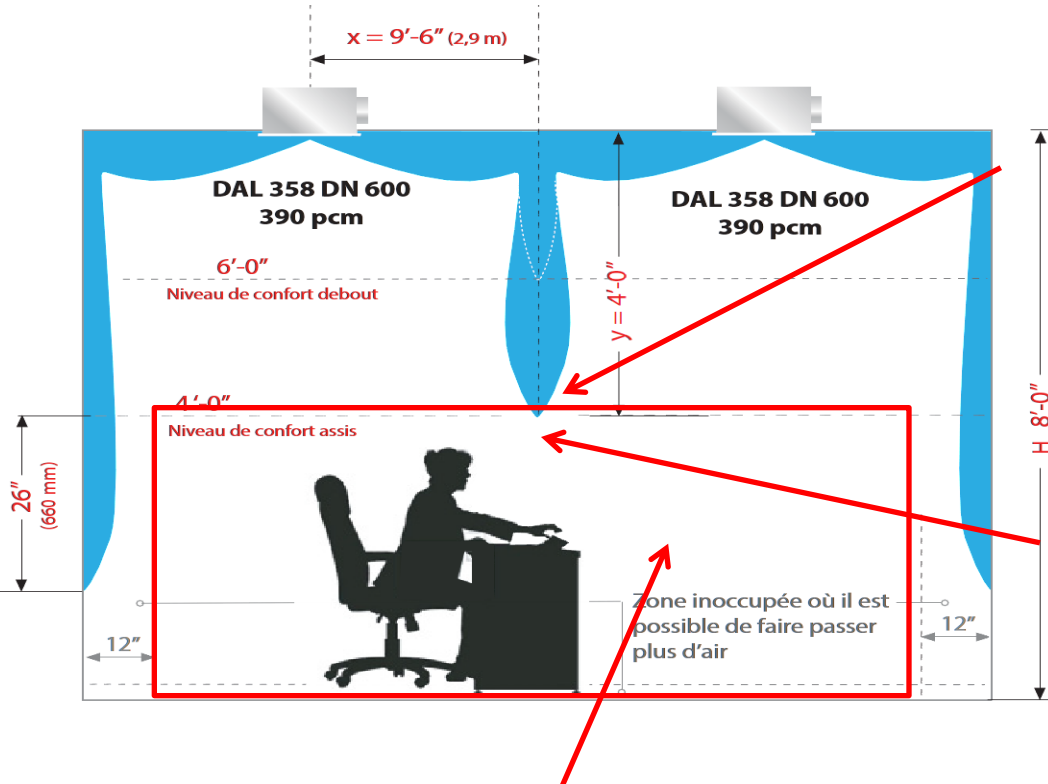


DAL 358 : VALIDATION OF COMFORT CONDITIONS

3 COMFORT CONDITIONS TO VALIDATE IN COOLING MODE



COMFORT ZONE: SEATED POSITION

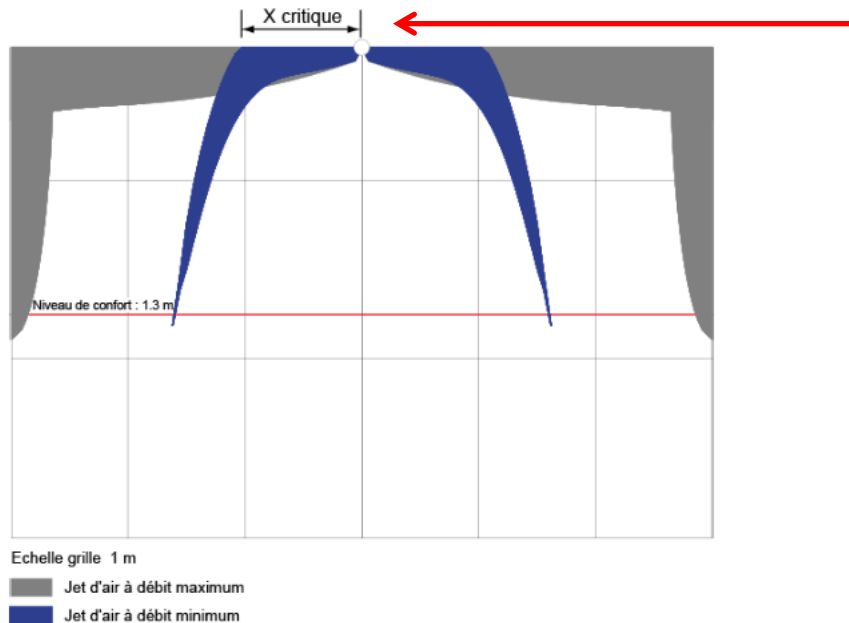
C.1

Maximum air speed = 0.15 m/s (30 ft/m) at the entrance of the comfort zone at 1.3 m (4'-4'') from the floor

C.2

Temperature differential between air jet and room temperature at 1.3 m (4'-4'') from the floor at $\Delta -1^\circ\text{C}$

3 COMFORT CONDITIONS TO VALIDATE IN COOLING MODE



C.3

Travelling distance of the air jet on the ceiling with minimum flow in VAV :

Critical $X > 0,5$ à $0,8$ m (1'-7" to 2'-7") according to maximum air flow

Collet du diffuseur po	Débit d'air maximum PCM	Débit d'air minimum PCM	X critique pi [m]
6	80 - 150	20 - 40	1'-7" [0.5]
8	151 - 280	41 - 90	1'-11" [0.6]
10	281 - 400	91 - 140	2'-3" [0.7]
12	401 - 600	141 - 200	2'-7" [0.8]

Critical $X > 0,5$ to $0,8$ m according to maximum air flow

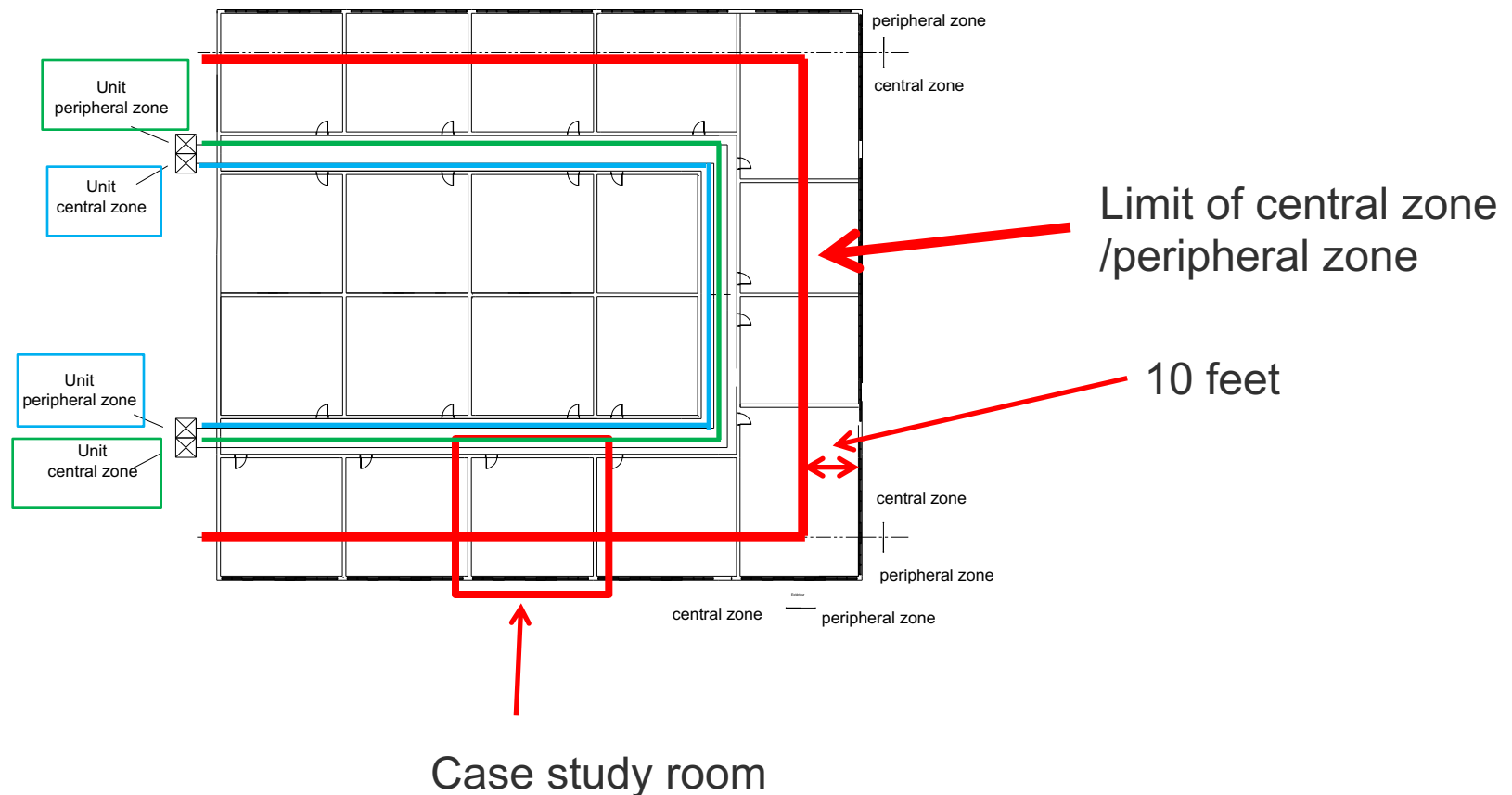
6 comfort conditions to validate in order to heat exclusively through the ceiling

- C.4 Use separate units to handle peripheral zones and central zones.
- C.5 $\Delta + 15\text{ }^{\circ}\text{C}$ maximum temperature differential in heating mode (37°C max)
- C.6 Ample air volume for heating : set VAV box to maximum air flow: usage of the DAL358 within it's optimal range
- C.7 Minimum air flow for VAV for peripheral zones : highest value between 30 % of maximum air flow and 0.4 cfm /ft^2 (without a need for heating or cooling)
- C.8 Isothermal speed of the air jet at 30ft/min from 300 to 600 mm (1 to 2 feet) from the bottom of the exterior walls.
Note : In the cut away view the circles should exceed the exterior walls by 2 to 3 feet
- C.9 Thermostat located in peripheral zone at a maximum of 8 feet from exterior wall

