

Ministério da Saúde

FIOCRUZ

Fundação Oswaldo Cruz





Contratação de Serviço de Engenharia para Elaboração de
Projeto do Novo Edifício do Segetrans/COGIC da Fiocruz/Rio de Janeiro.


MEMÓRIA DE CÁLCULO

VENTILAÇÃO, EXAUSTÃO E AR CONDICIONADO

JANEIRO/2025

 Ministério da Saúde FIOCRUZ Fundação Oswaldo Cruz		CONTRATO N.º 08/2020 - NOVO EDIFÍCIO SEGETRANS	MEMORIAL DESCRIPTIVO HVAC	Mês Ref.	Pág.
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CONTROLE DE REVISÃO					
REV.	DESCRIÇÃO	ELABORADO		APROVADO	
A	EMIÇÃO INICIAL	NEWTON M.	22/01/2025	NEWTON M.	22/01/2025

 Ministério da Saúde FIOCRUZ Fundação Oswaldo Cruz		CONTRATO N.º 08/2020 - NOVO EDIFÍCIO SEGETRANS	MEMORIAL DESCRIPTIVO HVAC	Mês Ref.	Pág.
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APRESENTAÇÃO

A ARCHITECTUS vem por meio desse relatório apresentar Caderno de Especificações Técnicas do projeto de Arquitetura e Urbanismo do novo edifício do Segetrans/COGIC, a ser construído no bairro Benfica, Rio de Janeiro-RJ.

Este relatório está alicerçado nas diretrizes de implantação do empreendimento apresentadas pela Fiocruz que se baseia em uma implantação por fases a partir das verbas anuais disponibilizadas para a construção.

Elementos Contratuais

Contrato de Serviços de Arquitetura e Engenharia nº.....	08/2020
Processo nº.....	25389.100057/2019-40
Data de Assinatura do Contrato.....	27.01.2020
Data das Ordens de Serviço 01, 02 e 03.....	27.07.2020
Data da Ordem de Serviço 04.....	02.06.2021
Data da Ordem de Serviço 05.....	14.06.2023
Prazo de Execução dos Serviços.....	1.530 (mil quinhentos e trinta) dias
Prazo de Vigência do Contrato.....	1.765 (mil setecentos e sessenta e cinco) dias
Endereço do Empreendimento.....	Rua Leopoldo Bulhões nº 1830/1850, Manguinhos, Rio de Janeiro-RJ

Equipe Técnica

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Oswaldo Holanda de Araújo Filho	Projeto de Luminotécnica Engenharia – Instalações Elétricas (Luz / Força / SPDA) Engenharia - Telecomunicações Engenharia - Projeto de detecção e alarme contra incêndio Engenharia - Automação Predial
Allison dos Santos Cordeiro	Engenharia – Inst. Hidrossanitárias (Água Fria e Quente / Esgoto / Drenagem / Irrigação)
Newton Ricardo Belchior Maranhão	Engenharia – Ar condicionados e Ventilação Mecânica

Elaboração Relatório

ARCHITECTUS: Newton Maranhão.

1 DIMENSIONAMENTO DO SISTEMA DE CLIMATIZAÇÃO

1.1 CARACTERÍSTICAS DO AR EXTERIOR

As características térmicas e higrométricas do ar exterior serão baseadas na tabela de dados climáticos disponibilizada na NBR 16401-1, nesta norma não disponibiliza os dados da cidade de Rio de Janeiro - RJ. Para possibilitar conforto térmico será adotado o processo de resfriamento do ar. Abaixo seguem os parâmetros:

- Frequência anual: 0,4%;
- Temperatura de bulbo seco (TBS): 38,1°C;
- Temperatura de bulbo úmido (TBU): 28,1°C.

RJ	Rio de Janeiro Galeão		Latitude	Longit.	Altitude	Pr.atm	Período	Extrem. anuais	TBU	TBSmx	s	TBSmn	s	
			22,82S	43,25W	6m	101,25	82/01		32,4	40,2	2,2	11,6	3,2	
Mês>Qt	Freq.	Resfriamento e desumidificação				Baixa umidade			Mês>Fr	Freq.	Aquec.	Umidificação		
Fev	anual	TBS	TBUc	TBU	TBSc	TPO	w	TBSc	Jul	anual	TBS	TPO	w	TBSc
	0,4%	38,1	25,6	28,1	32,8	27,1	22,9	30,1		99,6%	14,8	9,9	7,6	23,2
ΔTmd	1%	36,2	25,3	27,5	32,0	26,2	21,7	29,3		99%	15,8	11,2	8,3	22,5
9,8	2%	35,0	25,2	27,0	31,3	26,0	21,4	29,1						

1.2 CARACTERÍSTICAS DO AR INTERIOR

Para proporcionar conforto térmico as pessoas, recomenda-se atender aos seguintes parâmetros:

- Temperatura de Bulbo Seco (TBS): 22°C;

1.3 CARGA TÉRMICA

As cargas térmicas vão ser expressas em BTU/h e W e as vazões em m³/h e L/s, por efeito do cálculo vão ser identificadas zonas térmicas, vão ser calculadas as cargas térmicas de resfriamento.

As fontes internas de calor e umidade devem ser a ser consideradas:

- Pessoas
- Iluminação
- Equipamentos
- Outras fontes de calor

Todos os cálculos têm o auxílio de programas baseados nos métodos da ASHRAE (TFM- Transfer Function Method ou RTS – Radiant Time Series Method), onde existem diversos programas disponíveis, como os programas livres publicados pelo Departamento de Energia dos Estados Unidos, ou programas desenvolvidos e registrados pelos principais fabricantes de equipamentos.

O cálculo de carga térmica foi realizado através de *software* da empresa Carrier, Hourly Analysis Program (HAP) v4.9.

ARQUIVO

1. General Details:

Floor Area **488,0** m²
 Avg. Ceiling Height **3,5** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **410,0** L/s
 OA Requirement 2 **0,00** L/(s-m²)
 Space Usage Defaults . **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **16,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **ARQUIVO**

2.4. People:

Occupancy **7,0** People
 Activity Level **Medium Work**
 Sensible **86,5** W/person
 Latent **133,3** W/person
 Schedule **ARQUIVO**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **ARQUIVO**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **ARQUIVO**
 Latent **0** W
 Schedule **ARQUIVO**

2.3. Electrical Equipment:

Wattage **20500,0** Watts
 Schedule **ARQUIVO**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	171,0	0	0	0
W	65,0	4	0	0

3.1. Construction Types for Exposure N

Wall Type **Default Wall Assembly**

3.2. Construction Types for Exposure W

Wall Type **Default Wall Assembly**
 1st Window Type **J W**

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s
 Infiltration occurs only when the fan is off.

6. Floors:

Type **Slab Floor On Grade**
 Floor Area **480,0** m²
 Total Floor U-Value **0,568** W/(m²-°K)
 Exposed Perimeter **0,0** m
 Edge Insulation R-Value **0,00** (m²-°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **171,0** m²
 U-Value **2,000** W/(m²-°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

7.2. 2nd Partition Details:

Partition Type **Ceiling Partition**
 Area **480,0** m²
 U-Value **2,000** W/(m²-°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

SUPERIOR ADMINISTRAÇÃO

1. General Details:

Floor Area **68,6** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s-m²)
 Space Usage Defaults : **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.4. People:

Occupancy **16,0** People
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **None**

2.3. Electrical Equipment:

Wattage **1500,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
E	15,0	0	0	0
W	42,0	4	0	0

3.1. Construction Types for Exposure E

Wall Type **Default Wall Assembly(1)**

3.2. Construction Types for Exposure W

Wall Type **Default Wall Assembly(1)**
 1st Window Type **J ADMINISTRAÇÃO**

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	68,6	0	0

4.1. Construction Types for Exposure H

Roof Type **Default Roof Assembly**

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s
 Infiltration occurs only when the fan is off.

6. Floors:

Type **Floor Above Unconditioned Space**
 Floor Area **68,6** m²
 Total Floor U-Value **0,568** W/(m²-°K)
 Unconditioned Space Max Temp. **23,9** °C
 Ambient at Space Max Temp. **35,0** °C
 Unconditioned Space Min Temp. **23,9** °C
 Ambient at Space Min Temp. **12,8** °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **30,0** m²
 U-Value **2,000** W/(m²-°K)
 Uncondit. Space Max Temp **23,9** °C

Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

7.2. 2nd Partition Details:

SUPERIOR CHEFIA

(No partition data).

