blocked to meet current fire codes, consult we fessional engineer for remedies.	ith a	
2	Made sure every occupied space has supply of outdoor air (mechanical system or operable windows)		0
	TE: If outlets have been blocked intentionally to correct drafts or discomfort, inve correct the cause of the discomfort and reopen the vents.	stiga	te
	Modified the HVAC system to supply outside air to areas without an outdoor air supply		/ / -
	Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents	0	D
4i.	Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals	u	
AC	TIVITY 18: PRESSURIZATION IN BUILDINGS		
mai	TE: To prevent infiltration of outdoor pollutants, the ventilation system is designed intain positive pressurization in the building. Therefore, ensure that the system, indexhaust fans, is operating on the "occupied" cycle when doing this activity.		ng
4j.	Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, floor joints, pipe openings)	6	
5 . l	EXHAUST SYSTEMS		
AC 5a.	TIVITY 19: EXHAUST FAN OPERATION Checked (using chemical smoke) that air flows into exhaust fan grille(s)		٥
If fa	 ans are running but air is not flowing toward the exhaust intake, check for the following interesting into the following interesting interesting into the following into the following interesting int	wing	g:





ACTIVITY 20: EXHAUST AIRFLOW

	NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, k and labs by keeping them under negative pressure (as compared to surrounding sp			
:	5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces		Vo/i i⊒	N/A
	Stand outside the room with the door slightly open while checking airflow high and the door opening (see "How to Measure Airflow").		w in	
3000	5c. Ensured that air is flowing toward the exhaust intake		Б	
	ACTIVITY 21: EXHAUST DUCTWORK		,	
:	5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition		1	
(6. QUANTITY OF OUTDOOR AIR			
4	ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS	;		2
i	NOTE: Refer to "How to Measure Airflow" for techniques.			
(6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit	ı	o o	b
(6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration			ď
(6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)	I		₫
	ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES			
(6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1			D /
(6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet		_	
	Alice and a community of a distance of the Alice of the A			TV.