Garanteed comfort for all occupants

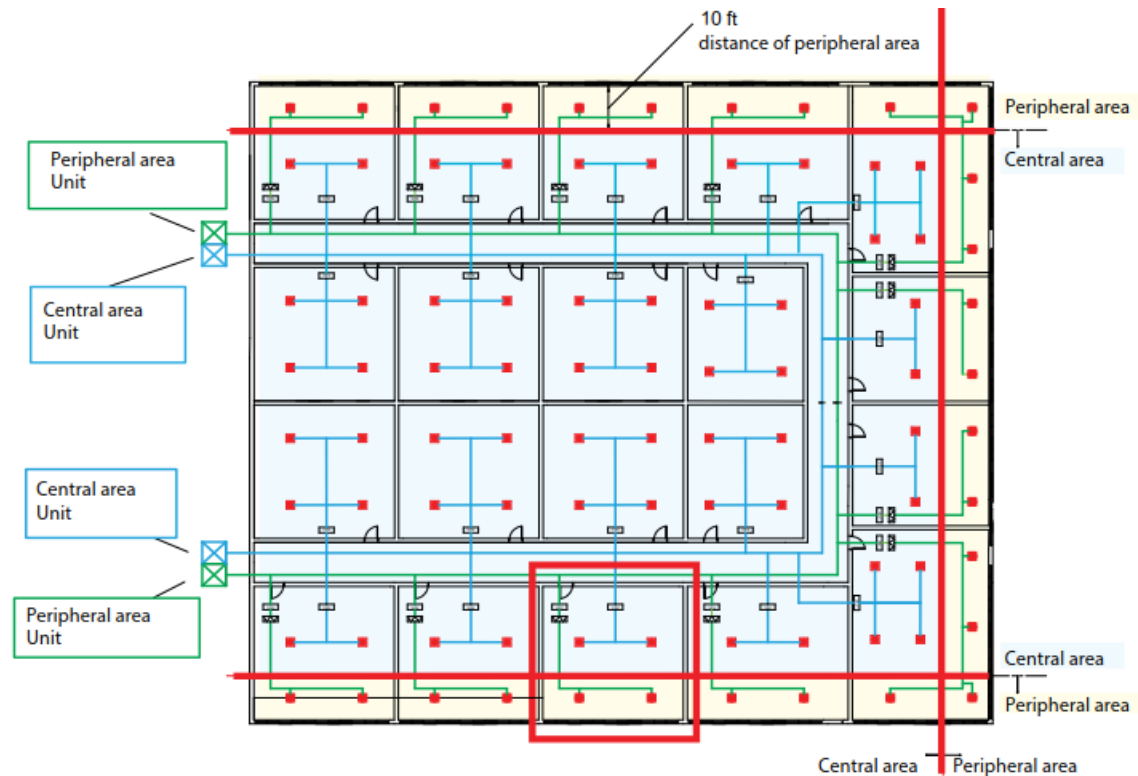
CASE STUDY

Floor Plan



CASE STUDY

Floor Plan



Validation of Comfort Conditions

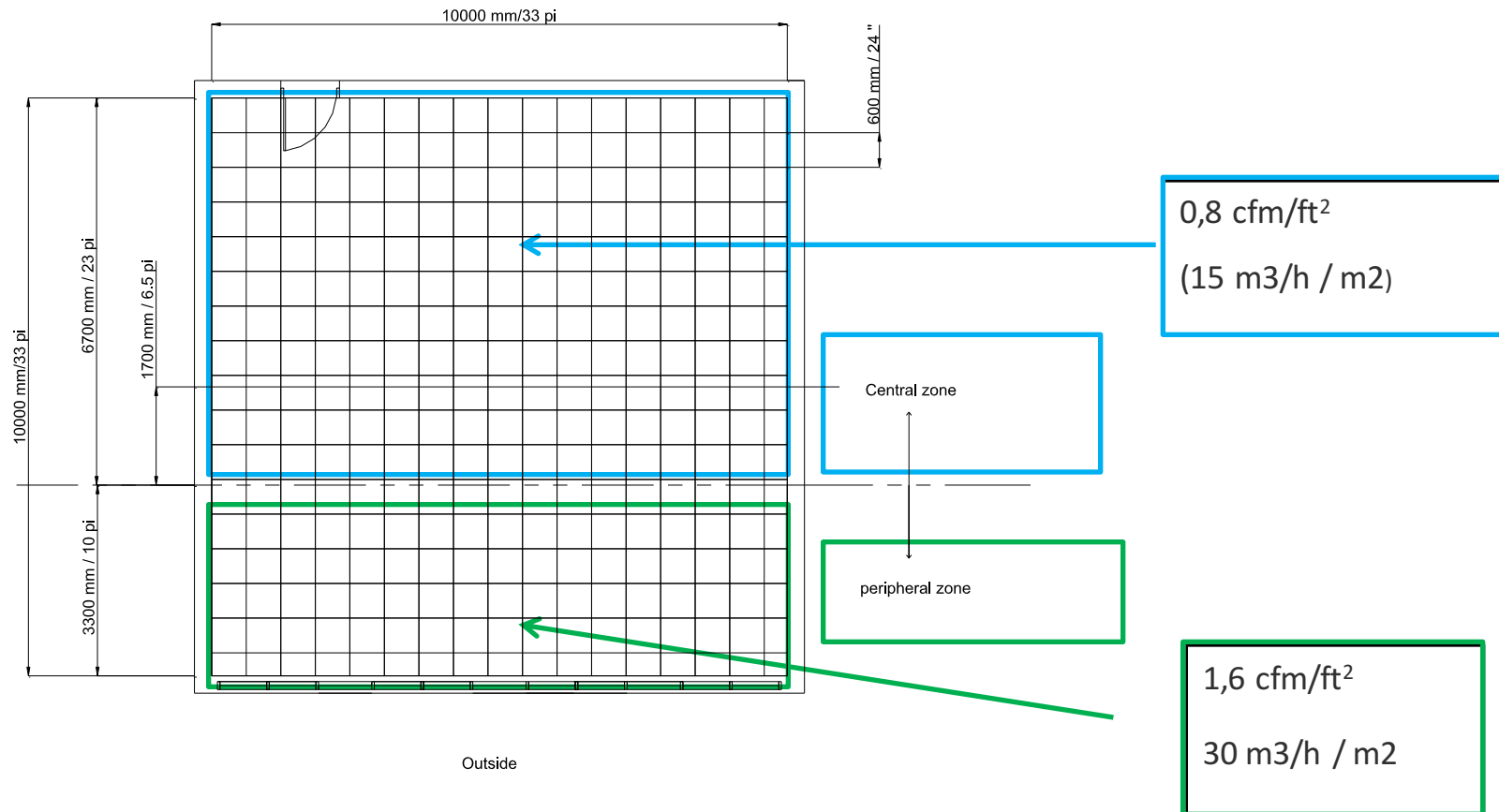
3 CONDITIONS FOR COMFORT IN COOLING MODE

	Conditions	Yes	No
1	Maximum air speed = 0.15 m/s (30 ft/min) at the entrance of the comfort zone at 1.3 m (4'-4") from the floor		
2	Temperature differential between air jet and room temperature at 1.3 m(4'-4") from the floor at $\Delta -1$ °C		
3	Travelling distance of the air jet on the ceiling with minimum flow in VAV : Critical X > 0,5 à 0,8 m (1'-7" to 2'-7") according to maximum air flow		

6 COMFORT CONDITIONS FOR HEATING EXCLUSIVELY THROUGH THE CEILING

	Conditions	Yes	No
4	Use separate units to handle peripheral zones and central zones		
5	$\Delta + 15$ °C maximum temperature differential in heating mode (37°C max)		
6	Ample air volume for heating : set VAV box to maximum air flow: usage of the DAL358 within it's optimal range		
7	Minimum air flow for VAV for peripheral zone : highest value between 30 % of maximum air flow and 0.4 cfm /ft ² (without a need for heating)		
8	Isothermal speed of the air jet at 30ft/min from 300 to 600 mm (1 to 2 feet) from the bottom of the exterior walls.		
9	Thermostat located in peripheral zone at a maximum of 8 feet from exterior wall		

ROOM LAYOUT



Room Overview

Metric system	Imperial system
Room: 10 m by 10 m	Room: 33 ' by 33'
Height of ceiling: 2.44 m	Height of ceiling: 8 '
Height of comfort zone = 1.3 m Seated position	Height of comfort zone = 4'-4'' Seated position
Total volume of air to circulate 1937 m ³ / h Target in VAV: 30 % maximum output 581 m ³ /h	Total volume of air to circulate 1140 cfm Target in VAV :30 % maximum output 342 cfm
Average output per m ² Qv = 19.4 m ³ /h /m ²	Average output per ft ² Qv = 1.05 cfm / ft ²
Cooling : Temperature differential : T air = 12 °C. T room = 22 °C. ΔT0 = -10 °C Heating : Temperature differential : T air = 35°C. T room = 22 °C. ΔT0 = +13 °C	Cooling : Temperature differential: T air = 53.6 °F. T room = 71.6 °F. Heating : Temperature differential : T air = 95 F. T room = 71.6 °F. ΔT0 = + 23.4 °F

VALIDATION COMFORT CONDITIONS

3 COMFORT CONDITIONS IN COOLING MODE

	Conditions	Yes	No
1	Maximum air speed = 0.15 m/s (30 ft/min) at the entrance of the comfort zone at 1.3 m (4'-4") from the floor		
2	Temperature differential between air jet and room temperature at 1.3 m(4'-4") from the floor at $\Delta -1^{\circ}\text{C}$		
3	Travelling distance of the air jet on the ceiling with minimum flow in VAV : Critical X > 0,5 à 0,8 m (1'-7" to 2'-7") according to maximum air flow		

6 COMFORT CONDITIONS FOR HEATING EXCLUSIVELY THROUGH THE CEILING

Conditions	Énoncé	Oui	Non
4	Use separate units to handle peripheral zones and central zones		
5	$\Delta + 15^{\circ}\text{C}$ maximum temperature differential in heating mode (37°C max)		
6	Ample air volume for heating : set VAV box to maximum air flow: usage of the DAL358 within it's optimal range		
7	Minimum air flow for VAV for peripheral zone : highest value between 30 % of maximum air flow and 0.4 cfm /ft ² (without a need for heating)		
8	Isothermal speed of the air jet at 30ft/min from 300 to 600 mm (1 to 2 feet) from the bottom of the exterior walls..		
9	Thermostat located in peripheral zone at a maximum of 8 feet from exterior wall		

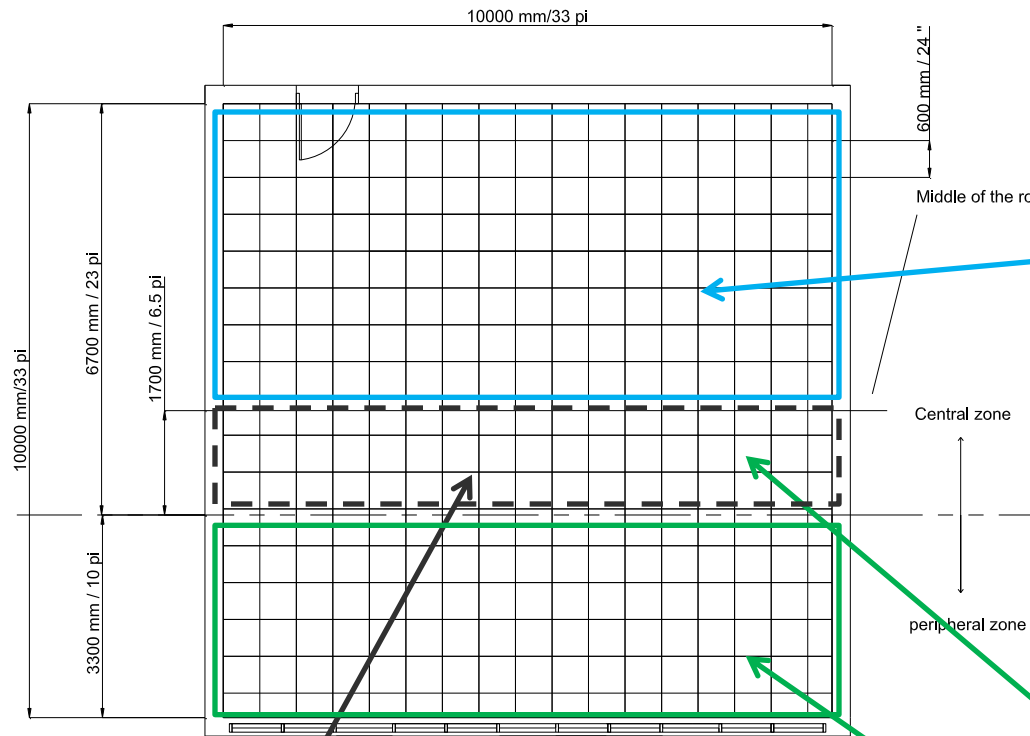
SELECTION OF DIFFUSERS

Solution

Calculation of air flow

Case study next page

In order to determine the air flow of each diffuser, you have to divide the room into 2 geometrically equal parts.



The air flow of the diffusers in the central zone correspond to a load factor of $0.8 \text{ cfm} / \text{ft}^2$ for the entire surface of the zone, namely :

$0.8 \text{ cfm} / \text{ft}^2$ for a room

$33 \text{ ft} * 16.5 \text{ ft}$

The air flow of the diffusers in the peripheral zone correspond to a load factor of $0.8 \text{ cfm} / \text{ft}^2$ and $1.6 \text{ cfm} / \text{ft}^2$ namely :

$0.8 \text{ cfm} / \text{ft}^2$ for a room

$33 \text{ ft} * 6.5 \text{ ft}$

$1.6 \text{ cfm} / \text{ft}^2$ for a room

$33 \text{ ft} * 10 \text{ ft}$

Transfer of the air flow for the diffusers in this area in the central zone to the diffusers in the peripheral zone

SELECTION OF DIFFUSERS

ESTABLISHING DN OF DIFFUSERS

[Solution](#)

Height of the room	Air flow by surface		Nominal size DN
	m ³ /h/m ²	cfm/sq ft	
2,44 m / 2,75 m (8/9 ft) ①	9	0.5	DN 400
	15	0.8	DN 500
	24	1.3	DN 600 ③
	30	1.6	DN 600
3,05 / 3,7 m (10/12 ft)	9	0.5	DN 400
	15	0.8	DN 500
	27	1.5	DN 600
	37	2	DN 600
4.0 / 4,3 m (13/14 ft)	9	0.5	DN 500
	15	0.8	DN 500
	27	1.5	DN 600
	37	2	DN 800

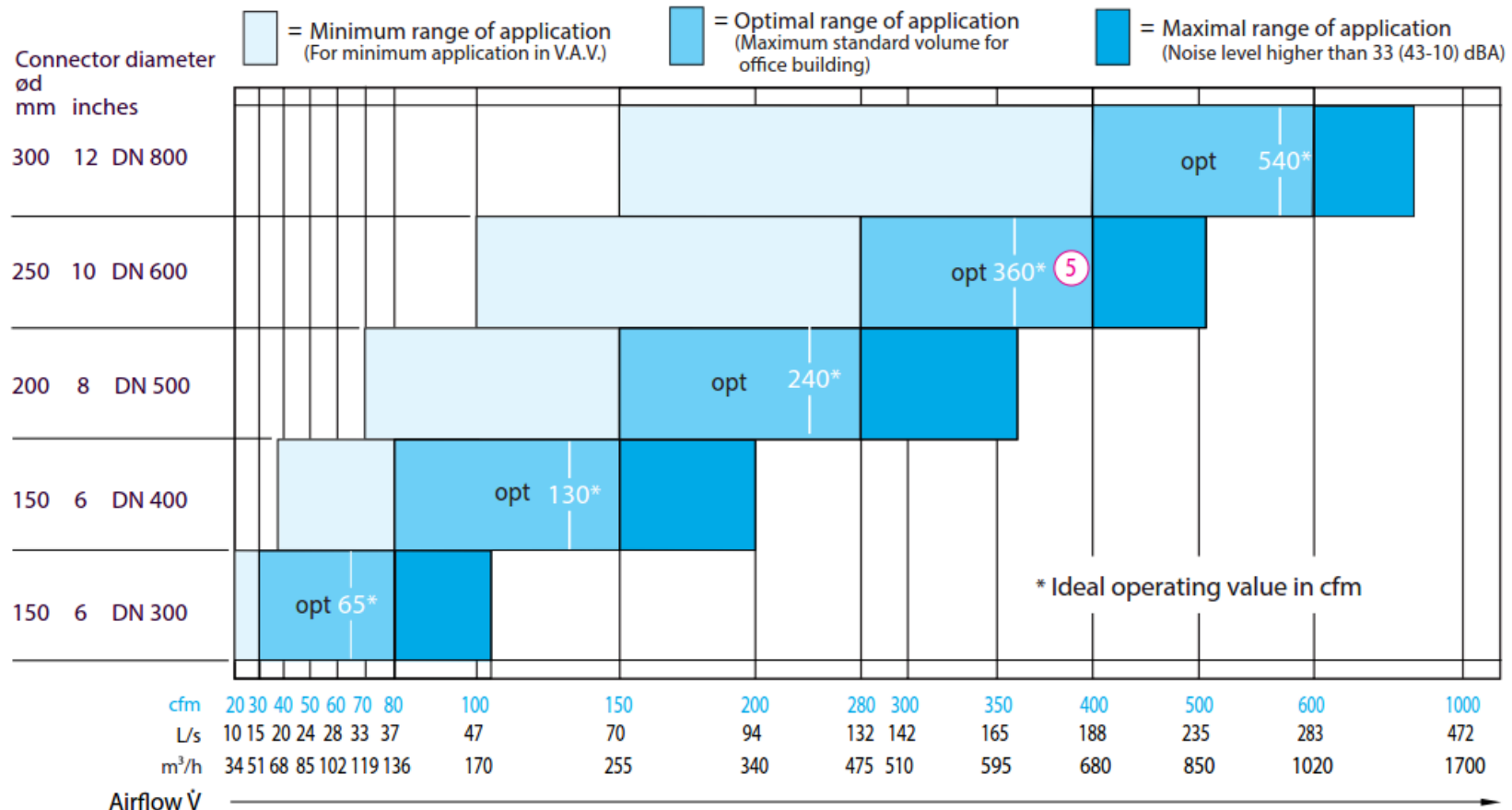
[Case study next page](#)