1. General Details:

Floor Area 12,7 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,0 L/(s·m²)
 Space Usage Defaults . ASHRAE Standard 62.1-2010

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,0 Watts
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.4. People:

Occupancy 7,0 People
 Activity Level Office Work
 Sensible 71,8 W/person
 Latent 60,1 W/person
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule None

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule None
 Latent 0 W
 Schedule SEGETRAN

2.3. Electrical Equipment:

Wattage 1050,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	7,8	1	0	0

3.1. Construction Types for Exposure W

Wall Type Default Wall Assembly(1)
 1st Window Type JANELA CHEFIA

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	12,7	0	0

4.1. Construction Types for Exposure H

Roof Type Default Roof Assembly

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Floor Above Unconditioned Space
 Floor Area 12,7 m²
 Total Floor U-Value 0,568 W/(m²·°K)
 Unconditioned Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Unconditioned Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 7,8 m²
 U-Value 2,000 W/(m²·°K)
 Uncondit. Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Uncondit. Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7.2. 2nd Partition Details:

(No partition data).

SUPERIOR GUARITA

1. General Details:

Floor Area **6,3** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s-m²)
 Space Usage Defaults . **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.4. People:

Occupancy **1,0** Person
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **SEGETRAN**

2.3. Electrical Equipment:

Wattage **150,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
E	2,6	1	0	0
W	2,3	1	0	0

3.1. Construction Types for Exposure E

Wall Type **Default Wall Assembly(1)**
 1st Window Type **J_OESTE**

3.2. Construction Types for Exposure W

Wall Type **Default Wall Assembly(1)**
 1st Window Type **J_OESTE**

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	6,3	0	0

4.1. Construction Types for Exposure H

Roof Type **Default Roof Assembly**

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type **Floor Above Unconditioned Space**
 Floor Area **6,3** m²
 Total Floor U-Value **0,568** W/(m²-°K)
 Unconditioned Space Max Temp. **23,9** °C
 Ambient at Space Max Temp. **35,0** °C
 Unconditioned Space Min Temp. **23,9** °C
 Ambient at Space Min Temp. **12,8** °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **19,6** m²
 U-Value **2,000** W/(m²-°K)

Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

7.2. 2nd Partition Details: SUPERIOR MOTORISTAS

(No partition data).

1. General Details:

Floor Area 32,5 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,00 L/(s-m²)
 Space Usage Defaults . ASHRAE Standard 62.1-2010

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.4. People:

Occupancy 28,0 People
 Activity Level Seated at Rest
 Sensible 67,4 W/person
 Latent 35,2 W/person
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule SEGETRAN

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule SEGETRAN
 Latent 0 W
 Schedule SEGETRAN

2.3. Electrical Equipment:

Wattage 300,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	16,6	3	0	0

3.1. Construction Types for Exposure W

Wall Type Default Wall Assembly(1)
 1st Window Type JANELA OETSE MOTORISTAS

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	32,5	0	0

4.1. Construction Types for Exposure H

Roof Type Default Roof Assembly

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Floor Above Unconditioned Space
 Floor Area 32,5 m²
 Total Floor U-Value 0,568 W/(m²-°K)
 Unconditioned Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Unconditioned Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 16,6 m²
 U-Value 2,000 W/(m²-°K)
 Uncondit. Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Uncondit. Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7.2. 2nd Partition Details:

(No partition data).

SUPERIOR PLANTÃO

1. General Details:

Floor Area **9,5** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s-m²)
 Space Usage Defaults . **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.4. People:

Occupancy **3,0** People
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **SEGETRAN**

2.3. Electrical Equipment:

Wattage **150,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
NE	6,6	1	0	0

3.1. Construction Types for Exposure NE

Wall Type **Default Wall Assembly(1)**
 1st Window Type **JANELA PLANTÃO SUP NE**

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	9,5	0	0

4.1. Construction Types for Exposure H

Roof Type **Default Roof Assembly**

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s
 Infiltration occurs only when the fan is off.

6. Floors:

Type **Floor Above Unconditioned Space**
 Floor Area **9,5** m²
 Total Floor U-Value **0,568** W/(m²-°K)
 Unconditioned Space Max Temp. **23,9** °C
 Ambient at Space Max Temp. **35,0** °C
 Unconditioned Space Min Temp. **23,9** °C
 Ambient at Space Min Temp. **12,8** °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **7,5** m²
 U-Value **2,000** W/(m²-°K)
 Uncondit. Space Max Temp. **23,9** °C
 Ambient at Space Max Temp. **35,0** °C
 Uncondit. Space Min Temp. **23,9** °C
 Ambient at Space Min Temp. **12,8** °C

7.2. 2nd Partition Details:

(No partition data).

SUPERIOR PREPOSTO

1. General Details:

Floor Area 7,5 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,00 L/(s-m²)
 Space Usage Defaults . **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule **SEGETRAN**

2.3. Electrical Equipment:

Wattage 450,0 Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

(No Wall, Window, Door data).

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	7,5	0	0

4.1. Construction Types for Exposure H

Roof Type **Default Roof Assembly**

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type **Floor Above Unconditioned Space**
 Floor Area 7,5 m²
 Total Floor U-Value 0,568 W/(m²-°K)
 Unconditioned Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Unconditioned Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area 9,6 m²
 U-Value 2,000 W/(m²-°K)
 Uncondit. Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Uncondit. Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7.2. 2nd Partition Details:

(No partition data).

SUPERIOR RECEPÇÃO

1. General Details:

Floor Area 20,7 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,00 L/(s-m²)
 Space Usage Defaults . ASHRAE Standard 62.1-2010

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.4. People:

Occupancy 6,0 People
 Activity Level Office Work
 Sensible 71,8 W/person
 Latent 60,1 W/person
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule SEGETRAN

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule SEGETRAN
 Latent 0 W
 Schedule SEGETRAN

2.3. Electrical Equipment:

Wattage 0,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
NE	6,0	1	0	0
SE	12,0	1	0	0

3.1. Construction Types for Exposure NE

Wall Type Default Wall Assembly(1)
 1st Window Type J_OESTE

3.2. Construction Types for Exposure SE

Wall Type Default Wall Assembly(1)
 1st Window Type JANELA SE SUP RECEP

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	20,7	0	0

4.1. Construction Types for Exposure H

Roof Type Default Roof Assembly

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Floor Above Unconditioned Space
 Floor Area 20,7 m²
 Total Floor U-Value 0,568 W/(m²-°K)
 Unconditioned Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Unconditioned Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 7,8 m²
 U-Value 2,000 W/(m²-°K)

Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

7.2. 2nd Partition Details: SUPERIOR REFEITORIO

(No partition data).

1. General Details:

Floor Area 52,8 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,00 L/(s-m²)
 Space Usage Defaults . ASHRAE Standard 62.1-2010

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.4. People:

Occupancy 38,0 People
 Activity Level Office Work
 Sensible 71,8 W/person
 Latent 60,1 W/person
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule SEGETRAN

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule SEGETRAN
 Latent 0 W
 Schedule None

2.3. Electrical Equipment:

Wattage 600,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	10,0	3	0	0

3.1. Construction Types for Exposure W

Wall Type Default Wall Assembly(1)
 1st Window Type JANELA OESTE REFEITORIO

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	52,8	0	0

4.1. Construction Types for Exposure H

Roof Type Default Roof Assembly

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Floor Above Unconditioned Space
 Floor Area 52,8 m²
 Total Floor U-Value 0,568 W/(m²-°K)
 Unconditioned Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Unconditioned Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 30,0 m²
 U-Value 2,000 W/(m²-°K)
 Uncondit. Space Max Temp. 23,9 °C
 Ambient at Space Max Temp. 35,0 °C
 Uncondit. Space Min Temp. 23,9 °C
 Ambient at Space Min Temp. 12,8 °C

7.2. 2nd Partition Details:

(No partition data).

SUPERIOR TI

1. General Details:

Floor Area **8,3** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s·m²)
 Space Usage Defaults : **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.4. People:

Occupancy **6,0** People
 Activity Level **Medium Work**
 Sensible **86,5** W/person
 Latent **133,3** W/person
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **SEGETRAN**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **SEGETRAN**

2.3. Electrical Equipment:

Wattage **2000,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
NE	4,5	0	0	0

3.1. Construction Types for Exposure NE

Wall Type **Default Wall Assembly(1)**

4. Roofs, Skylights:

Exp.	Roof Gross Area (m ²)	Roof Slope (deg.)	Skylight Qty.
H	8,3	0	0

4.1. Construction Types for Exposure H

Roof Type **Default Roof Assembly**

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s
 Infiltration occurs only when the fan is off.

6. Floors:

Type **Floor Above Unconditioned Space**
 Floor Area **8,3** m²
 Total Floor U-Value **0,568** W/(m²·°K)
 Unconditioned Space Max Temp. **23,9** °C
 Ambient at Space Max Temp. **35,0** °C
 Unconditioned Space Min Temp. **23,9** °C
 Ambient at Space Min Temp. **12,8** °C

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **4,5** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp. **23,9** °C
 Ambient at Space Max Temp. **35,0** °C
 Uncondit. Space Min Temp. **23,9** °C
 Ambient at Space Min Temp. **12,8** °C

7.2. 2nd Partition Details:

(No partition data).

