Building:	Gibba	Office Bu	ildin	a				
System Tag/Name:	AHU-1							
Operating Condition Description:		ooling						
Units (select from pull-down list)	IP							
Inputs for System	Name	Units			Sve	stem	Ī	
Floor area served by system	As	sf			Зу	9500		
Population of area served by system (including diversity)	Ps	P		100% diversity		140		
Design primary supply fan airflow rate	Vpsd	cfm		100% diversity		1,700		
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf				0.08		
OA req'd per unit alea for system (Weighted average) OA req'd per person for system area (Weighted average)	Rps	cfm/p				6.8		
Inputs for Potentially Critical zones	ixps	CIIIVP				0.0	Potentially C	ritical Zones
							Cafeteria	Office space
Zone Name	Zone tit	tle turns p	urple	italic for critical zone(s)				
Zone Tag				• • • • • • • • • • • • • • • • • • • •			VAV-1	Office
Zone rag								
Space type							Restaurant	Office space
• • • • • • • • • • • • • • • • • • • •			rom p	ull-down list			dining rooms	
Floor Area of zone	Az	sf					1,500	8000
Design population of zone	Pz	P	(defa	ault value listed; may be ov	erridden)	100	40
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm					1,020	680
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?	_	Select fi	rom p	oull-down list or leave blank	it N/A			
Local recirc. air % representative of ave system return air	Er						75%	75%
Inputs for Operating Condition Analyzed	_							
Percent of total design airflow rate at conditioned analyzed	Ds	%				100%	100%	100%
Air distribution type at conditioned analyzed	_	Select fi	rom p	oull-down list			CS	CS
Zone air distribution effectiveness at conditioned analyzed	Ez						1.00	1.00
Primary air fraction of supply air at conditioned analyzed	Ер							
Results								
Ventilation System Efficiency	Ev					1.00	1	
Outdoor air intake required for system	Vot	cfm				1700		
Outdoor air per unit floor area	Vot/As	cfm/sf				0.18		
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p				12.1		
Outdoor air as a % of design primary supply air	Ypd	cfm				100%		
Detailed Calculations								
Initial Calculations for the System as a whole								
Primary supply air flow to system at conditioned analyzed	Vps	cfm	=	VpdDs	=	1700		
UncorrectedOA requirement for system	Vou	cfm	=	Rps Ps + Ras As	=	1700		
Uncorrected OA req'd as a fraction of primary SA	Xs		=	Vou / Vps	=	1.00		
Initial Calculations for individual zones				·				
OA rate per unit area for zone	Raz	cfm/sf					0.18	0.06
OA rate per person	Rpz	cfm/p					7.50	5.00
Total supply air to zone (at condition being analyzed)	Vdz	cfm					1020	680
Unused OA reg'd to breathing zone	Vbz	cfm	=	Rpz Pz + Raz Az	=		1020.0	680.0
Unused OA requirement for zone	Voz	cfm	=	Vbz/Ez	=		1020	680
Fraction of zone supply not directly recirc. from zone	Fa		=	Ep + (1-Ep)Er	=		1.00	1.00
Fraction of zone supply from fully mixed primary air	Fb		=	Ep : (:	=		1.00	1.00
Fraction of zone OA not directly recirc. from zone	Fc		=	1-(1-Ez)(1-Ep)(1-Er)	=		1.00	1.00
Unused OA fraction required in supply air to zone	Zd		=	Voz / Vdz	=		1.00	1.00
Unused OA fraction required in primary air to zone	Zp		=	Voz / Vpz	=		1.00	1.00
System Ventilation Efficiency								
Zone Ventilation Efficiency (App A Method)	Evz		=	(Fa + FbXs - FcZ) / Fa	=		1.00	1.00
System Ventilation Efficiency (App A Method)	Ev		=	min (Evz)	=	1.00		
Ventilation System Efficiency (Table 6.3 Method)	Ev		=	Value from Table 6.3	=	n/a		
Minimum outdoor air intake airflow								
Outdoor Air Intake Flow required to System	Vot	cfm	=	Vou / Ev	=	1700		
OA intake reg'd as a fraction of primary SA	Y		=	Vot / Vps	=	1.00		
Outdoor Air Intake Flow required to System (Table 6.3 Method)		cfm	_	Vou / Ev	=	n/a		
						n/a		
OA intake reg'd as a fraction of primary SA (Table 6.3 Method)	Υ		=	VOT / VDS	=	11/4		
OA intake req'd as a fraction of primary SA (Table 6.3 Method) OA Temp at which Min OA provides all cooling	Υ		=	Vot / Vps	-	II/a		

Building:		Gibba	Office Bu	ildin	a			1	
System Tag/Name: Operating Condition Description:			AHU-2						
			ooling						