SELECTION OF DIFFUSERS

Solution

ESTABLISHING DN OF DIFFUSERS

Case study next page

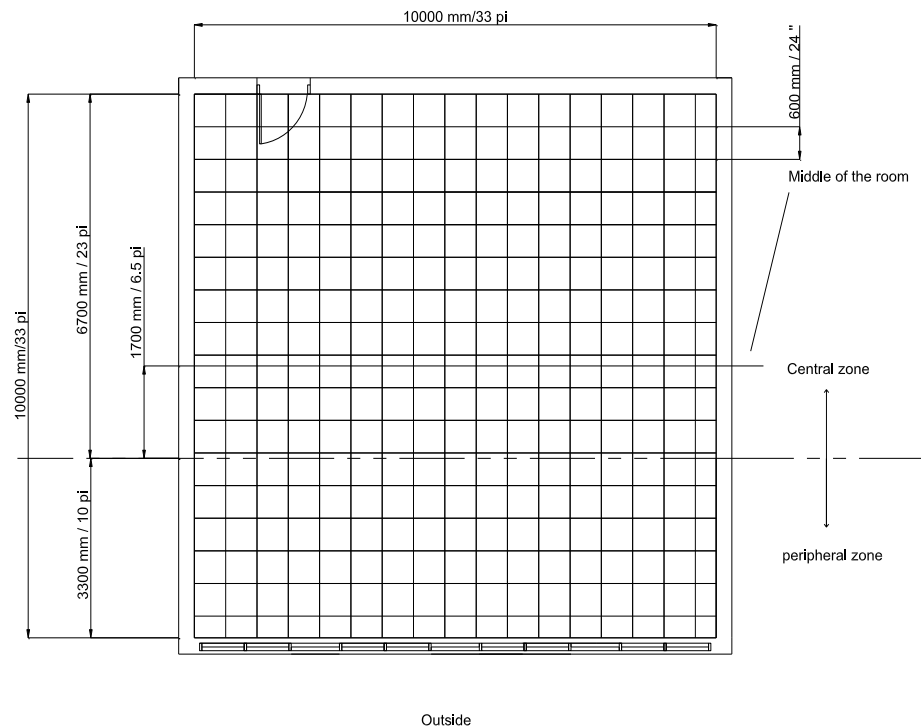


Locating the diffusers and plotting the comfort circles

Place the diffusers and their circles on the grid:

- The circles must not overlap each other.
- The circles must go beyond the exterior walls by 2 to 3 feet in the peripheral zone in order to insure heating through the ceiling.

Case study next page



Locating the diffusers and plotting the comfort circles

The radius of the circles represent the horizontal projection of the air jet at a speed of 30 ft/min at 4 ft from the floor

Solution

Case study next page

DN 500 ③

L/S	PCM	8'		① 9'		10'	
		m	po	m	po	m	po
71	150	0,8	30	0,5	18	0,2	6
75	160	0,9	33	0,6	22	0,3	12
80	170	1,0	39	0,7	28	0,4	16
85	180	1,1	43	0,8	31	0,5	20
90	190	1,3	49	1,0	39	0,7	26
94	200	1,4	53	1,1	41	0,8	31
99	210	1,5	59	1,2	47	0,9	35
104	220	1,6	63	1,3	51	1,0	39
108	230	1,8	69	1,4	55	1,2	45
113	240	1,9	73	1,6	61	1,3	49
118	250	2,0	77	1,7	65	1,4	53
123	260	2,1	83	1,8	71	1,5	59
127	270	2,2	87	1,9	75	1,7	65
② 132	280	2,4	93	2,1 ④	81	1,8	69
137	290	2,5	96	2,2	85	1,9	75

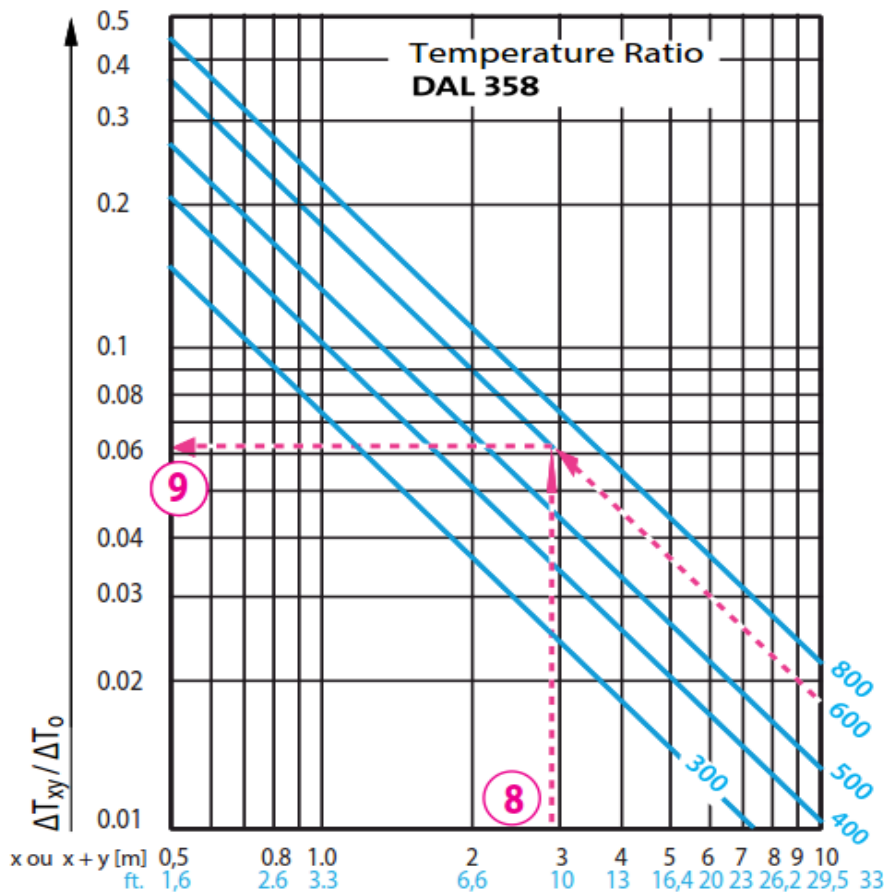
DN 600

L/S	PCM	8'		9'		10'	
		m	po	m	po	m	po
132	280	1,8	71	1,5	59	1,2	47
137	290	1,9	75	1,6	63	1,3	51
142	300	2,0	79	1,7	67	1,4	55
146	310	2,1	83	1,8	71	1,5	59
151	320	2,2	87	1,9	75	1,6	63
156	330	2,3	91	2,0	79	1,7	67
160	340	2,4	94	2,1	83	1,8	71
165	350	2,5	98	2,2	87	1,9	75
170	360	2,6	102	2,3	91	2,0	79
175	370	2,7	106	2,4	94	2,1	83
179	380	2,8	110	2,5	98	2,2	87
184	390	2,9	114	2,6	102	2,3	91
189	400	3,0	118	2,7	106	2,4	94
193	410	3,1	122	2,8	110	2,5	98
198	420	3,2	126	2,9	114	2,6	102

Relationship of the temperature based on the distance travelled by the air jet

Solution

Case study next page



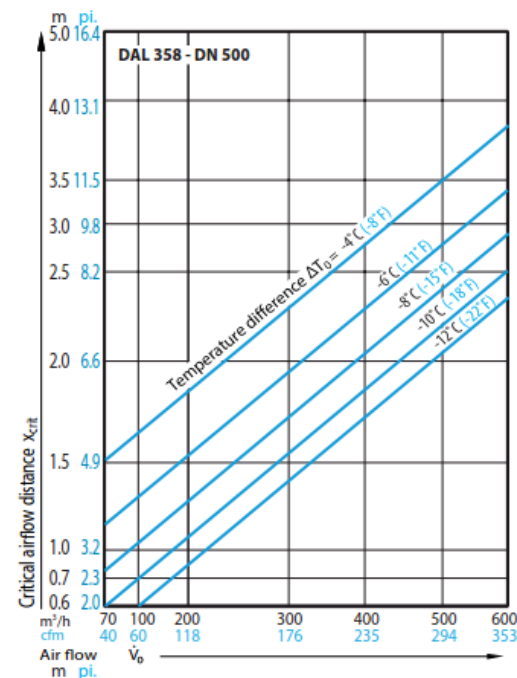
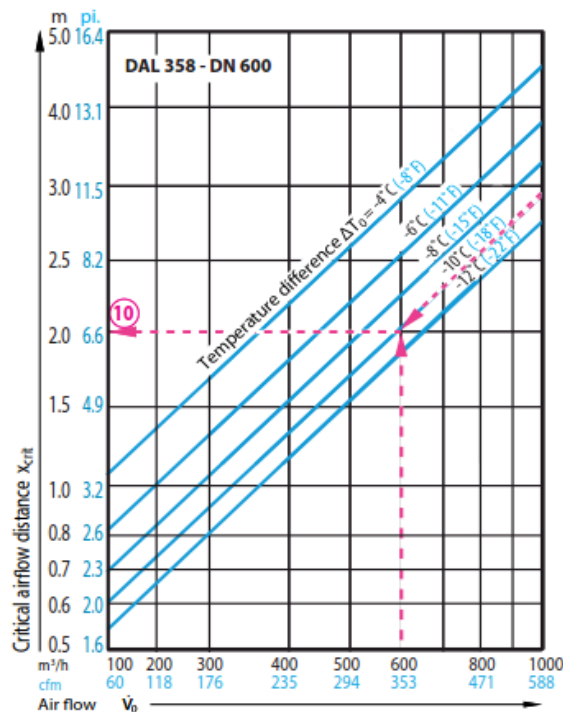
Critical X: Distance travelled on the ceiling in Variable Volume VAV with a temperature differential of -10°C between the air flow and the room

Diffuser inlet in.	Air flow maximum cfm	Air flow minimum cfm	X critic ft. (m)
6	80 - 150	20 - 40	1'-7" (0,5)
8	151 - 280	41 - 90	1'-11" (0,6)
10	281 - 400	91 - 140	2'-3" (0,7)
12	401 - 600	141 - 200	2'-7" (0,8)

Solution

Case study next page

Critical X DAL 358 with regards to DN



Implimentation of VAV box

Option 3 : Configuration of air supply with dual ducts

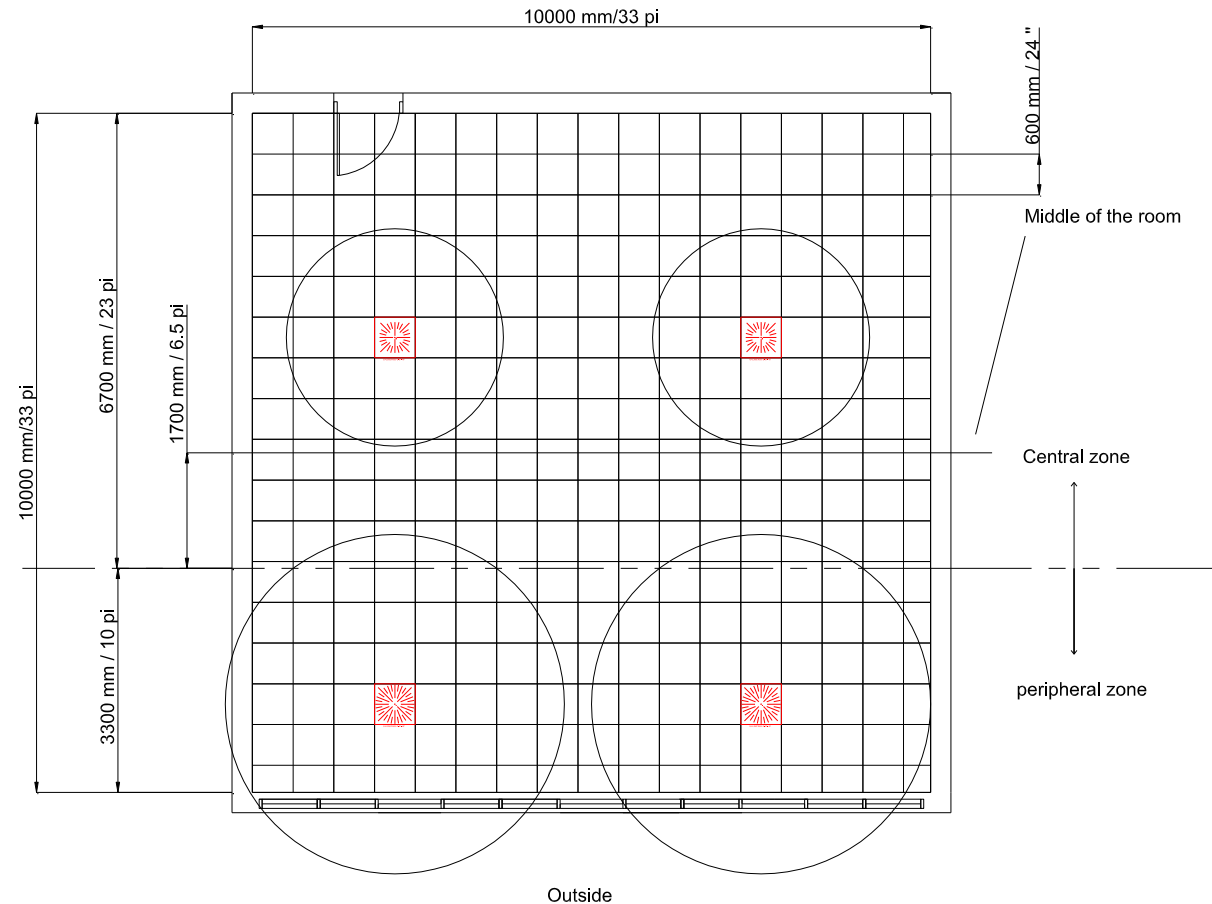
Solution

Cold duct

Hot duct

Locate

- VAV box
- Heating element.
- Thermostat.
- Return grilles.