TÉRREO ADMINISTRAÇÃO

1. General Details:

Floor Area 30,9 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,00 L/(s-m²)
 Space Usage Defaults : **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.4. People:

Occupancy 10,0 People
 Activity Level Office Work
 Sensible 71,8 W/person
 Latent 60,1 W/person
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule SEGETRAN

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule SEGETRAN
 Latent 0 W
 Schedule None

2.3. Electrical Equipment:

Wattage 900,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	20,2	2	0	0
N	12,0	0	0	0

3.1. Construction Types for Exposure W

Wall Type Default Wall Assembly(1)
 1st Window Type JANELA TER W

3.2. Construction Types for Exposure N

Wall Type Default Wall Assembly(1)

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Slab Floor On Grade
 Floor Area 30,9 m²
 Total Floor U-Value 0,568 W/(m²-°K)
 Exposed Perimeter 0,0 m
 Edge Insulation R-Value 0,00 (m²-°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 12,0 m²
 U-Value 2,000 W/(m²-°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

7.2. 2nd Partition Details:

Partition Type Ceiling Partition
 Area 30,9 m²
 U-Value 2,000 W/(m²-°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

TÉRREO AVALIAÇÃO

1. General Details:

Floor Area **9,8** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s·m²)
 Space Usage Defaults : **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.3. Electrical Equipment:

Wattage **150,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	11,5	1	0	0

3.1. Construction Types for Exposure W

Wall Type **Default Wall Assembly(1)**
 1st Window Type **JANELA MICROFILMES W**

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type **Slab Floor On Grade**
 Floor Area **9,8** m²
 Total Floor U-Value **0,568** W/(m²·°K)
 Exposed Perimeter **0,0** m
 Edge Insulation R-Value **0,00** (m²·°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **11,5** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

2.4. People:

Occupancy **1,0** Person
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **None**

7.2. 2nd Partition Details:

Partition Type **Ceiling Partition**
 Area **9,8** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

TÉRREO COLSULTORIA PÚBLI

1. General Details:

Floor Area **8,4** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s·m²)
 Space Usage Defaults . **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.3. Electrical Equipment:

Wattage **150,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	10,0	1	0	0

3.1. Construction Types for Exposure W

Wall Type **Default Wall Assembly(1)**
 1st Window Type **JANELA TER W**

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type **Slab Floor On Grade**
 Floor Area **8,4** m²
 Total Floor U-Value **0,568** W/(m²·°K)
 Exposed Perimeter **0,0** m
 Edge Insulation R-Value **0,00** (m²·°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **9,6** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

2.4. People:

Occupancy **5,0** People
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **None**

7.2. 2nd Partition Details:

Partition Type **Ceiling Partition**
 Area **8,4** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

TÉRREO COPA

1. General Details:

Floor Area 7,3 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,0 L/(s-m²)
 Space Usage Defaults . **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.4. People:

Occupancy 2,0 People
 Activity Level Office Work
 Sensible 71,8 W/person
 Latent 60,1 W/person
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule None

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule SEGETRAN
 Latent 0 W
 Schedule None

2.3. Electrical Equipment:

Wattage 300,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	9,0	1	0	0

3.1. Construction Types for Exposure W

Wall Type Default Wall Assembly(1)
 1st Window Type JANELA COPA TERRE

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Slab Floor On Grade
 Floor Area 7,3 m²
 Total Floor U-Value 0,568 W/(m²-°K)
 Exposed Perimeter 0,0 m
 Edge Insulation R-Value 0,00 (m²-°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 16,7 m²
 U-Value 2,000 W/(m²-°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

7.2. 2nd Partition Details:

Partition Type Ceiling Partition
 Area 7,3 m²
 U-Value 2,000 W/(m²-°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

TÉRREO MECANICOS

1. General Details:

Floor Area **16,5** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s-m²)
 Space Usage Defaults . **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.4. People:

Occupancy **8,0** People
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **None**

2.3. Electrical Equipment:

Wattage **150,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	10,0	1	0	0
S	15,0	0	0	0
E	15,0	0	0	0

3.1. Construction Types for Exposure W

Wall Type **Default Wall Assembly(1)**
 1st Window Type **JANELA COPA TERRE**

3.2. Construction Types for Exposure S

Wall Type **Default Wall Assembly(1)**

3.3. Construction Types for Exposure E

Wall Type **Default Wall Assembly(1)**

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s
 Infiltration occurs only when the fan is off.

6. Floors:

Type **Slab Floor On Grade**
 Floor Area **16,5** m²
 Total Floor U-Value **0,568** W/(m²-°K)
 Exposed Perimeter **0,0** m
 Edge Insulation R-Value **0,00** (m²-°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **15,0** m²
 U-Value **2,000** W/(m²-°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

7.2. 2nd Partition Details:

Partition Type **Ceiling Partition**
 Area **16,5** m²
 U-Value **2,000** W/(m²-°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

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TÉRREO MICROFILME

1. General Details:

Floor Area 7,3 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,00 L/(s·m²)
 Space Usage Defaults . ASHRAE Standard 62.1-2010

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule None

2.3. Electrical Equipment:

Wattage 150,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	8,6	1	0	0

3.1. Construction Types for Exposure W

Wall Type Default Wall Assembly(1)
 1st Window Type JANELA MICROFILMES W

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Slab Floor On Grade
 Floor Area 7,3 m²
 Total Floor U-Value 0,568 W/(m²·°K)
 Exposed Perimeter 0,0 m
 Edge Insulation R-Value 0,00 (m²·°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 8,6 m²
 U-Value 2,000 W/(m²·°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

2.4. People:

Occupancy 1,0 Person
 Activity Level Office Work
 Sensible 71,8 W/person
 Latent 60,1 W/person
 Schedule SEGETRAN

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule SEGETRAN
 Latent 0 W
 Schedule None

7.2. 2nd Partition Details:

Partition Type Ceiling Partition
 Area 7,3 m²
 U-Value 2,000 W/(m²·°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

TÉRREO PRESERVAÇÃO

1. General Details:

Floor Area **10,3** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s·m²)
 Space Usage Defaults : **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **20,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.3. Electrical Equipment:

Wattage **150,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	12,0	1	0	0

3.1. Construction Types for Exposure W

Wall Type **Default Wall Assembly(1)**
 1st Window Type **JANELA PRESERVA W**

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type **Slab Floor On Grade**
 Floor Area **10,3** m²
 Total Floor U-Value **0,568** W/(m²·°K)
 Exposed Perimeter **0,0** m
 Edge Insulation R-Value **0,00** (m²·°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **12,0** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

2.4. People:

Occupancy **2,0** People
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **None**

7.2. 2nd Partition Details:

Partition Type **Ceiling Partition**
 Area **10,3** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

TÉRREO RECEPÇÃO

1. General Details:

Floor Area 27,0 m²
 Avg. Ceiling Height 3,0 m
 Building Weight 341,8 kg/m²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
 OA Requirement 1 0,0 L/s/person
 OA Requirement 2 0,00 L/(s·m²)
 Space Usage Defaults : **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
 Wattage 30,00 W/m²
 Ballast Multiplier 1,00
 Schedule SEGETRAN

2.2. Task Lighting:

Wattage 0,00 W/m²
 Schedule None

2.3. Electrical Equipment:

Wattage 0,0 Watts
 Schedule SEGETRAN

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	10,0	0	0	0

3.1. Construction Types for Exposure W

Wall Type Default Wall Assembly(1)

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling 0,00 L/s
 Design Heating 0,00 L/s
 Energy Analysis 0,00 L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type Slab Floor On Grade
 Floor Area 27,0 m²
 Total Floor U-Value 0,568 W/(m²·°K)
 Exposed Perimeter 0,0 m
 Edge Insulation R-Value 0,00 (m²·°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
 Area 10,0 m²
 U-Value 2,000 W/(m²·°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

2.4. People:

Occupancy 2,0 People
 Activity Level Office Work
 Sensible 71,8 W/person
 Latent 60,1 W/person
 Schedule SEGETRAN

2.5. Miscellaneous Loads:

Sensible 0 W
 Schedule SEGETRAN
 Latent 0 W
 Schedule None

7.2. 2nd Partition Details:

Partition Type Ceiling Partition
 Area 27,0 m²
 U-Value 2,000 W/(m²·°K)
 Uncondit. Space Max Temp 23,9 °C
 Ambient at Space Max Temp 35,0 °C
 Uncondit. Space Min Temp 23,9 °C
 Ambient at Space Min Temp 12,8 °C

TÉRREO SWAT

1. General Details:

Floor Area **23,3** m²
 Avg. Ceiling Height **3,0** m
 Building Weight **341,8** kg/m²