Units (sele	ect from pull-down list)	IP							
Inputs for	System	Name	Units			Sv	stem	1	
	Floor area served by system	As	sf			Зу	9500		
	Population of area served by system (including diversity)	Ps	P		100% diversity		90		
	Design primary supply fan airflow rate	Vpsd	cfm		10070 diversity		1,020		
	OA reg'd per unit area for system (Weighted average)	Ras	cfm/sf				0.06		
	OA req'd per unit area for system (Weighted average) OA req'd per person for system area (Weighted average)	Rps	cfm/p				5.0		
Inputs for	Potentially Critical zones	турз	CITIVE				5.0	Potentially C	ritical Zones
-	Zone Name							Conference	Office space
	Zone name	Zone tit	tle turns p	urple	italic for critical zone(s)			Rooms	
	Zone Tag							Conference	Office
								Conference/m	Office space
	Space type		Select fo	rom r	oull-down list			eetina	Office space
	Floor Area of zone	Az	sf	- J þ	an actification			2,000	7500
	Design population of zone	Pz	P	(def	ault value listed; may be ov	verridder	1)	45	45
	Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	, 2011			′	345	675
	Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?	- 424		rom r	oull-down list or leave blant	k if N/A		040	010
	Local recirc. air % representative of ave system return air	Er	30.000	٠ ١				75%	75%
	Operating Condition Analyzed							7070	1070
,50.10.101	Percent of total design airflow rate at conditioned analyzed	Ds	%				100%	100%	100%
	Air distribution type at conditioned analyzed			rom r	oull-down list		.0070	CS	CS
	Zone air distribution effectiveness at conditioned analyzed	Ez	20.0001	2.11 F				1.00	1.00
	Primary air fraction of supply air at conditioned analyzed	Ep						1.00	1.00
Results	Timary an madion of supply an at contamonou analyzed	-P							
	Ventilation System Efficiency	Ev					1.00		
	Outdoor air intake required for system	Vot	cfm				1020	1	
L	Outdoor air per unit floor area	Vot/As	cfm/sf				0.11	_	
	Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p				11.3		
	Outdoor air as a % of design primary supply air	Ypd	cfm				100%		
D-1-11-10	Manufacture								
	<u>calculations</u> culations for the System as a whole								
minua Care	Primary supply air flow to system at conditioned analyzed	Vps	cfm	_	VpdDs	_	1020		
	UncorrectedOA requirement for system	Vou	cfm	=	Rps Ps + Ras As	=	1020		
	Uncorrected OA req'd as a fraction of primary SA	Xs	OIIII	_	Vou / Vps	_	1.00		
Initial Calc	culations for individual zones	710			700 / 1po				
a. Gaic	OA rate per unit area for zone	Raz	cfm/sf					0.06	0.06
	OA rate per person	Rpz	cfm/p					5.00	5.00
	Total supply air to zone (at condition being analyzed)	Vdz	cfm					345	675
	Unused OA reg'd to breathing zone	Vbz	cfm	=	Rpz Pz + Raz Az	=		345.0	675.0
	Unused OA requirement for zone	Voz	cfm	=	Vbz/Ez	=		345	675
	Fraction of zone supply not directly recirc. from zone	Fa	OIIII	_	Ep + (1-Ep)Er	_		1.00	1.00
	Fraction of zone supply from fully mixed primary air	Fb		=	Ep ((Lp) L	_		1.00	1.00
	Fraction of zone OA not directly recirc. from zone	Fc		=	1-(1-Ez)(1-Ep)(1-Er)	=		1.00	1.00
	Unused OA fraction required in supply air to zone	Zd		_	Voz / Vdz	_		1.00	1.00
	Unused OA fraction required in supply air to zone	Zp		_	Voz / Vpz	_		1.00	1.00
System Va	entilation Efficiency	_p			102, VP2	_		1.00	7.00
	Zone Ventilation Efficiency (App A Method)	Evz		=	(Fa + FbXs - FcZ) / Fa	=		1.00	1.00
	System Ventilation Efficiency (App A Method)	Ev		=	min (Evz)	=	1.00		7.00
	Ventilation System Efficiency (Table 6.3 Method)	Ev		_	Value from Table 6.3	_	n/a		
	outdoor air intake airflow				22		, 3		
	Outdoor Air Intake Airnow Outdoor Air Intake Flow required to System	Vot	cfm	=	Vou / Ev	=	1020		
	OA intake reg'd as a fraction of primary SA	Y		_	Vot / Vps	_	1.00		
					•		n/a		
	Outdoor Air Intake Flow required to System (Table 6.3 Method)	Vot	ctm	=	Vou / Ev	=			
	Outdoor Air Intake Flow required to System (Table 6.3 Method) OA intake reg'd as a fraction of primary SA (Table 6.3 Method)		cfm	=	Vou / Ev Vot / Vps	=			
OA Temp	Outdoor Air Intake Flow required to System (Table 6.3 Method) OA intake req'd as a fraction of primary SA (Table 6.3 Method) at which Min OA provides all cooling	Vot Y	ctm	=	Vou / Ev Vot / Vps	=	n/a		