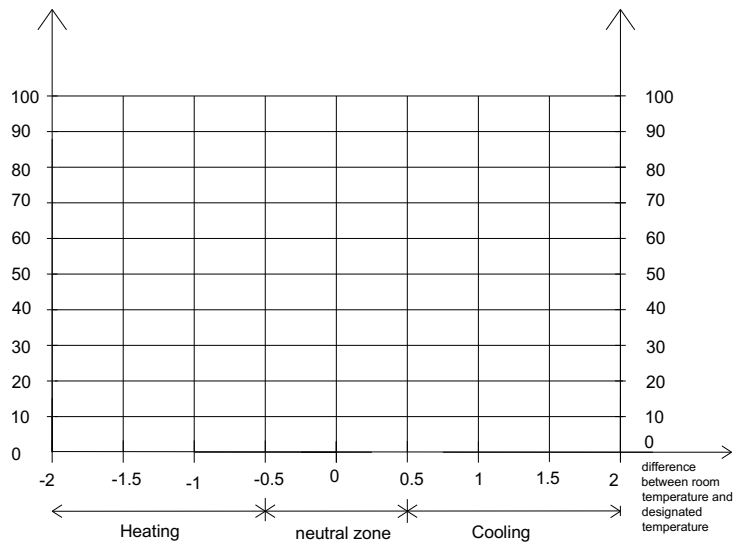
Control Sequence

Complete the control sequence graphs

Solution

Peripheral zone

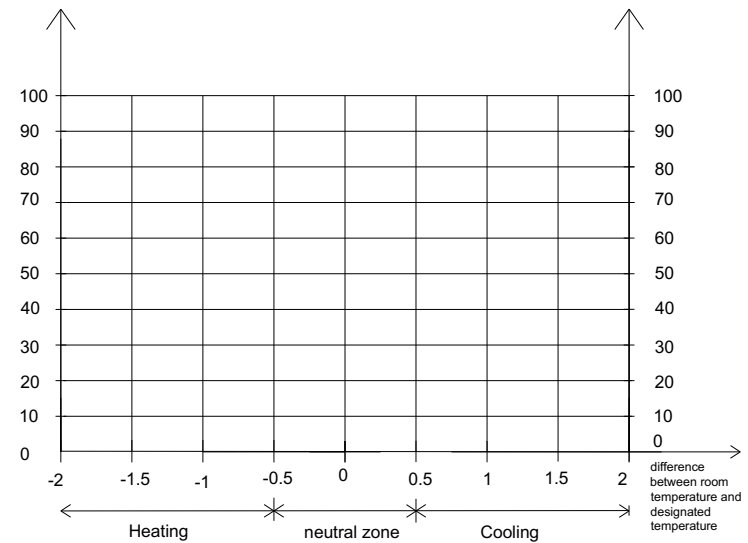
% opening VAV box



% opening VAV box

Central zone

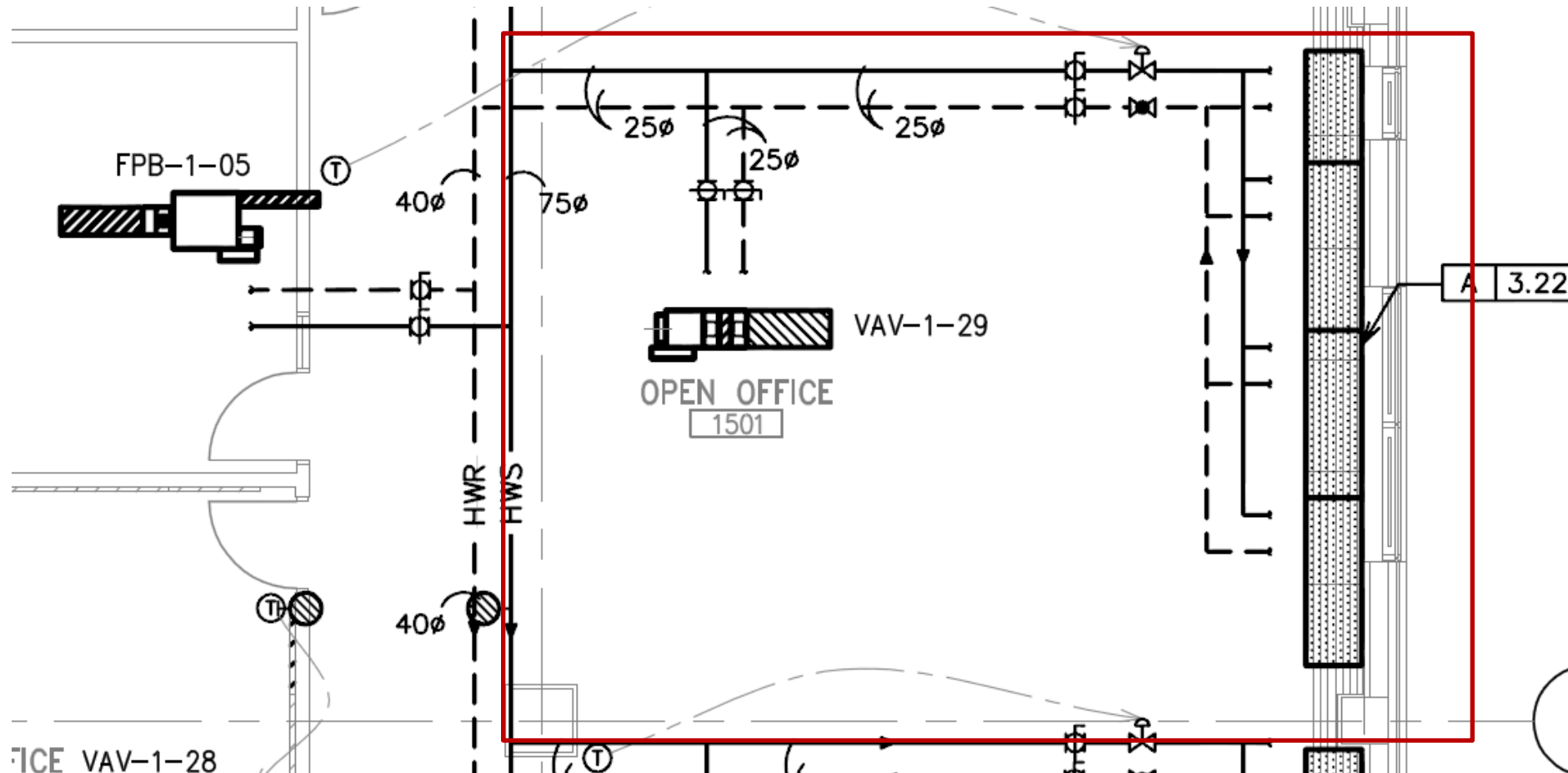
% opening VAV box



% opening VAV box

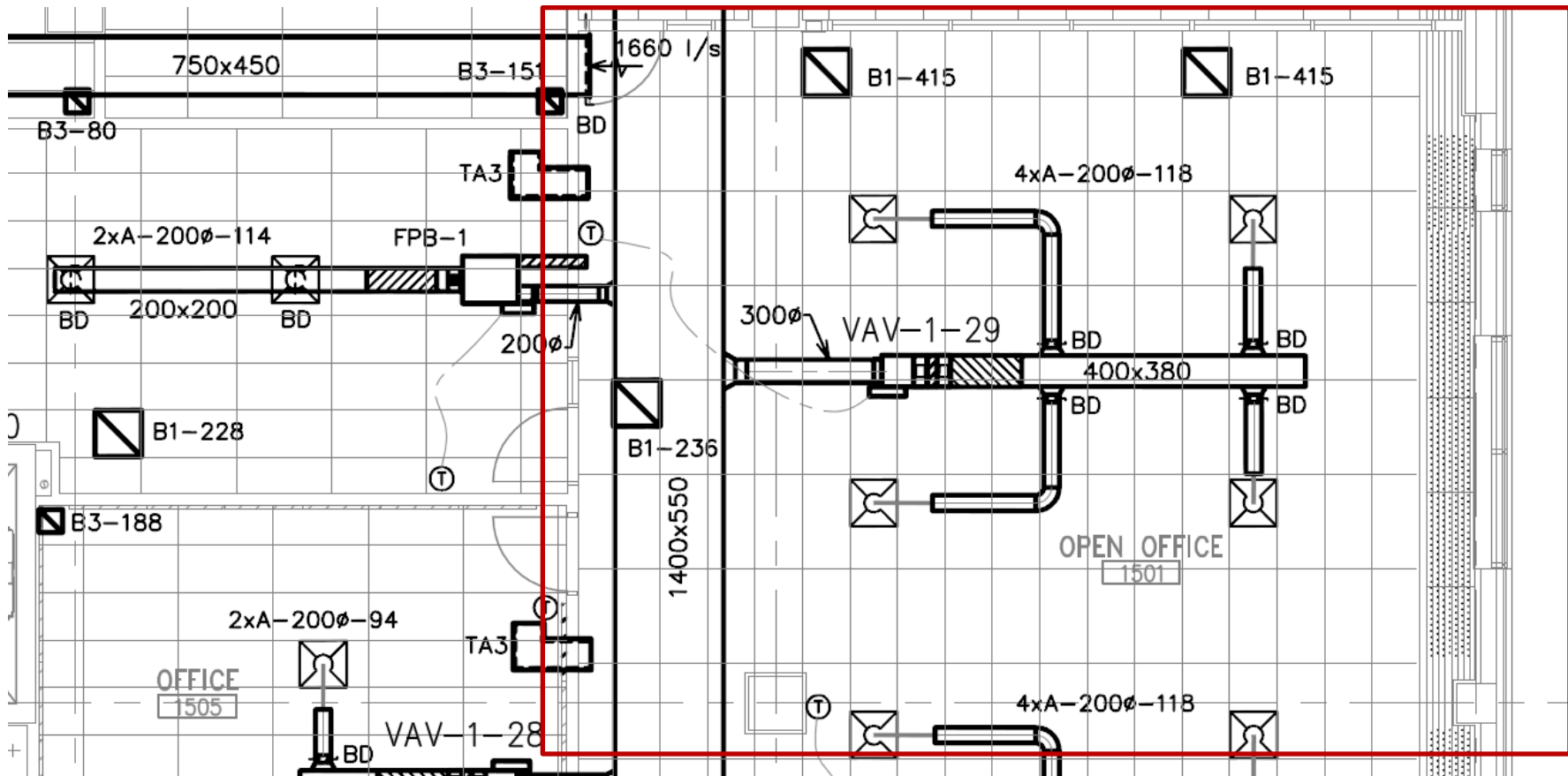
Sample plan plumbing layout

[Case study next page](#)

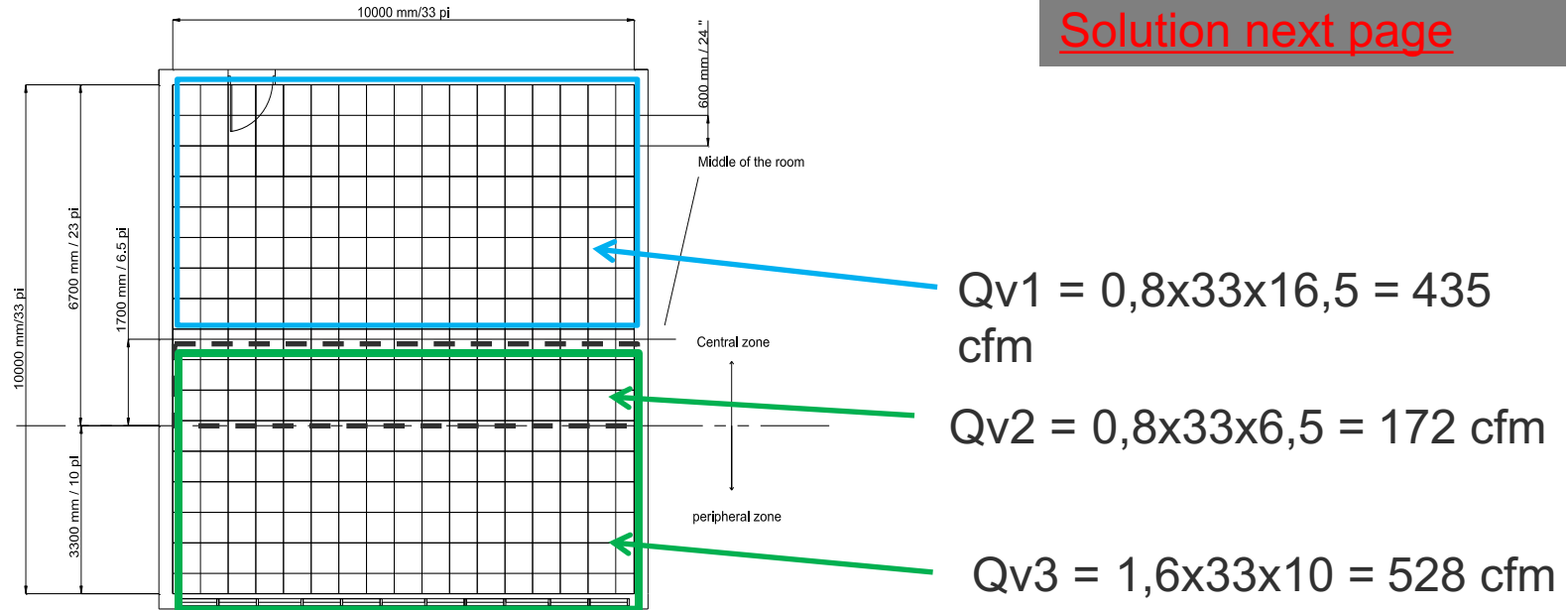


Sample plan

HVAC layout

Solution

Solution: Diffuser output

[Return](#)
[Solution next page](#)