1.1. OA Ventilation Requirements:

Space Usage **User-Defined**
 OA Requirement 1 **0,0** L/s/person
 OA Requirement 2 **0,00** L/(s·m²)
 Space Usage Defaults : **ASHRAE Standard 62.1-2010**

2. Internals:

2.1. Overhead Lighting:

Fixture Type **Recessed (Unvented)**
 Wattage **30,00** W/m²
 Ballast Multiplier **1,00**
 Schedule **SEGETRAN**

2.4. People:

Occupancy **16,0** People
 Activity Level **Office Work**
 Sensible **71,8** W/person
 Latent **60,1** W/person
 Schedule **SEGETRAN**

2.2. Task Lighting:

Wattage **0,00** W/m²
 Schedule **None**

2.5. Miscellaneous Loads:

Sensible **0** W
 Schedule **SEGETRAN**
 Latent **0** W
 Schedule **None**

2.3. Electrical Equipment:

Wattage **0,0** Watts
 Schedule **SEGETRAN**

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	14,1	1	0	0
E	14,1	0	0	0

3.1. Construction Types for Exposure W

Wall Type **Default Wall Assembly(1)**
 1st Window Type **JANELA COPA TERRE**

3.2. Construction Types for Exposure E

Wall Type **Default Wall Assembly(1)**

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling **0,00** L/s
 Design Heating **0,00** L/s
 Energy Analysis **0,00** L/s

Infiltration occurs only when the fan is off.

6. Floors:

Type **Slab Floor On Grade**
 Floor Area **23,3** m²
 Total Floor U-Value **0,568** W/(m²·°K)
 Exposed Perimeter **0,0** m
 Edge Insulation R-Value **0,00** (m²·°K)/W

7. Partitions:

7.1. 1st Partition Details:

Partition Type **Wall Partition**
 Area **30,0** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

7.2. 2nd Partition Details:

Partition Type **Ceiling Partition**
 Area **23,3** m²
 U-Value **2,000** W/(m²·°K)
 Uncondit. Space Max Temp **23,9** °C
 Ambient at Space Max Temp **35,0** °C
 Uncondit. Space Min Temp **23,9** °C
 Ambient at Space Min Temp **12,8** °C

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Air System Information

Air System Name **ARQUIVO MORTO**
Equipment Class **PKG VERT**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **488,0** m²
Location **Rio de Janeiro, Brazil**

Sizing Calculation Information

Calculation Months **Jan to Dec**
Sizing Data **Calculated**

Zone L/s Sizing **Sum of space airflow rates**
Space L/s Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **70,8** kW
Sensible coil load **59,2** kW
Coil L/s at Feb 1600 **3778** L/s
Max block L/s **3778** L/s
Sum of peak zone L/s **3778** L/s
Sensible heat ratio **0,836**
m²/kW **6,9**
W/m² **145,2**
Water flow @ 5,6 °K rise **N/A**

Load occurs at **Feb 1600**
OA DB / WB **38,6 / 26,0** °C
Entering DB / WB **23,3 / 15,9** °C
Leaving DB / WB **10,4 / 9,7** °C
Coil ADP **8,9** °C
Bypass Factor **0,100**
Resulting RH **43** %
Design supply temp. **10,8** °C
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0,0** °K

Supply Fan Sizing Data

Actual max L/s **3778** L/s
Standard L/s **3775** L/s
Actual max L/(s-m²) **7,74** L/(s-m²)

Fan motor BHP **2,38** BHP
Fan motor kW **1,89** kW
Fan static **250** Pa

Outdoor Ventilation Air Data

Design airflow L/s **410** L/s
L/(s-m²) **0,84** L/(s-m²)

L/s/person **58,57** L/s/person

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Air System Information

Air System Name **ARQUIVO MORTO**
Equipment Class **PKG VERT**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **488,0** m²
Location **Rio de Janeiro, Brazil**

Sizing Calculation Information

Calculation Months **Jan to Dec**
Sizing Data **Calculated**

Zone L/s Sizing **Sum of space airflow rates**
Space L/s Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (kW)	Design Airflow (L/s)	Minimum Airflow (L/s)	Time of Peak Load	Maximum Heating Load (kW)	Zone Floor Area (m ²)	Zone L/(s-m ²)
Zone 1	45,9	3400	3400	Mar 1600	2,2	488,0	6,97

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m ²)	Space L/(s-m ²)
Zone 1							
ARQUIVO	1	45,9	Mar 1600	3400	2,2	488,0	6,97

1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **410** L/s

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s-m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
Zone 1									
ARQUIVO	1	488,0	7,0	3400,2	0,00	0,00	410,0	0,0	410,0
Totals (incl. Space Multipliers)				3400,2					410,0

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	12 m²	1834	-	12 m²	-	-
Wall Transmission	224 m²	6013	-	224 m²	1756	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	12 m²	705	-	12 m²	458	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	480 m²	0	-	480 m²	0	-
Partitions	171 m²	646	-	171 m²	0	-
Ceiling	480 m²	1824	-	480 m²	0	-
Overhead Lighting	7808 W	7704	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	20500 W	20377	-	0	0	-
People	7	595	933	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	3970	93	0%	0	0
>> Total Zone Loads	-	43668	1026	-	2213	0
Zone Conditioning	-	42426	1026	-	-515	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	3778 L/s	0	-	3778 L/s	0	-
Ventilation Load	410 L/s	5835	6649	410 L/s	2248	0
Supply Fan Load	3778 L/s	1889	-	3778 L/s	-1889	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	10%	4367	-	10%	221	-
>> Total System Loads	-	54517	7675	-	65	0
Central Cooling Coil	-	54517	7676	-	0	0
>> Total Conditioning	-	54517	7676	-	0	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,3 °C / 22,8 °C			HEATING OA DB / WB 15,0 °C / 9,7 °C		
	OCCUPIED T-STAT 22,0 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	12 m²	1834	-	12 m²	-	-
Wall Transmission	224 m²	6013	-	224 m²	1756	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	12 m²	705	-	12 m²	458	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	480 m²	0	-	480 m²	0	-
Partitions	171 m²	646	-	171 m²	0	-
Ceiling	480 m²	1824	-	480 m²	0	-
Overhead Lighting	7808 W	7704	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	20500 W	20377	-	0	0	-
People	7	595	933	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	3970	93	0%	0	0
>> Total Zone Loads	-	43668	1026	-	2213	0

TABLE 1.1.A. COMPONENT LOADS FOR SPACE " ARQUIVO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 22,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 21,1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	12 m²	2683	-	12 m²	-	-
Wall Transmission	224 m²	6857	-	224 m²	1756	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	12 m²	1031	-	12 m²	458	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	480 m²	0	-	480 m²	0	-
Partitions	171 m²	646	-	171 m²	0	-
Ceiling	480 m²	1824	-	480 m²	0	-
Overhead Lighting	7808 W	7711	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	20500 W	20385	-	0	0	-
People	7	596	933	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	4173	93	0%	0	0
>> Total Zone Loads	-	45907	1026	-	2213	0

TABLE 1.1.B. ENVELOPE LOADS FOR SPACE " ARQUIVO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
N EXPOSURE						
WALL	171	1,280	-	5481	-	1338
W EXPOSURE						
WALL	53	1,280	-	1377	-	418
WINDOW 1	12	6,500	0,811	1031	2683	458