Building:		Gibba	Office Bu	ıildin	a			1	
System Tag/Name: Operating Condition Description:			AHU-3 Peak Cooling						
Units (select from pull-down list)		IP							
Inputs for System		Name	Units			9	ystem	1	
Floor area served by system		As	sf			3	9700		
Population of area served by system	n (including diversity)	Ps	P		100% diversity		86		
Design primary supply fan airflow ra		Vpsd	cfm		10070 diversity		1,012		
OA reg'd per unit area for system (V		Ras	cfm/sf				0.06		
OA req'd per drift area for system (v		Rps	cfm/p				5.0		
Inputs for Potentially Critical zones	a (vveigitied average)	Прз	CITTEP				3.0	Potentially C	ritical Zones
Zone Name								Conference	Office space
Zone Name		Zone tit	tle turns p	ourple	italic for critical zone(s)			Rooms	
Zone Tag								Conference	Office
								Cantananasim	Office course
Space type			Salact f	rom r	oull-down list			Conference/m eeting	Office space
Floor Area of zone		Az	sf	i Oiii þ	dii-down list			1,500	8200
Design population of zone		Pz	SI P	(def	ault value listed; may be o	verridde	n)	38	48
Design population of zone Design total supply to zone (primary	nlus local recirculated)	Vdzd	cfm	(aci	aun raido notou, may be o		,	280	732
Induction Terminal Unit, Dual Fan D		v uzu		rom r	ull-down list or leave blan	k if N/∆		200	132
Local recirc. air % representative of		Er	00/001	. J.111 þ	JOWN NO. OF IGAVE DIAIT			750/	750/
Inputs for Operating Condition Analyzed	ave system return an							1370	1370
Percent of total design airflow rate a	at conditioned analyzed	Ds	%				100%	100%	100%
Air distribution type at conditioned a		D0		rom r	oull-down list		10070	CS	CS
Zone air distribution effectiveness a	•	Ez	00.000	۲	an down not			1.00	1.00
Primary air fraction of supply air at o		Ep						1.00	1.00
Results	Sorialitorica analyzea	-Р							
Ventilation System Efficiency		Ev					1.00		
Outdoor air intake required for syste	em	Vot	cfm				1012	1	
Outdoor air per unit floor area		Vot/As	cfm/sf				0.10		
Outdoor air per person served by sy	stem (including diversity)	Vot/Ps	cfm/p				11.8		
Outdoor air as a % of design primar		Ypd	cfm .				100%		
Detailed Calculations									
Initial Calculations for the System as a whole	۵								
Primary supply air flow to system at		Vps	cfm	_	VpdDs	_	1012		
UncorrectedOA requirement for sys	,	Vou	cfm	=	Rps Ps + Ras As	=	1012		
Uncorrected OA reg'd as a fraction		Xs	OIIII	_	Vou / Vps	_	1.00		
Initial Calculations for individual zones	or primary c/v	7.0			VOU / VPO		1.00		
OA rate per unit area for zone		Raz	cfm/sf					0.06	0.06
OA rate per person		Rpz	cfm/p					5.00	5.00
Total supply air to zone (at condition	n being analyzed)	Vdz	cfm					280	732
Unused OA reg'd to breathing zone		Vbz	cfm	=	Rpz Pz + Raz Az	=		280.0	732.0
Unused OA requirement for zone		Voz	cfm	=	Vbz/Ez	=		280	732
Fraction of zone supply not directly	recirc from zone	Fa	J1	=	Ep + (1-Ep)Er	_		1.00	1.00
Fraction of zone supply from fully m		Fb		=	Ep + (1-Lp)L1	_		1.00	1.00
Fraction of zone OA not directly rec		Fc		=	1-(1-Ez)(1-Ep)(1-Er)	=		1.00	1.00
Unused OA fraction required in sup		Zd		=	Voz / Vdz	_		1.00	1.00
Unused OA fraction required in sup		Zp		_	Voz / Vpz	_		1.00	1.00
System Ventilation Efficiency	ial y all to zone	_p			, , , , _			1.30	1.00
Zone Ventilation Efficiency (App A N	Method)	Evz		=	(Fa + FbXs - FcZ) / Fa	=		1.00	1.00
System Ventilation Efficiency (App A		Ev		=	min (Evz)	=	1.00		
Ventilation System Efficiency (Table		Ev		_	Value from Table 6.3	=	n/a		
Minimum outdoor air intake airflow									
Outdoor Air Intake Flow required to	System	Vot	cfm	=	Vou / Ev	=	1012		
Odiacol / III Illiano I lovi Tequilea to		Y	J	=	Vot / Vps	_	1.00		
OA intake reg'd as a fraction of prim									
OA intake req'd as a fraction of prim Outdoor Air Intake Flow required to			cfm	=	Vou / Év	=	n/a		
Outdoor Air Intake Flow required to	System (Table 6.3 Method)	Vot	cfm	=	Vou / Év Vot / Vos	=	n/a n/a		
	System (Table 6.3 Method) nary SA (Table 6.3 Method)		cfm	=	Vou / Év Vot / Vps	= =	n/a n/a		