Air flow per zone	
Outside	
Diffusers Central zone	$Qv1 = 0,8 \times 33 \times 16,5 = \mathbf{435 \text{ cfm}}$
Diffusers Peripheral zone	$Qv2 = 0,8 \times 33 \times 6,5 = 172 \text{ cfm}$ $+ \quad Qv3 = 1,6 \times 33 \times 10 = 528 \text{ cfm}$ $\mathbf{= 700 \text{ cfm}}$

Solution: Selection of diffusers

Diffusers DN

Height of the room	Air flow by surface		Nominal size DN
	m ³ /h/m ²	cfm/sq ft	
2,44 m / 2,75 m (8/9 ft) ①	9	0.5	DN 400
	15	0.8	DN 500
	24	1.3	DN 600 ③
	30	1.6	DN 600
3,05 / 3,7 m (10/12 ft)	9	0.5	DN 400
	15	0.8	DN 500
	27	1.5	DN 600
	37	2	DN 600
4.0 / 4,3 m (13/14 ft)	9	0.5	DN 500
	15	0.8	DN 500
	27	1.5	DN 600
	37	2	DN 800

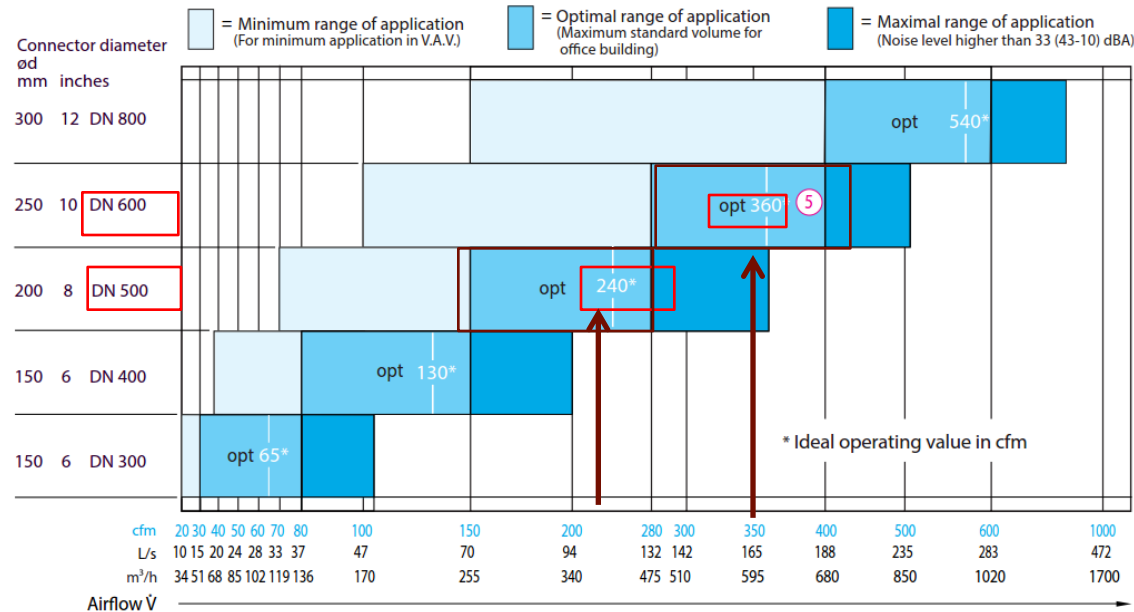
[return](#)
[Solution next page](#)

	Diffusers DN	Output per zone:	Number of diffusers	Output per diffuser
Central zone	DN 500	435 cfm		
Peripheral zone	DN 600	700 cfm		

Solution: Selection of Diffusers

[return](#)

Number and output of diffusers

[Solution next page](#)


	Output per zone	Diffusers DN	Number of diffusers	Output per diffuser
Central zone	435 cfm	DN 500	435/240 or 2	435/2 = 220 cfm
Peripheral zone	700 cfm	DN 600	700/360 or 2	700/2= 350 cfm

Operation of diffusers within their optimal range

Solution: Location of diffusers and plotting the comfort circles

[Solution next page](#)

The radius of the circles represent the horizontal projection of the air jet at a speed of 30 ft/min at 4 ft from the floor.

Installation height 8 ft.

$Q_v = 220$ cfm

DN 500 ③

L/S	PCM	8' ①		9'		10'	
		m	po	m	po	m	po
71	150	0,8	30	0,5	18	0,2	6
75	160	0,9	33	0,6	22	0,3	12
80	170	1,0	39	0,7	28	0,4	16
85	180	1,1	43	0,8	31	0,5	20
90	190	1,3	49	1,0	39	0,7	26
94	200	1,4	53	1,1	41	0,8	31
99	210	1,5	59	1,2	47	0,9	35
104	220	1,6	63	1,3	51	1,0	39
108	230	1,8	69	1,4	55	1,2	45
113	240	1,9	73	1,6	61	1,3	49
118	250	2,0	77	1,7	65	1,4	53
123	260	2,1	83	1,8	71	1,5	59
127	270	2,2	87	1,9	75	1,7	65
② 132	280	2,4	93	2,1 ④	81	1,8	69
137	290	2,5	96	2,2	85	1,9	75

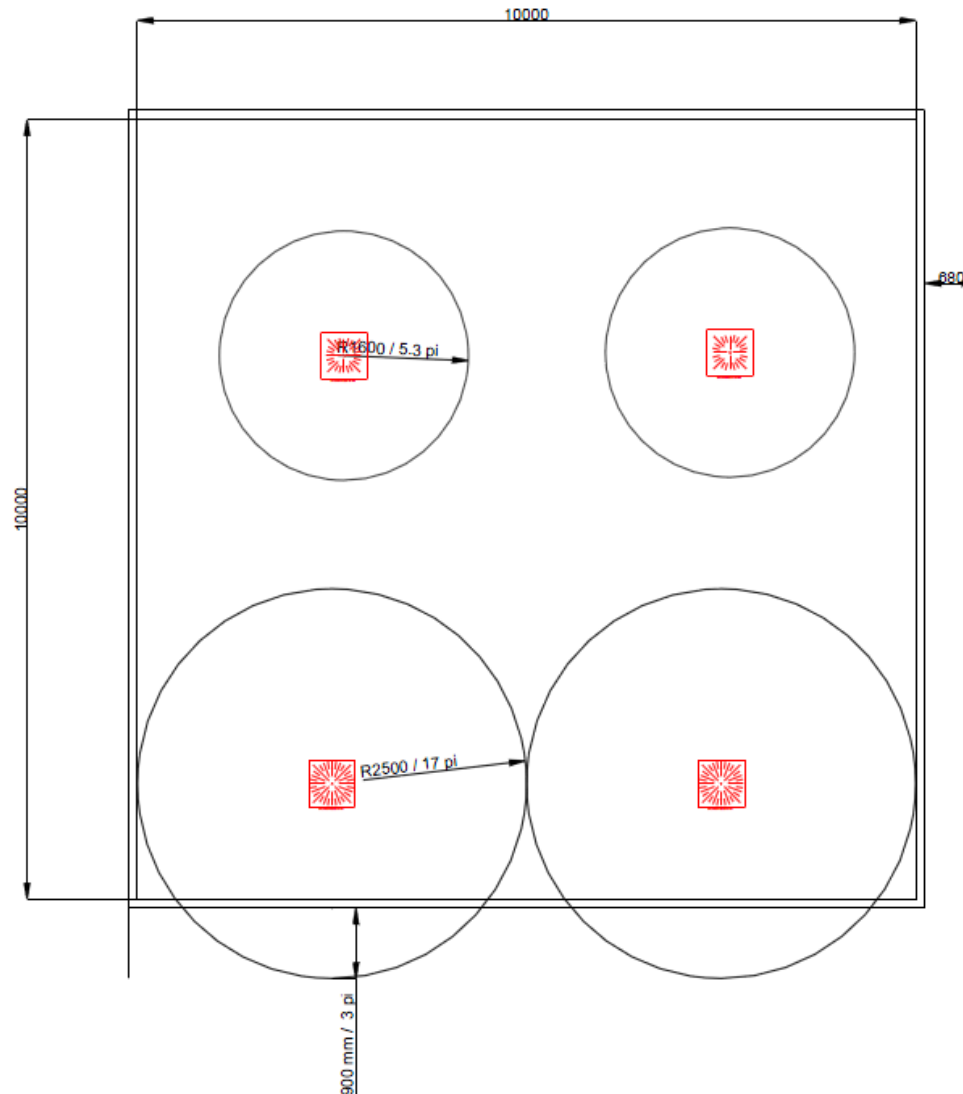
$Q_v = 350$ cfm

DN 600

L/S	PCM	8'		9'		10'	
		m	po	m	po	m	po
132	280	1,8	71	1,5	59	1,2	47
137	290	1,9	75	1,6	63	1,3	51
142	300	2,0	79	1,7	67	1,4	55
146	310	2,1	83	1,8	71	1,5	59
151	320	2,2	87	1,9	75	1,6	63
156	330	2,3	91	2,0	79	1,7	67
160	340	2,4	94	2,1	83	1,8	71
165	350	2,5	98	2,2	87	1,9	75
170	360	2,6	102	2,3	91	2,0	79
175	370	2,7	106	2,4	94	2,1	83
179	380	2,8	110	2,5	98	2,2	87
184	390	2,9	114	2,6	102	2,3	91
189	400	3,0	118	2,7	106	2,4	94
193	410	3,1	122	2,8	110	2,5	98
198	420	3,2	126	2,9	114	2,6	102

Solution: Location of diffusers and plotting the comfort circles

[Solution next page](#)

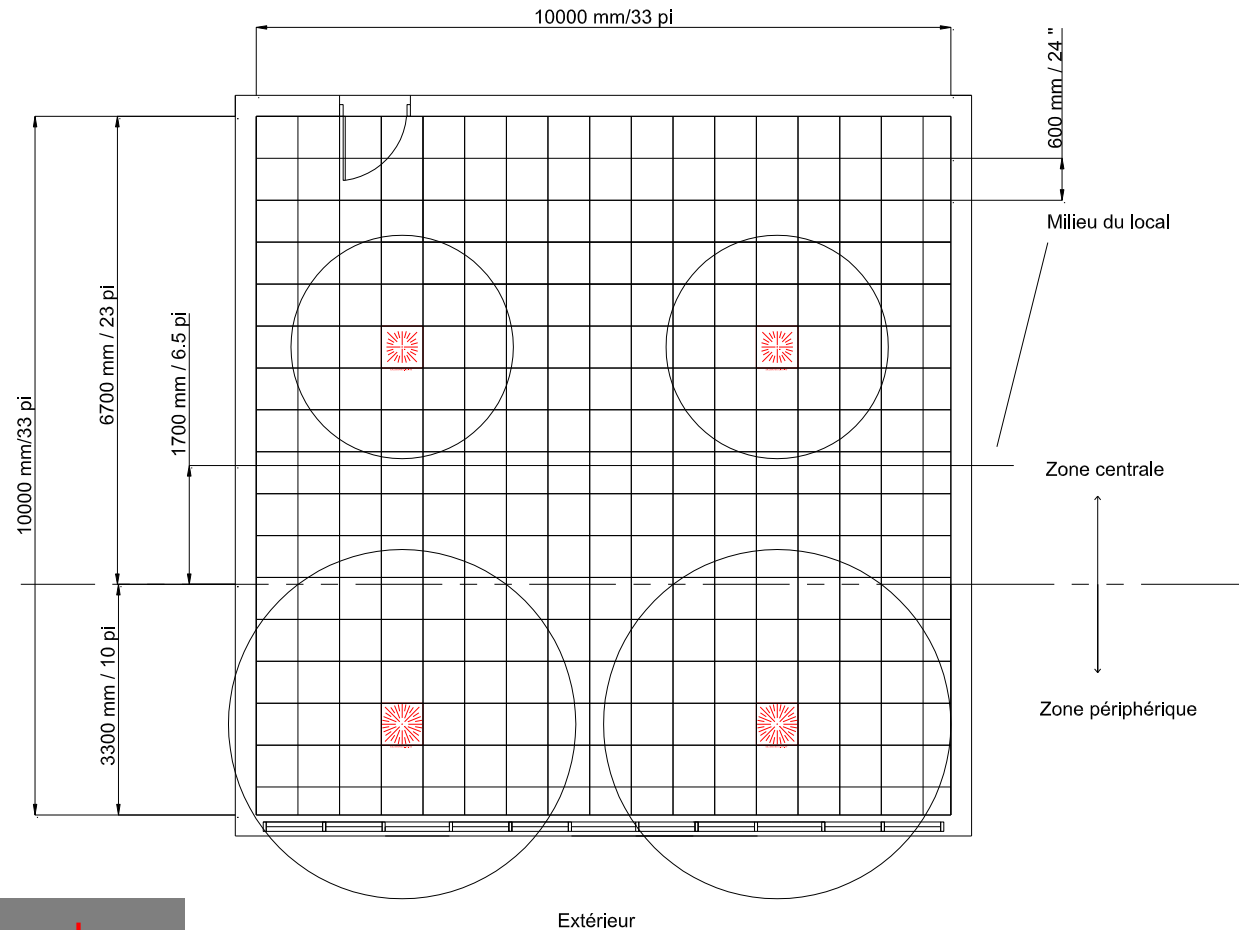


Solution: Location of diffusers and plotting of the comfort circles

[Solution next page](#)