DESIGN MONTH: JULY										
Hour	OA TEMP (°C)	SUPPLY AIRFLOW (L/s)	CENTRAL COOLING SENSIBLE (kW)	CENTRAL COOLING TOTAL (kW)	CENTRAL HEATING COIL (kW)	PRECOOL COIL (kW)	PREHEAT COIL (kW)	TERMINAL COOLING (kW)	TERMINAL HEATING (kW)	ZONE HEATING UNIT (kW)
0000	24,5	3778	47,1	54,3	0,0	0,0	0,0	0,0	0,0	0,0
0100	24,0	3778	45,6	52,5	0,0	0,0	0,0	0,0	0,0	0,0
0200	23,5	3778	45,4	52,4	0,0	0,0	0,0	0,0	0,0	0,0
0300	23,0	3778	44,9	51,8	0,0	0,0	0,0	0,0	0,0	0,0
0400	22,7	3778	43,9	50,6	0,0	0,0	0,0	0,0	0,0	0,0
0500	22,6	3778	42,2	48,6	0,0	0,0	0,0	0,0	0,0	0,0
0600	22,8	3778	43,1	49,7	0,0	0,0	0,0	0,0	0,0	0,0
0700	23,4	3778	43,4	50,0	0,0	0,0	0,0	0,0	0,0	0,0
0800	24,3	3778	42,4	48,7	0,0	0,0	0,0	0,0	0,0	0,0
0900	25,7	3778	44,4	51,0	0,0	0,0	0,0	0,0	0,0	0,0
1000	27,3	3778	45,2	51,7	0,0	0,0	0,0	0,0	0,0	0,0
1100	29,2	3778	46,6	53,2	0,0	0,0	0,0	0,0	0,0	0,0
1200	30,9	3778	48,7	55,6	0,0	0,0	0,0	0,0	0,0	0,0
1300	32,2	3778	50,6	57,7	0,0	0,0	0,0	0,0	0,0	0,0
1400	33,0	3778	53,2	60,7	0,0	0,0	0,0	0,0	0,0	0,0
1500	33,3	3778	54,5	62,2	0,0	0,0	0,0	0,0	0,0	0,0
1600	33,0	3778	54,5	62,2	0,0	0,0	0,0	0,0	0,0	0,0
1700	32,3	3778	54,8	62,5	0,0	0,0	0,0	0,0	0,0	0,0
1800	31,1	3778	53,4	60,9	0,0	0,0	0,0	0,0	0,0	0,0
1900	29,7	3778	52,5	60,1	0,0	0,0	0,0	0,0	0,0	0,0
2000	28,3	3778	51,4	58,8	0,0	0,0	0,0	0,0	0,0	0,0
2100	27,1	3778	50,2	57,5	0,0	0,0	0,0	0,0	0,0	0,0
2200	26,0	3778	49,7	57,2	0,0	0,0	0,0	0,0	0,0	0,0
2300	25,2	3778	24,7	26,5	0,0	0,0	0,0	0,0	0,0	0,0

ZONE: Zone 1									
DESIGN MONTH: JULY									
Hour	OA TEMP (°C)	ZONE TEMP (°C)	RH (%)	ZONE AIRFLOW (L/s)	ZONE SENSIBLE LOAD (W)	ZONE COND (W)	TERMINAL COOLING COIL (W)	TERMINAL HEATING COIL (W)	ZONE HEATING UNIT (W)
0000	24,5	22,5	47	3400,2	40185,1	39684,1	0,0	0,0	0,0
0100	24,0	22,6	48	3400,2	39663,3	38549,7	0,0	0,0	0,0
0200	23,5	22,6	48	3400,2	39179,4	38624,6	0,0	0,0	0,0
0300	23,0	22,5	48	3400,2	38738,8	38324,0	0,0	0,0	0,0
0400	22,7	22,6	49	3400,2	38339,1	37576,7	0,0	0,0	0,0
0500	22,6	22,7	50	3400,2	37983,9	36087,0	0,0	0,0	0,0
0600	22,8	22,6	50	3400,2	37678,2	36846,9	0,0	0,0	0,0
0700	23,4	22,6	50	3400,2	37471,0	36843,8	0,0	0,0	0,0
0800	24,3	22,7	51	3400,2	37380,3	35550,2	0,0	0,0	0,0
0900	25,7	22,6	50	3400,2	37545,4	36739,2	0,0	0,0	0,0
1000	27,3	22,7	50	3400,2	38014,9	36686,0	0,0	0,0	0,0
1100	29,2	22,7	49	3400,2	38737,1	37150,2	0,0	0,0	0,0
1200	30,9	22,7	48	3400,2	39690,2	38263,7	0,0	0,0	0,0
1300	32,2	22,7	47	3400,2	41028,4	39392,1	0,0	0,0	0,0
1400	33,0	22,7	45	3400,2	42431,1	41378,8	0,0	0,0	0,0
1500	33,3	22,7	44	3400,2	43667,9	42425,9	0,0	0,0	0,0
1600	33,0	22,8	44	3400,2	44409,1	42585,1	0,0	0,0	0,0
1700	32,3	22,7	44	3400,2	44204,9	43127,3	0,0	0,0	0,0
1800	31,1	22,8	44	3400,2	44311,5	42371,3	0,0	0,0	0,0
1900	29,7	22,8	44	3400,2	43979,1	42273,3	0,0	0,0	0,0
2000	28,3	22,8	45	3400,2	43379,2	41831,6	0,0	0,0	0,0
2100	27,1	22,7	45	3400,2	42700,0	41283,0	0,0	0,0	0,0
2200	26,0	22,6	45	3400,2	42016,8	41390,6	0,0	0,0	0,0
2300	25,2	22,4	68	3400,2	18329,7	19318,9	0,0	0,0	0,0

July DESIGN COOLING DAY, 1500

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°C)	Specific Humidity (kg/kg)	Airflow (L/s)	CO2 Level (ppm)	Sensible Heat (W)	Latent Heat (W)
Ventilation Air	Inlet	33,3	0,01306	410	400	5835	6649
Vent - Return Mixing	Outlet	22,8	0,00816	3778	625	-	-
Central Cooling Coil	Outlet	10,9	0,00747	3778	625	54517	7676
Supply Fan	Outlet	11,3	0,00747	3778	625	1889	-
Cold Supply Duct	Outlet	12,3	0,00747	3400	625	-	-
Zone Air	-	22,7	0,00757	3400	654	42426	1026
Return Plenum	Outlet	22,7	0,00757	3400	654	0	-
Duct Leakage Air	Outlet	11,3	0,00747	378	625	-	-
Return Duct	Outlet	21,5	0,00756	3778	652	-	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1,207; At site altitude = 1,206 W/(L/s-K)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 2947,6; At site altitude = 2945,5 W/(L/s)

Site Altitude = 5,8 m

TABLE 2: ZONE DATA

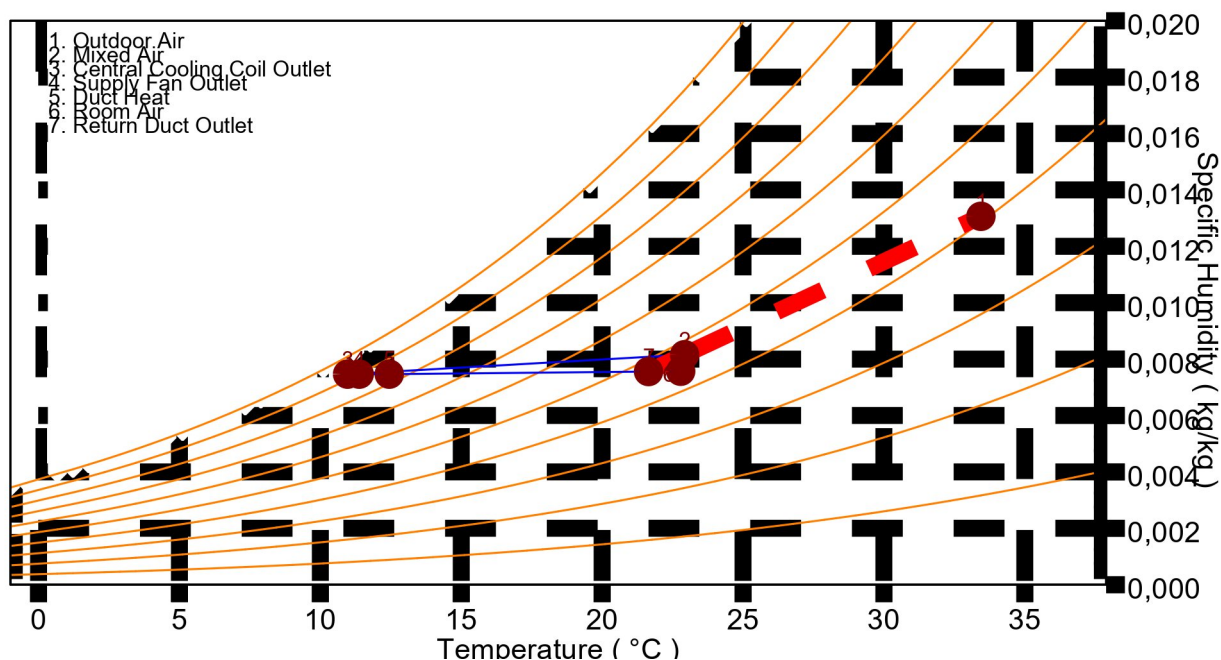
Zone Name	Zone Sensible Load (W)	T-stat Mode	Zone Cond (W)	Zone Temp (°C)	Zone Airflow (L/s)	CO2 Level (ppm)	Terminal Heating Coil (W)	Zone Heating Unit (W)
Zone 1	43668	Cooling	42426	22,7	3400	654	0	0

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Location: Rio de Janeiro, Brazil

Altitude: 5,8 m.