The diffusers are inserted in the ceiling framework

The circles do not overlap



[VIDEO tracé des cercles](#)

The circles exceed the exterior wall by 2 to 3 feet

VALIDATION COMFORT CONDITIONS

3 COMFORT CONDITIONS IN COOLING

[Return](#)

	Conditions	Yes	No
1	Maximum air speed = 0.15 m/s (30 ft/min) at the entrance of the comfort zone at 1.3 m (4'-4") from the floor		
2	Temperature differential between air jet and room temperature at 1.3 m(4'-4") from the floor at $\Delta -1^{\circ}\text{C}$		
3	Travelling distance of the air jet on the ceiling with minimum flow in VAV : Critical X > 0,5 à 0,8 m (1'-7" to 2'-7") according to maximum air flow		

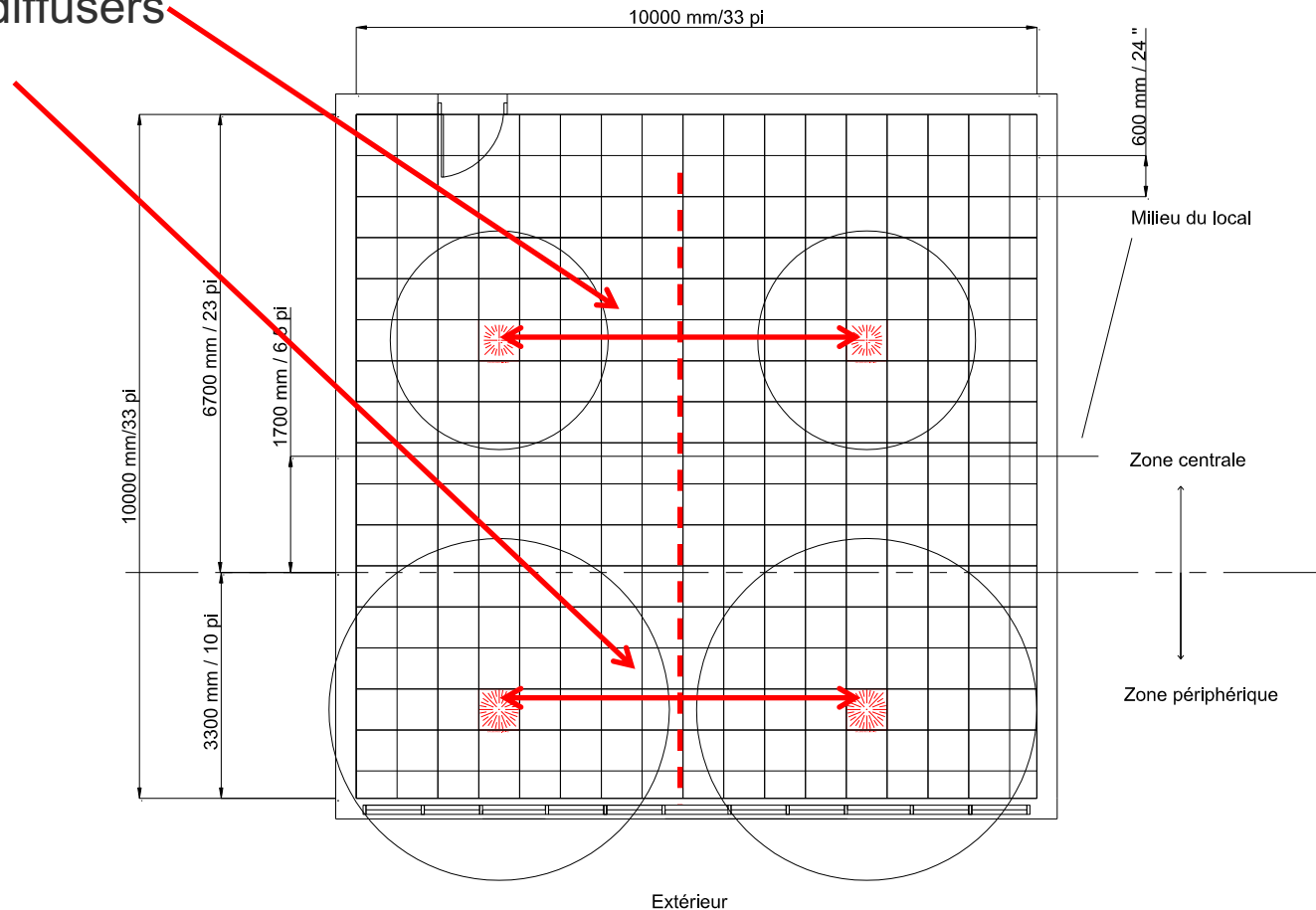
6 COMFORT CONDITIONS FOR HEATING EXCLUSIVELY THROUGH THE CEILING

	Conditions	Oui	Non
4	Use separate units to handle peripheral zones and central zones		
5	$\Delta + 15^{\circ}\text{C}$ maximum temperature differential in heating mode (37°C max)		
6	Ample air volume for heating : set VAV box to maximum air flow: usage of the DAL358 within it's optimal range		
7	Minimum air flow for VAV for peripheral zone : highest value between 30 % of maximum air flow and 0.4 cfm /ft ² (without a need for heating)		
8	Isothermal speed of the air jet at 30ft/min from 300 to 600 mm (1 to 2 feet) from the bottom of the exterior walls.		
9	Thermostat located in peripheral zone at a maximum of 8 feet from exterior wall		

Solution: Relationship of the temperature based on the distance travelled by the air jet

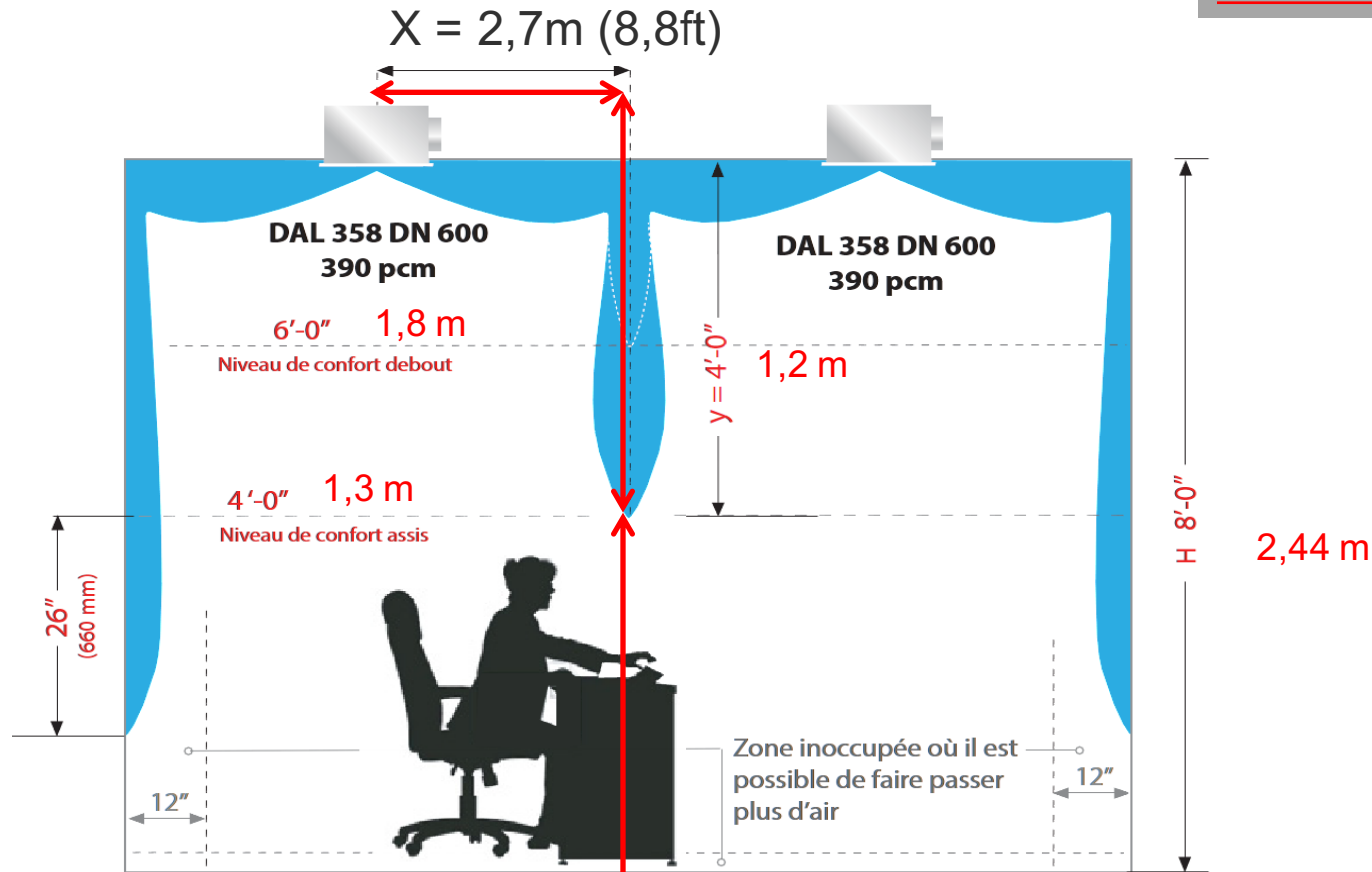
[Solution next page](#)

5,4 m shortest distance between 2 diffusers



Solution: Relationship of the temperature based on the distance travelled by the air jet

[Solution next page](#)



Distance travelled by the air jet at the entrance of the comfort zone

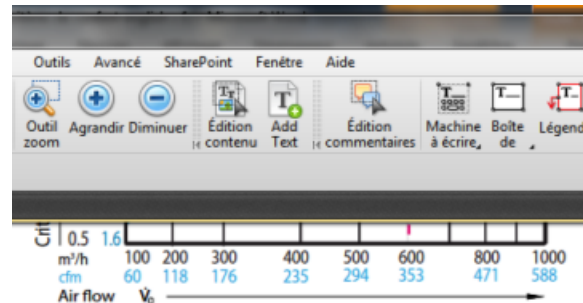
$$X = 2,7\text{m} (8,8\text{ft})$$

$$Y = 2,44 - 1,3 = 1,2\text{m} (4\text{ ft})$$

$$X + Y = 3,9\text{m} (12,8\text{ ft})$$

Solution: Relationship of the temperature based on the distance travelled by the air jet

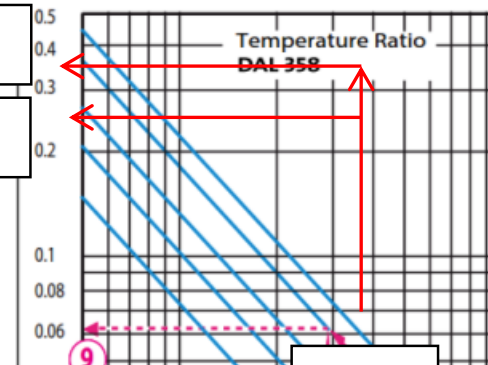
[Solution next page](#)



$\Delta T_0 = -10^\circ\text{C}$
for both
diffusers

For DN 600 : 0.05

For DN 500 : 0.035



3.9 m

DN 500

$$\Delta T_{xy} = 0,035x - 10 = -0,35^\circ\text{C}$$

Minimum temperature of the air jet
at the entrance of the comfort zone

$$= 22 - 0.35 = \mathbf{21.65^\circ\text{C.}}$$

DN 600

$$\Delta T_{xy} = 0,05x - 10 = -0,5^\circ\text{C}$$

Minimum temperature of the air jet at
the entrance of the comfort zone

$$= 22 - 0.5 = \mathbf{21.5^\circ\text{C.}}$$

VALIDATION CONDITIONS CONFORT

3 COMFORT CONDITIONS IN COOLING

[Return](#)

	Conditions	Yes	No
1	Maximum air speed = 0.15 m/s (30 ft/min) at the entrance of the comfort zone at 1.3 m (4'-4") from the floor		
2	Temperature differential between air jet and room temperature at 1.3 m (4'-4") from the floor at $\Delta -1^{\circ}\text{C}$		
3	Travelling distance of the air jet on the ceiling with minimum flow in VAV : Critical X > 0,5 à 0,8 m (1'-7" to 2'-7") according to maximum air flow		

6 COMFORT CONDITIONS FOR HEATING EXCLUSIVELY THROUGH THE CEILING

	Conditions	Yes	No
4	Use separate units to handle peripheral zones and central zones		
5	$\Delta + 15^{\circ}\text{C}$ maximum temperature differential in heating mode (37°C max)		
6	Ample air volume for heating : set VAV box to maximum air flow: usage of the DAL358 within it's optimal range		
7	Minimum air flow for VAV for peripheral zone : highest value between 30 % of maximum air flow and 0.4 cfm /ft ² (without a need for heating)		
8	Isothermal speed of the air jet at 30ft/min from 300 to 600 mm (1 to 2 feet) from the bottom of the exterior walls..		
9	Thermostat located in peripheral zone at a maximum of 8 feet from exterior wall		

Solution: Critical X: Distance travelled on the ceiling in Variable Volume VAV with a temperature differential of -10°C between the air flow and the room

[Solution next page](#)

DAL 358 DN 600
Peripheral zone

X critique mini = 0,7 m (2'-3")

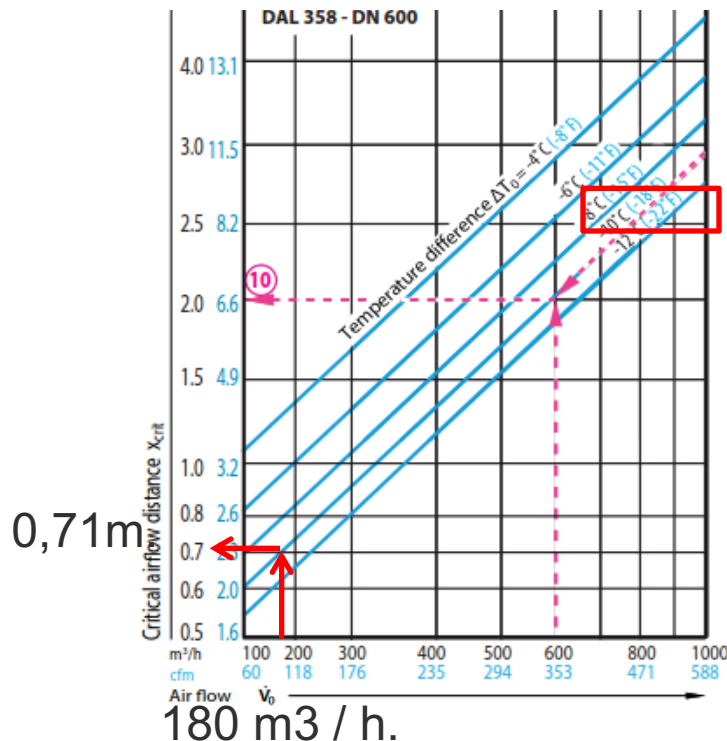
Minimal output at 30 % in VAV
 $qv = 0.3 * 350 = 105 \text{ cfm}$
 or $1.7 * 105 = 180 \text{ m}^3 / \text{h}$.

(Value greater than 0.4 cfm/ft^2
 $1.6 * 0.3 = 0.48 \text{ cfm/ft}^2$)

Using the graph we find
 Critical X = 0,71 m in other
 words (with $\Delta T_0 = -10^\circ \text{C}$)
 Greater than 0,7 m

Condition validated

Diffuser inlet in.	Air flow maximum cfm	Air flow minimum cfm	X critic ft. (m)
6	80 - 150	20 - 40	1'-7" (0,5)
8	151 - 280	41 - 90	1'-11" (0,6)
10	281 - 400	91 - 140	2'-3" (0,7)
12	401 - 600	141 - 200	2'-7" (0,8)



Solution: Critical X: Distance travelled on the ceiling in Variable Volume VAV with a temperature differential of -10°C between the air flow and the room

[Solution next page](#)

Diffuser inlet in.	Air flow maximum cfm	Air flow minimum cfm	X critic ft. (m)
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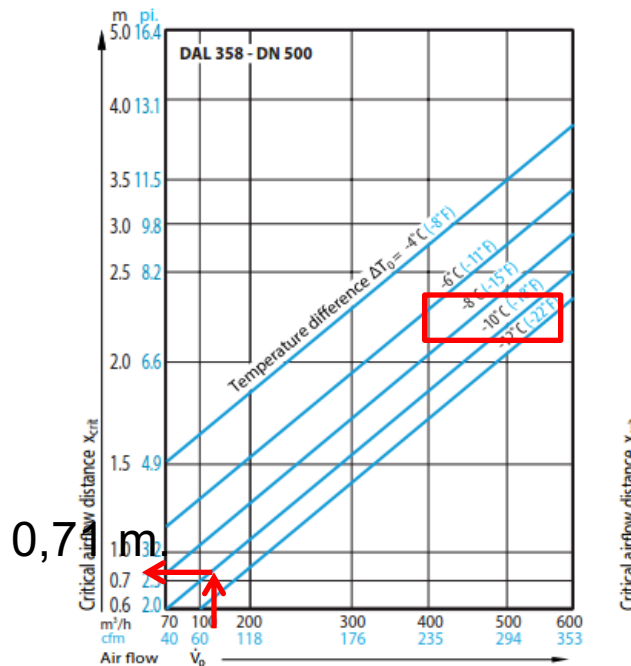
DAL 358 DN 500
Central zone

X critique mini = 0,6 m (1'-11")

Minimum output at 30 % in VAV
 $qv = 0.35 * 220 = 66 \text{ cfm}$
 or $1.7 * 55 = 112 \text{ m}^3 / \text{h}$.

Using the graph we find
 Critical X = 0,71 m in other words (with $\Delta T_0 = -10^\circ \text{C}$)
 Greater than 0,6 m

Condition validated



112 m^3 / h .

VALIDATION COMFORT CONDITIONS

3 COMFORT CONDITIONS IN COOLING

[Return](#)

	Conditions	Yes	No
1	Maximum air speed = 0.15 m/s (30 ft/min) at the entrance of the comfort zone at 1.3 m (4'-4") from the floor	<input type="checkbox"/>	<input type="checkbox"/>
2	Temperature differential between air jet and room temperature at 1.3 m (4'-4") from the floor at $\Delta -1^\circ\text{C}$	<input type="checkbox"/>	<input type="checkbox"/>
3	Travelling distance of the air jet on the ceiling with minimum flow in VAV : Critical X > 0.5 à 0.8 m (1'-7" to 2'-7") according to maximum air flow	<input type="checkbox"/>	<input type="checkbox"/>

6 COMFORT CONDITIONS FOR HEATING EXCLUSIVELY THROUGH THE CEILING

	Conditions	Yes	No
4	Use separate units to handle peripheral zones and central zones	<input type="checkbox"/>	<input type="checkbox"/>
5	$\Delta + 15^\circ\text{C}$ maximum temperature differential in heating mode (37°C max)	<input type="checkbox"/>	<input type="checkbox"/>
6	Ample air volume for heating : set VAV box to maximum air flow: usage of the DAL358 within it's optimal range	<input type="checkbox"/>	<input type="checkbox"/>
7	Minimum air flow for VAV for peripheral zone : highest value between 30 % of maximum air flow and 0.4 cfm/ft ² (without a need for heating)	<input type="checkbox"/>	<input type="checkbox"/>
8	Isothermal speed of the air jet at 30ft/min from 300 to 600 mm (1 to 2 feet) from the bottom of the exterior walls.	<input type="checkbox"/>	<input type="checkbox"/>
9	Thermostat located in peripheral zone at a maximum of 8 feet from exterior wall	<input type="checkbox"/>	<input type="checkbox"/>

VALIDATION CONDITIONS CONFORT

3 COMFORT CONDITIONS IN COOLING

[Return](#)

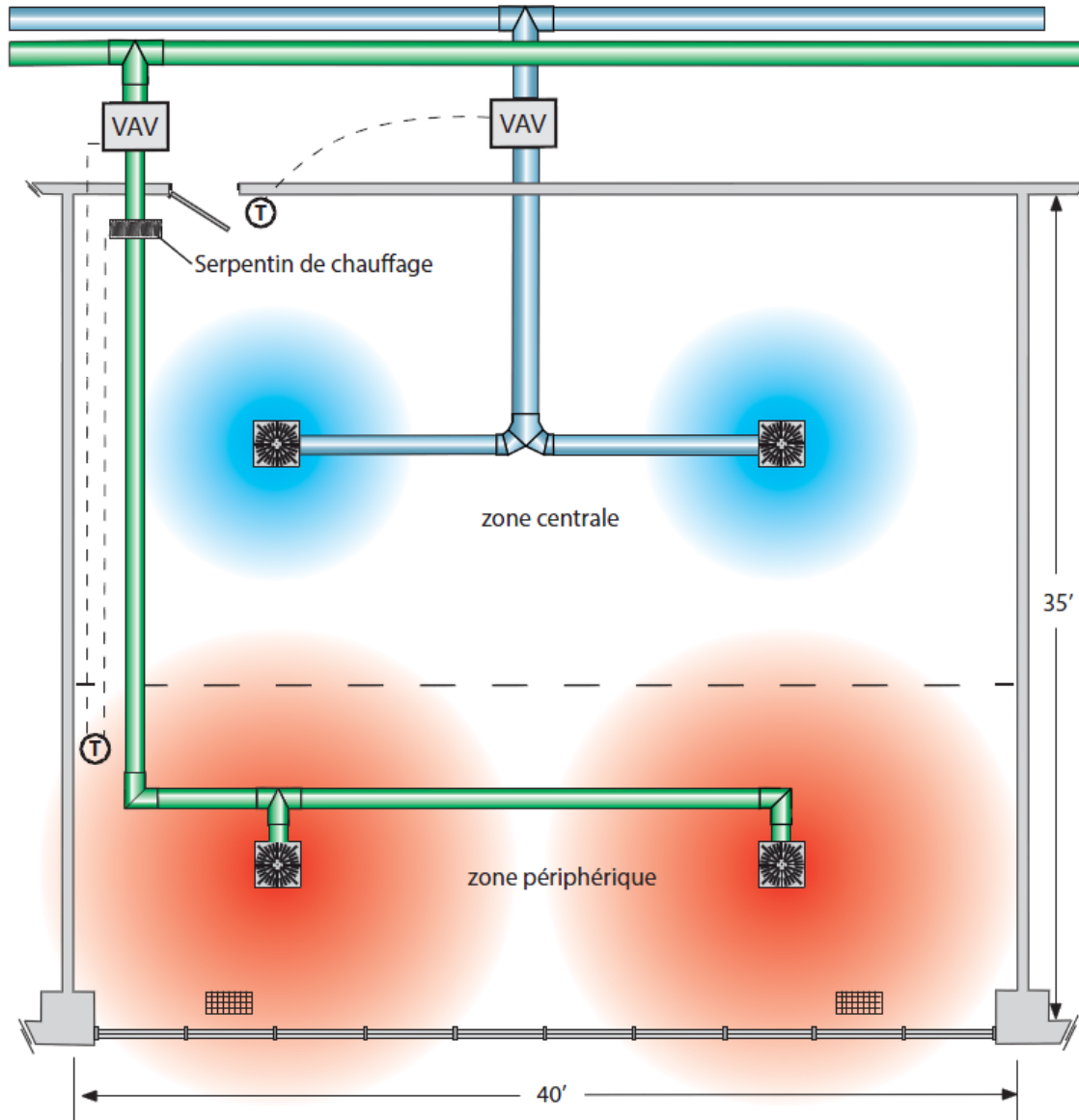
	Conditions	Yes	No
1	Maximum air speed = 0.15 m/s (30 ft/min) at the entrance of the comfort zone at 1.3 m (4'-4") from the floor	<input type="checkbox"/>	<input type="checkbox"/>
2	Temperature differential between air jet and room temperature at 1.3 m (4'-4") from the floor at $\Delta -1^{\circ}\text{C}$	<input type="checkbox"/>	<input type="checkbox"/>
3	Travelling distance of the air jet on the ceiling with minimum flow in VAV : Critical X > 0,5 à 0,8 m (1'-7" to 2'-7") according to maximum air flow	<input type="checkbox"/>	<input type="checkbox"/>

6 COMFORT CONDITIONS FOR HEATING EXCLUSIVELY THROUGH THE CEILING

	Conditions	Yes	No
4	Use separate units to handle peripheral zones and central zones	<input type="checkbox"/>	<input type="checkbox"/>
5	$\Delta + 15^{\circ}\text{C}$ maximum temperature differential in heating mode (37°C max)	<input type="checkbox"/>	<input type="checkbox"/>
6	Ample air volume for heating : set VAV box to maximum air flow: usage of the DAL358 within it's optimal range	<input type="checkbox"/>	<input type="checkbox"/>
7	Minimum air flow for VAV for peripheral zone : highest value between 30 % of maximum air flow and 0.4 cfm /ft ² (without a need for heating)	<input type="checkbox"/>	<input type="checkbox"/>
8	Isothermal speed of the air jet at 30ft/min from 300 to 600 mm (1 to 2 feet) from the bottom of the exterior walls.	<input type="checkbox"/>	<input type="checkbox"/>
9	Thermostat located in peripheral zone at a maximum of 8 feet from exterior wall	<input type="checkbox"/>	<input type="checkbox"/>

Solution: Air supply single duct :
option 2: One unit for the peripheral zone and one for the central