Data for: July DESIGN COOLING DAY, 1500



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Air System Information

Air System Name **SEGETRAN**
Equipment Class **UNDEF**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **359,7** m²
Location **Rio de Janeiro, Brazil**

Sizing Calculation Information

Calculation Months **Jan to Dec**
Sizing Data **Calculated**

Zone L/s Sizing **Sum of space airflow rates**
Space L/s Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **88,0** kW
Sensible coil load **76,7** kW
Coil L/s at Dec 1600 **7056** L/s
Max block L/s **7056** L/s
Sum of peak zone L/s **7056** L/s
Sensible heat ratio **0,872**
m²/kW **4,1**
W/m² **244,7**
Water flow @ 5,6 °K rise **3,79** L/s

Load occurs at **Dec 1600**
OA DB / WB **38,0 / 26,0** °C
Entering DB / WB **21,1 / 15,6** °C
Leaving DB / WB **12,1 / 11,6** °C
Coil ADP **11,1** °C
Bypass Factor **0,100**
Resulting RH **55** %
Design supply temp. **12,0** °C
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0,0** °K

Supply Fan Sizing Data

Actual max L/s **7056** L/s
Standard L/s **7051** L/s
Actual max L/(s-m²) **19,62** L/(s-m²)

Fan motor BHP **0,00** BHP
Fan motor kW **0,00** kW
Fan static **0** Pa

Outdoor Ventilation Air Data

Design airflow L/s **0** L/s
L/(s-m²) **0,00** L/(s-m²)

L/s/person **0,00** L/s/person

Air System Information

Air System Name **SEGETRAN**
 Equipment Class **UNDEF**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **359,7** m²
 Location **Rio de Janeiro, Brazil**

Sizing Calculation Information

Calculation Months **Jan to Dec**
 Sizing Data **Calculated**

Zone L/s Sizing **Sum of space airflow rates**
 Space L/s Sizing **Individual peak space loads**

Zone Sizing Data

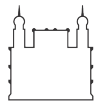
Zone Name	Maximum Cooling Sensible (kW)	Design Airflow (L/s)	Minimum Airflow (L/s)	Time of Peak Load	Maximum Heating Load (kW)	Zone Floor Area (m²)	Zone L/(s-m²)
Zone 1	71,9	6703	6703	Jan 1600	2,4	359,7	18,64

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s-m²)
Zone 1							
SUPERIOR ADMINISTRAÇÃO	1	12,7	Jan 1600	1173	0,5	68,6	17,09
SUPERIOR CHEFIA	1	2,8	Jan 1600	262	0,1	12,7	20,64
SUPERIOR GUARITA	1	1,9	Jan 1500	171	0,1	6,3	27,13
SUPERIOR MOTORISTAS	1	8,4	Jan 1600	773	0,3	32,5	23,79
SUPERIOR PLANTÃO	1	1,9	Feb 1300	176	0,1	9,5	18,56
SUPERIOR PREPOSTO	1	1,4	Jan 1400	132	0,0	7,5	17,60
SUPERIOR RECEPÇÃO	1	3,4	Jan 1300	310	0,2	20,7	14,98
SUPERIOR REFEITÓRIO	1	10,7	Jan 1600	987	0,3	52,8	18,70
SUPERIOR TI	1	3,5	Feb 1400	319	0,0	8,3	38,49
TÉRREO ADMINISTRAÇÃO	1	6,3	Jan 1700	577	0,2	30,9	18,67
TÉRREO AVALIAÇÃO	1	2,2	Jan 1700	206	0,1	9,8	21,05
TÉRREO COLSULTORIA PÚBLICA	1	2,4	Jan 1700	220	0,1	8,4	26,14
TÉRREO COPA	1	1,8	Jan 1700	163	0,1	7,3	22,36
TÉRREO MECANICOS	1	3,5	Jan 1700	322	0,2	16,5	19,49
TÉRREO MICROFILME	1	2,0	Jan 1600	185	0,1	7,3	25,34
TÉRREO PRESERVAÇÃO	1	2,2	Jan 1700	207	0,1	10,3	20,10
TÉRREO RECEPÇÃO	1	1,8	Jan 2000	161	0,0	27,0	5,98
TÉRREO SWAT	1	3,9	Jan 1700	358	0,1	23,3	15,37



1. Summary

Ventilation Sizing Method Sum of Space OA Airflows
Design Ventilation Airflow Rate 0 L/s

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
Zone 1									
SUPERIOR ADMINISTRAÇÃO	1	68,6	16,0	1172,7	0,00	0,00	0,0	0,0	0,0
SUPERIOR CHEFIA	1	12,7	7,0	262,2	0,00	0,00	0,0	0,0	0,0
SUPERIOR GUARITA	1	6,3	1,0	170,9	0,00	0,00	0,0	0,0	0,0
SUPERIOR MOTORISTAS	1	32,5	28,0	773,2	0,00	0,00	0,0	0,0	0,0
SUPERIOR PLANTÃO	1	9,5	3,0	176,3	0,00	0,00	0,0	0,0	0,0
SUPERIOR PREPOSTO	1	7,5	4,0	132,0	0,00	0,00	0,0	0,0	0,0
SUPERIOR RECEPÇÃO	1	20,7	6,0	310,0	0,00	0,00	0,0	0,0	0,0
SUPERIOR REFEITORIO	1	52,8	38,0	987,4	0,00	0,00	0,0	0,0	0,0
SUPERIOR TI	1	8,3	6,0	319,4	0,00	0,00	0,0	0,0	0,0
TÉRREO ADMINISTRAÇÃO	1	30,9	10,0	577,0	0,00	0,00	0,0	0,0	0,0
TÉRREO AVALIAÇÃO	1	9,8	1,0	206,3	0,00	0,00	0,0	0,0	0,0
TÉRREO COLSULTORIA PÚBLICA	1	8,4	5,0	219,5	0,00	0,00	0,0	0,0	0,0
TÉRREO COPA	1	7,3	2,0	163,2	0,00	0,00	0,0	0,0	0,0
TÉRREO MECANICOS	1	16,5	8,0	321,5	0,00	0,00	0,0	0,0	0,0
TÉRREO MICROFILME	1	7,3	1,0	185,0	0,00	0,00	0,0	0,0	0,0
TÉRREO PRESERVAÇÃO	1	10,3	2,0	207,0	0,00	0,00	0,0	0,0	0,0
TÉRREO RECEPÇÃO	1	27,0	2,0	161,5	0,00	0,00	0,0	0,0	0,0
TÉRREO SWAT	1	23,3	16,0	358,0	0,00	0,00	0,0	0,0	0,0
Totals (incl. Space Multipliers)				6703,2					0,0

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	55 m²	8492	-	55 m²	-	-
Wall Transmission	232 m²	3960	-	232 m²	892	-
Roof Transmission	219 m²	3953	-	219 m²	450	-
Window Transmission	55 m²	3692	-	55 m²	1064	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	360 m²	359	-	360 m²	0	-
Partitions	259 m²	1495	-	259 m²	0	-
Ceiling	141 m²	813	-	141 m²	0	-
Overhead Lighting	10337 W	8332	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	8150 W	7444	-	0	0	-
People	156	8505	9408	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	9409	1882	0%	0	0
>> Total Zone Loads	-	56455	11290	-	2405	0
Zone Conditioning	-	56646	11290	-	37	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	7056 L/s	0	-	7056 L/s	0	-
Ventilation Load	0 L/s	0	0	0 L/s	0	0
Supply Fan Load	7056 L/s	0	-	7056 L/s	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	5%	2823	-	5%	120	-
>> Total System Loads	-	59468	11290	-	157	0
Central Cooling Coil	-	59468	11303	-	0	0
>> Total Conditioning	-	59468	11303	-	0	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,3 °C / 22,8 °C			HEATING OA DB / WB 15,0 °C / 9,7 °C		
	OCCUPIED T-STAT 21,0 °C			OCCUPIED T-STAT 18,0 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	55 m²	8492	-	55 m²	-	-
Wall Transmission	232 m²	3960	-	232 m²	892	-
Roof Transmission	219 m²	3953	-	219 m²	450	-
Window Transmission	55 m²	3692	-	55 m²	1064	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	360 m²	359	-	360 m²	0	-
Partitions	259 m²	1495	-	259 m²	0	-
Ceiling	141 m²	813	-	141 m²	0	-
Overhead Lighting	10337 W	8332	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	8150 W	7444	-	0	0	-
People	156	8505	9408	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	9409	1882	0%	0	0
>> Total Zone Loads	-	56455	11290	-	2405	0

TABLE 1.1.A. COMPONENT LOADS FOR SPACE " SUPERIOR ADMINISTRAÇÃO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	8 m²	1223	-	8 m²	-	-
Wall Transmission	49 m²	799	-	49 m²	189	-
Roof Transmission	69 m²	1239	-	69 m²	141	-
Window Transmission	8 m²	520	-	8 m²	150	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	69 m²	113	-	69 m²	0	-
Partitions	30 m²	173	-	30 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	2058 W	1659	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	1370	-	0	0	-
People	16	870	961	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	1593	192	0%	0	0
>> Total Zone Loads	-	9559	1154	-	480	0

TABLE 1.1.B. ENVELOPE LOADS FOR SPACE " SUPERIOR ADMINISTRAÇÃO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
E EXPOSURE						
WALL	15	1,280	-	312	-	58
W EXPOSURE						
WALL	34	1,280	-	487	-	132
WINDOW 1	8	6,500	0,811	520	1223	150
H EXPOSURE						
ROOF	69	0,685	-	1239	-	141

TABLE 1.2.A. COMPONENT LOADS FOR SPACE " SUPERIOR CHEFIA " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	1 m²	153	-	1 m²	-	-
Wall Transmission	7 m²	97	-	7 m²	26	-
Roof Transmission	13 m²	229	-	13 m²	26	-
Window Transmission	1 m²	65	-	1 m²	19	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	13 m²	21	-	13 m²	0	-
Partitions	8 m²	45	-	8 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	30 W	24	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1050 W	959	-	0	0	-
People	7	381	421	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	395	84	0%	0	0
>> Total Zone Loads	-	2369	505	-	71	0

TABLE 1.2.B. ENVELOPE LOADS FOR SPACE " SUPERIOR CHEFIA " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	7	1,280	-	97	-	26
WINDOW 1	1	6,500	0,811	65	153	19
H EXPOSURE						
ROOF	13	0,685	-	229	-	26

TABLE 1.3.A. COMPONENT LOADS FOR SPACE " SUPERIOR GUARITA " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	2 m²	345	-	2 m²	-	-
Wall Transmission	3 m²	45	-	3 m²	10	-
Roof Transmission	6 m²	114	-	6 m²	13	-
Window Transmission	2 m²	155	-	2 m²	45	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	6 m²	10	-	6 m²	0	-
Partitions	20 m²	113	-	20 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	189 W	152	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	137	-	0	0	-
People	1	54	60	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	225	12	0%	0	0
>> Total Zone Loads	-	1351	72	-	67	0

TABLE 1.3.B. ENVELOPE LOADS FOR SPACE " SUPERIOR GUARITA " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
E EXPOSURE						
WALL	1	1,280	-	29	-	5
WINDOW 1	1	6,195	0,949	77	121	22
W EXPOSURE						
WALL	1	1,280	-	16	-	4
WINDOW 1	1	6,195	0,949	77	223	22
H EXPOSURE						
ROOF	6	0,685	-	114	-	13

TABLE 1.4.A. COMPONENT LOADS FOR SPACE " SUPERIOR MOTORISTAS " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	9 m²	1376	-	9 m²	-	-
Wall Transmission	8 m²	113	-	8 m²	31	-
Roof Transmission	33 m²	587	-	33 m²	67	-
Window Transmission	9 m²	585	-	9 m²	168	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	33 m²	53	-	33 m²	0	-
Partitions	17 m²	96	-	17 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	975 W	786	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	300 W	274	-	0	0	-
People	28	1430	986	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	1060	197	0%	0	0
>> Total Zone Loads	-	6359	1183	-	266	0

TABLE 1.4.B. ENVELOPE LOADS FOR SPACE " SUPERIOR MOTORISTAS " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	8	1,280	-	113	-	31
WINDOW 1	9	6,500	0,811	585	1376	168
H EXPOSURE						
ROOF	33	0,685	-	587	-	67

TABLE 1.5.A. COMPONENT LOADS FOR SPACE " SUPERIOR PLANTÃO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	2 m²	324	-	2 m²	-	-
Wall Transmission	4 m²	137	-	4 m²	17	-
Roof Transmission	10 m²	172	-	10 m²	20	-
Window Transmission	2 m²	146	-	2 m²	42	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	16	-	10 m²	0	-
Partitions	8 m²	43	-	8 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	285 W	230	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	137	-	0	0	-
People	3	163	180	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	273	36	0%	0	0
>> Total Zone Loads	-	1641	216	-	79	0

TABLE 1.5.B. ENVELOPE LOADS FOR SPACE " SUPERIOR PLANTÃO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
NE EXPOSURE						
WALL	4	1,280	-	137	-	17
WINDOW 1	2	6,500	0,811	146	324	42
H EXPOSURE						
ROOF	10	0,685	-	172	-	20

TABLE 1.6.A. COMPONENT LOADS FOR SPACE " SUPERIOR PREPOSTO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	8 m²	135	-	8 m²	15	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	8 m²	12	-	8 m²	0	-
Partitions	10 m²	55	-	10 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	225 W	181	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	450 W	411	-	0	0	-
People	4	262	533	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	212	107	0%	0	0
>> Total Zone Loads	-	1269	640	-	15	0

TABLE 1.6.B. ENVELOPE LOADS FOR SPACE " SUPERIOR PREPOSTO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
H EXPOSURE						
ROOF	8	0,685	-	135	-	15

TABLE 1.7.A. COMPONENT LOADS FOR SPACE " SUPERIOR RECEPÇÃO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	258	-	3 m²	-	-
Wall Transmission	15 m²	271	-	15 m²	59	-
Roof Transmission	21 m²	374	-	21 m²	43	-
Window Transmission	3 m²	175	-	3 m²	50	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	21 m²	34	-	21 m²	0	-
Partitions	8 m²	45	-	8 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	621 W	501	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	6	326	361	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	397	72	0%	0	0
>> Total Zone Loads	-	2381	433	-	152	0

TABLE 1.7.B. ENVELOPE LOADS FOR SPACE " SUPERIOR RECEPÇÃO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
NE EXPOSURE						
WALL	5	1,280	-	148	-	18
WINDOW 1	1	6,195	0,949	77	210	22
SE EXPOSURE						
WALL	11	1,280	-	123	-	41
WINDOW 1	1	6,500	0,811	97	48	28
H EXPOSURE						
ROOF	21	0,685	-	374	-	43

TABLE 1.8.A. COMPONENT LOADS FOR SPACE " SUPERIOR REFEITORIO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	9 m²	1376	-	9 m²	-	-
Wall Transmission	1 m²	19	-	1 m²	5	-
Roof Transmission	53 m²	953	-	53 m²	108	-
Window Transmission	9 m²	585	-	9 m²	168	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	53 m²	87	-	53 m²	0	-
Partitions	30 m²	173	-	30 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	1584 W	1277	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	600 W	548	-	0	0	-
People	38	2067	2283	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	1417	457	0%	0	0
>> Total Zone Loads	-	8502	2740	-	282	0

TABLE 1.8.B. ENVELOPE LOADS FOR SPACE " SUPERIOR REFEITORIO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	1	1,280	-	19	-	5
WINDOW 1	9	6,500	0,811	585	1376	168
H EXPOSURE						
ROOF	53	0,685	-	953	-	108

TABLE 1.9.A. COMPONENT LOADS FOR SPACE " SUPERIOR TI " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	5 m²	139	-	5 m²	17	-
Roof Transmission	8 m²	150	-	8 m²	17	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	8 m²	14	-	8 m²	0	-
Partitions	5 m²	26	-	5 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	249 W	201	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	2000 W	1827	-	0	0	-
People	6	393	800	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	550	160	0%	0	0
>> Total Zone Loads	-	3299	960	-	34	0

TABLE 1.9.B. ENVELOPE LOADS FOR SPACE " SUPERIOR TI " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
NE EXPOSURE						
WALL	5	1,280	-	139	-	17
H EXPOSURE						
ROOF	8	0,685	-	150	-	17

TABLE 1.10.A. COMPONENT LOADS FOR SPACE " TÉRREO ADMINISTRAÇÃO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	6 m²	917	-	6 m²	-	-
Wall Transmission	26 m²	594	-	26 m²	102	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	6 m²	390	-	6 m²	112	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	31 m²	0	-	31 m²	0	-
Partitions	12 m²	69	-	12 m²	0	-
Ceiling	31 m²	179	-	31 m²	0	-
Overhead Lighting	927 W	747	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	900 W	822	-	0	0	-
People	10	544	601	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	852	120	0%	0	0
>> Total Zone Loads	-	5114	721	-	214	0

TABLE 1.10.B. ENVELOPE LOADS FOR SPACE " TÉRREO ADMINISTRAÇÃO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	14	1,280	-	205	-	55
WINDOW 1	6	6,500	0,811	390	917	112
N EXPOSURE						
WALL	12	1,280	-	389	-	46

TABLE 1.11.A. COMPONENT LOADS FOR SPACE " TÉRREO AVALIAÇÃO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	459	-	3 m²	-	-
Wall Transmission	9 m²	122	-	9 m²	33	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	3 m²	195	-	3 m²	56	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	0	-	10 m²	0	-
Partitions	12 m²	66	-	12 m²	0	-
Ceiling	10 m²	57	-	10 m²	0	-
Overhead Lighting	294 W	237	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	137	-	0	0	-
People	1	54	60	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	265	12	0%	0	0
>> Total Zone Loads	-	1593	72	-	89	0