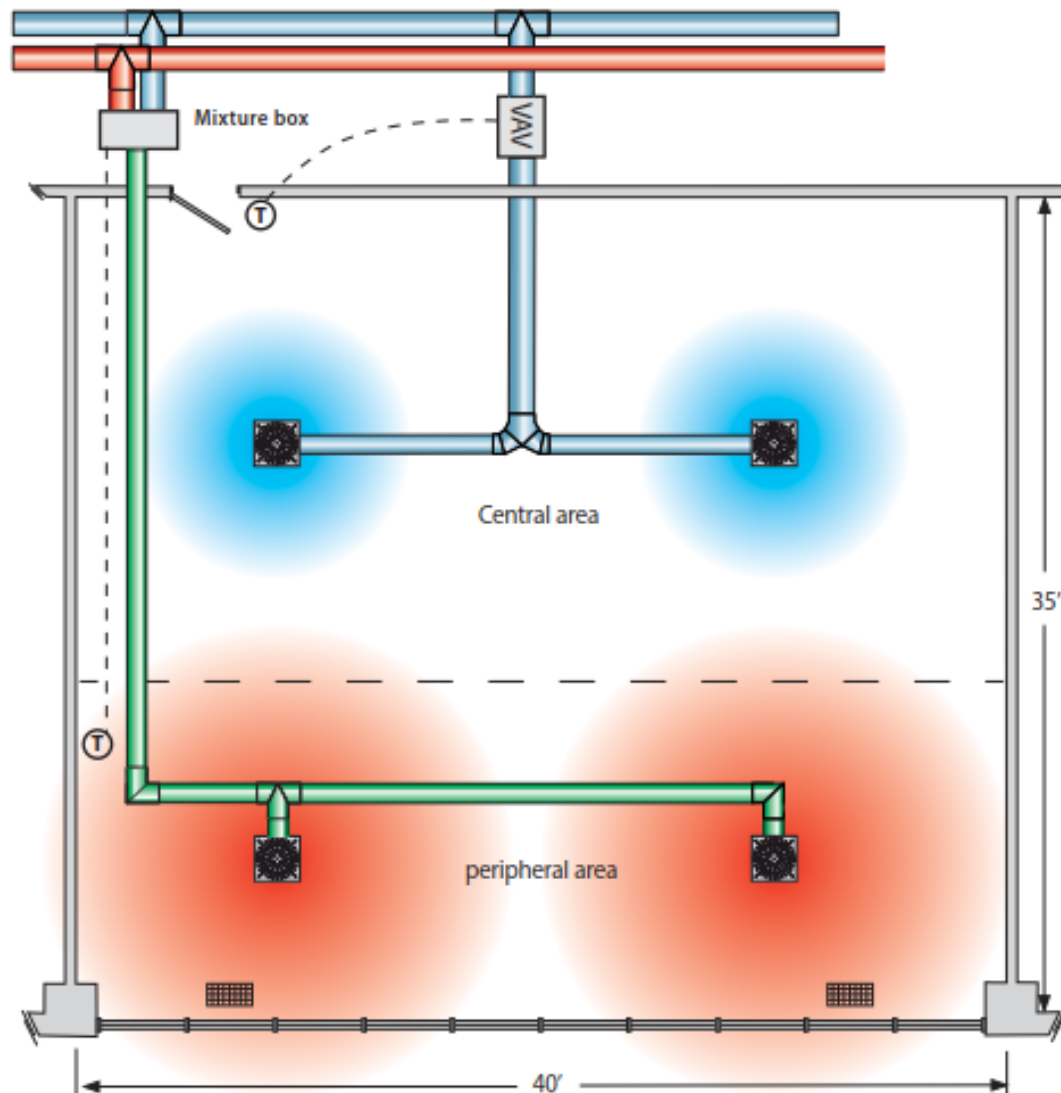
Return



Solution: option 3: Air supply double duct

Return

Air supply double duct :
one hot duct and one cold duct



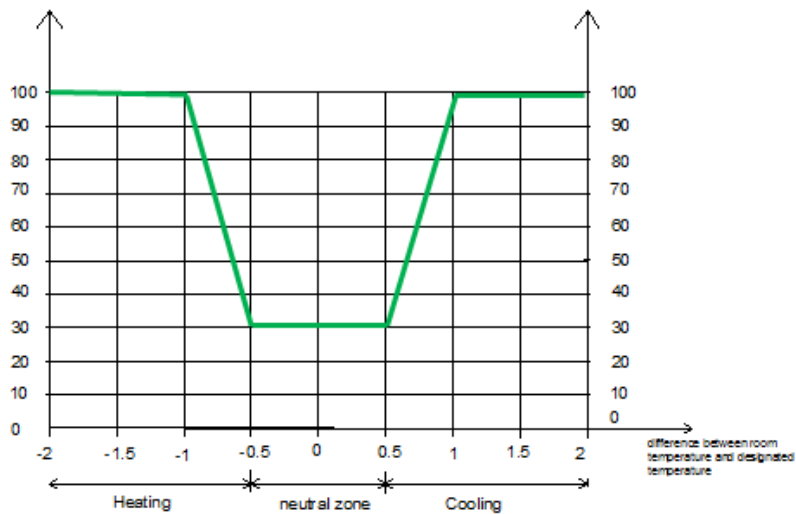
Solution: Control sequence graph

[Return](#)

Peripheral box

% opening VAV box

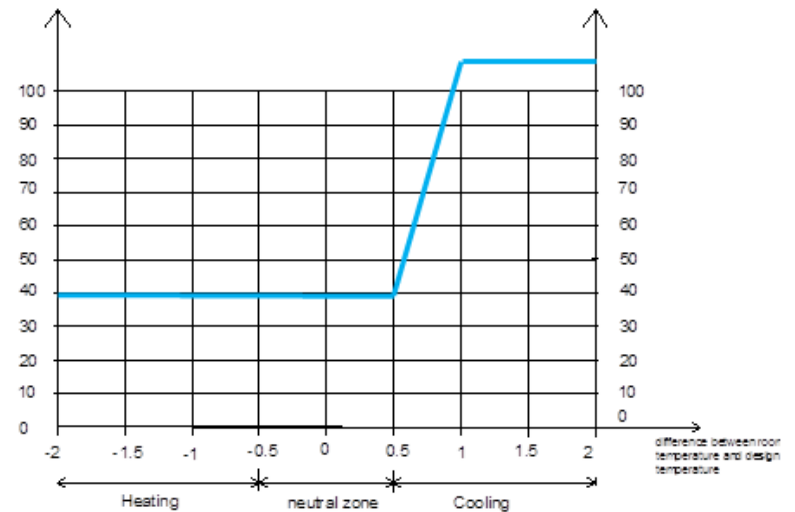
% opening VAV box



Central box

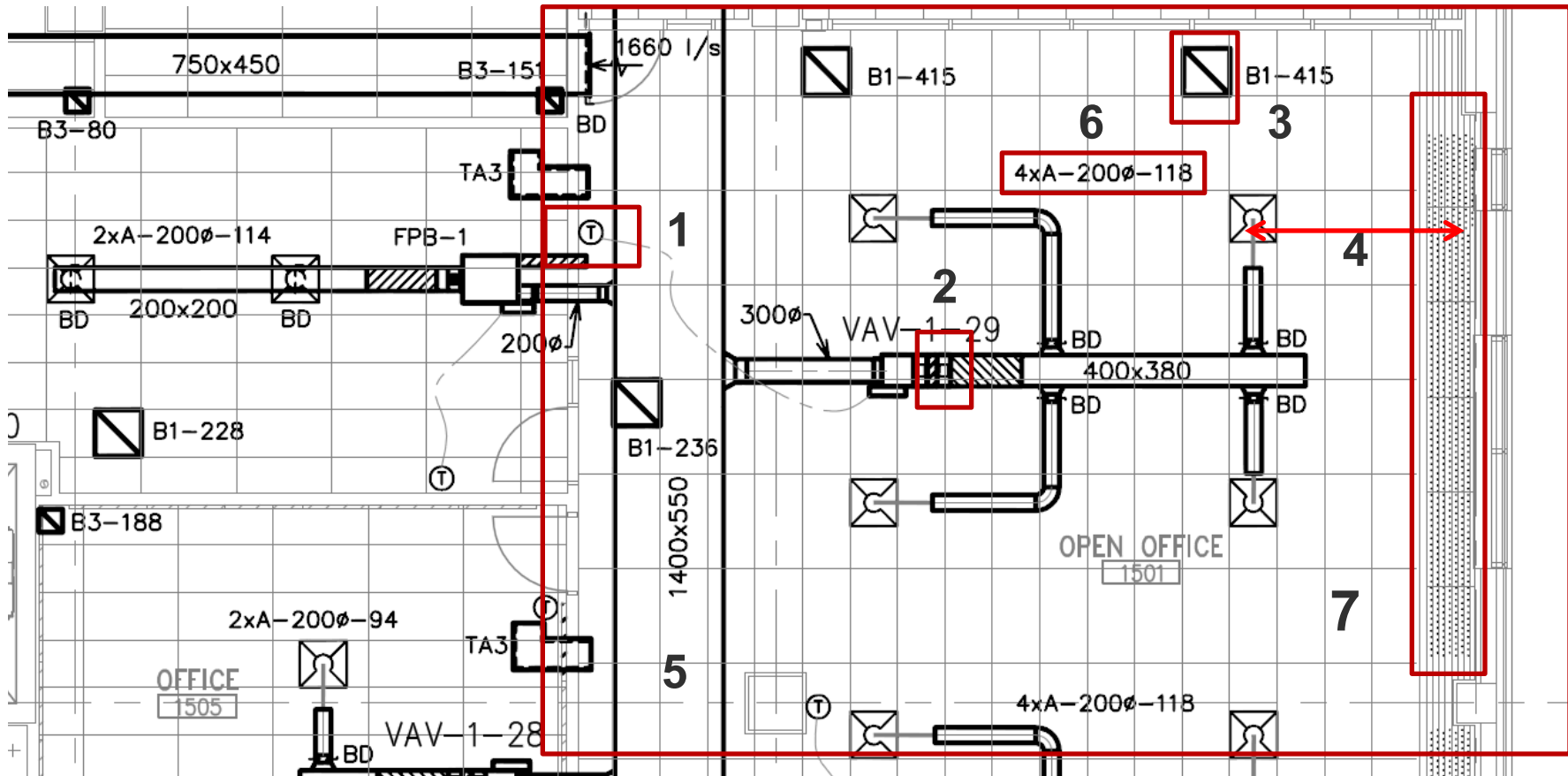
% opening VAV box

% opening VAV box



Sample plan

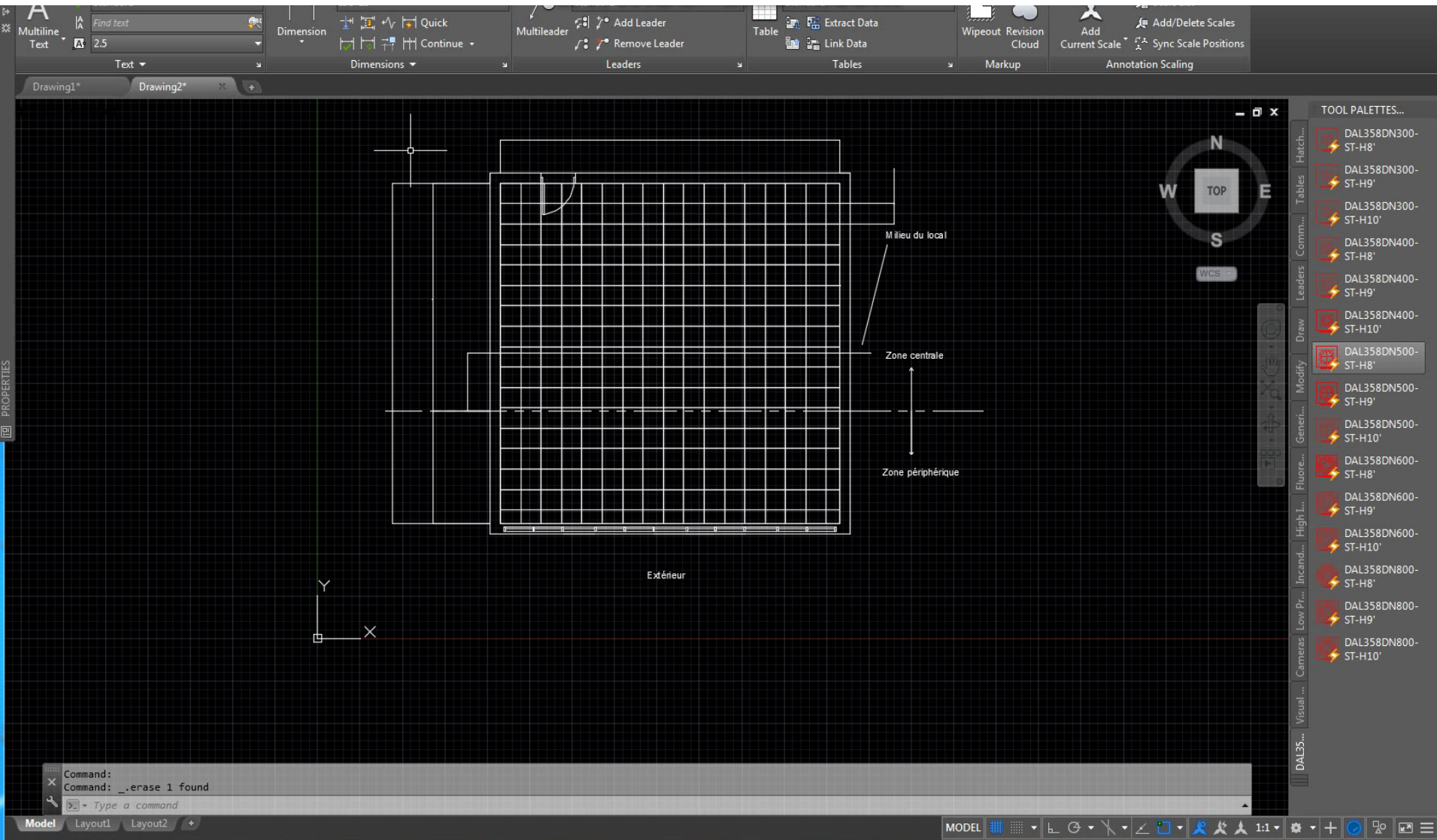
- 1 : Location of thermostat / 2: Location heating element/ 3: Location return grilles/
- 4: Distance window diffuser / 5 : Unit zoning/ 6 : Output of the 4 diffusers



7 : deletion of heating by water

**DOCUMENT AVAILABLE ON
www.nadklima.com**

VIDEO tracé des cercles

Retour corrigé