TABLE 1.11.B. ENVELOPE LOADS FOR SPACE " TÉRREO AVALIAÇÃO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	9	1,280	-	122	-	33
WINDOW 1	3	6,500	0,811	195	459	56

TABLE 1.12.A. COMPONENT LOADS FOR SPACE " TÉRREO COLSULTORIA PÚBLI " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	459	-	3 m²	-	-
Wall Transmission	7 m²	101	-	7 m²	27	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	3 m²	195	-	3 m²	56	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	8 m²	0	-	8 m²	0	-
Partitions	10 m²	55	-	10 m²	0	-
Ceiling	8 m²	49	-	8 m²	0	-
Overhead Lighting	252 W	203	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	137	-	0	0	-
People	5	272	300	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	294	60	0%	0	0
>> Total Zone Loads	-	1765	360	-	84	0

TABLE 1.12.B. ENVELOPE LOADS FOR SPACE " TÉRREO COLSULTORIA PÚBLI " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	7	1,280	-	101	-	27
WINDOW 1	3	6,500	0,811	195	459	56

TABLE 1.13.A. COMPONENT LOADS FOR SPACE " TÉRREO COPA " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	1 m²	229	-	1 m²	-	-
Wall Transmission	8 m²	107	-	8 m²	29	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	1 m²	97	-	1 m²	28	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	7 m²	0	-	7 m²	0	-
Partitions	17 m²	96	-	17 m²	0	-
Ceiling	7 m²	42	-	7 m²	0	-
Overhead Lighting	219 W	177	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	300 W	274	-	0	0	-
People	2	109	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	226	24	0%	0	0
>> Total Zone Loads	-	1358	144	-	57	0

TABLE 1.13.B. ENVELOPE LOADS FOR SPACE " TÉRREO COPA " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	8	1,280	-	107	-	29
WINDOW 1	1	6,500	0,811	97	229	28

TABLE 1.14.A. COMPONENT LOADS FOR SPACE " TÉRREO MECANICOS " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	1 m²	229	-	1 m²	-	-
Wall Transmission	39 m²	590	-	39 m²	148	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	1 m²	97	-	1 m²	28	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	17 m²	0	-	17 m²	0	-
Partitions	15 m²	87	-	15 m²	0	-
Ceiling	17 m²	95	-	17 m²	0	-
Overhead Lighting	495 W	399	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	137	-	0	0	-
People	8	435	481	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	414	96	0%	0	0
>> Total Zone Loads	-	2484	577	-	176	0

TABLE 1.14.B. ENVELOPE LOADS FOR SPACE " TÉRREO MECANICOS " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	9	1,280	-	121	-	33
WINDOW 1	1	6,500	0,811	97	229	28
S EXPOSURE						
WALL	15	1,280	-	156	-	58
E EXPOSURE						
WALL	15	1,280	-	312	-	58

TABLE 1.15.A. COMPONENT LOADS FOR SPACE " TÉRREO MICROFILME " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	459	-	3 m²	-	-
Wall Transmission	6 m²	81	-	6 m²	22	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	3 m²	195	-	3 m²	56	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	7 m²	0	-	7 m²	0	-
Partitions	9 m²	50	-	9 m²	0	-
Ceiling	7 m²	42	-	7 m²	0	-
Overhead Lighting	219 W	177	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	137	-	0	0	-
People	1	54	60	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	239	12	0%	0	0
>> Total Zone Loads	-	1433	72	-	78	0

TABLE 1.15.B. ENVELOPE LOADS FOR SPACE " TÉRREO MICROFILME " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	6	1,280	-	81	-	22
WINDOW 1	3	6,500	0,811	195	459	56

TABLE 1.16.A. COMPONENT LOADS FOR SPACE " TÉRREO PRESERVAÇÃO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	459	-	3 m²	-	-
Wall Transmission	9 m²	129	-	9 m²	35	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	3 m²	195	-	3 m²	56	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	0	-	10 m²	0	-
Partitions	12 m²	69	-	12 m²	0	-
Ceiling	10 m²	60	-	10 m²	0	-
Overhead Lighting	206 W	166	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	137	-	0	0	-
People	2	109	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	265	24	0%	0	0
>> Total Zone Loads	-	1588	144	-	91	0

TABLE 1.16.B. ENVELOPE LOADS FOR SPACE " TÉRREO PRESERVAÇÃO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	9	1,280	-	129	-	35
WINDOW 1	3	6,500	0,811	195	459	56

TABLE 1.17.A. COMPONENT LOADS FOR SPACE " TÉRREO RECEPÇÃO " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	10 m²	142	-	10 m²	38	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	27 m²	0	-	27 m²	0	-
Partitions	10 m²	58	-	10 m²	0	-
Ceiling	27 m²	156	-	27 m²	0	-
Overhead Lighting	810 W	653	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	2	109	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	223	24	0%	0	0
>> Total Zone Loads	-	1341	144	-	38	0

TABLE 1.17.B. ENVELOPE LOADS FOR SPACE " TÉRREO RECEPÇÃO " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	10	1,280	-	142	-	38

TABLE 1.18.A. COMPONENT LOADS FOR SPACE " TÉRREO SWAT " IN ZONE " Zone 1 "						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,3 °C / 22,8 °C OCCUPIED T-STAT 21,0 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 15,0 °C / 9,7 °C OCCUPIED T-STAT 18,0 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	1 m²	229	-	1 m²	-	-
Wall Transmission	27 m²	473	-	27 m²	103	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	1 m²	97	-	1 m²	28	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	23 m²	0	-	23 m²	0	-
Partitions	30 m²	173	-	30 m²	0	-
Ceiling	23 m²	135	-	23 m²	0	-
Overhead Lighting	699 W	563	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	16	870	961	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	20% / 20%	508	192	0%	0	0
>> Total Zone Loads	-	3050	1154	-	131	0

TABLE 1.18.B. ENVELOPE LOADS FOR SPACE " TÉRREO SWAT " IN ZONE " Zone 1 "						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·°K))	Coeff.	(W)	(W)	(W)
W EXPOSURE						
WALL	13	1,280	-	180	-	49
WINDOW 1	1	6,500	0,811	97	229	28
E EXPOSURE						
WALL	14	1,280	-	293	-	54

DESIGN MONTH: JULY										
Hour	OA TEMP (°C)	SUPPLY AIRFLOW (L/s)	CENTRAL COOLING SENSIBLE (kW)	CENTRAL COOLING TOTAL (kW)	CENTRAL HEATING COIL (kW)	PRECOOL COIL (kW)	PREHEAT COIL (kW)	TERMINAL COOLING (kW)	TERMINAL HEATING (kW)	ZONE HEATING UNIT (kW)
0000	24,5	1399	18,1	18,3	0,0	0,0	0,0	0,0	0,0	0,0
0100	24,0	1299	16,8	16,9	0,0	0,0	0,0	0,0	0,0	0,0
0200	23,5	1204	15,5	15,7	0,0	0,0	0,0	0,0	0,0	0,0
0300	23,0	1115	14,4	14,5	0,0	0,0	0,0	0,0	0,0	0,0
0400	22,7	1034	13,3	13,4	0,0	0,0	0,0	0,0	0,0	0,0
0500	22,6	963	12,4	12,5	0,0	0,0	0,0	0,0	0,0	0,0
0600	22,8	906	11,6	11,7	0,0	0,0	0,0	0,0	0,0	0,0
0700	23,4	949	12,2	12,3	0,0	0,0	0,0	0,0	0,0	0,0
0800	24,3	1050	13,5	13,6	0,0	0,0	0,0	0,0	0,0	0,0
0900	25,7	7056	46,7	58,0	0,0	0,0	0,0	0,0	0,0	0,0
1000	27,3	7056	48,5	59,8	0,0	0,0	0,0	0,0	0,0	0,0
1100	29,2	7056	51,9	63,2	0,0	0,0	0,0	0,0	0,0	0,0
1200	30,9	7056	53,4	64,7	0,0	0,0	0,0	0,0	0,0	0,0
1300	32,2	7056	56,9	68,2	0,0	0,0	0,0	0,0	0,0	0,0
1400	33,0	7056	58,0	69,3	0,0	0,0	0,0	0,0	0,0	0,0
1500	33,3	7056	59,5	70,8	0,0	0,0	0,0	0,0	0,0	0,0
1600	33,0	7056	59,8	71,1	0,0	0,0	0,0	0,0	0,0	0,0
1700	32,3	7056	56,3	67,6	0,0	0,0	0,0	0,0	0,0	0,0
1800	31,1	7056	54,5	65,8	0,0	0,0	0,0	0,0	0,0	0,0
1900	29,7	7056	55,2	66,5	0,0	0,0	0,0	0,0	0,0	0,0
2000	28,3	7056	55,0	66,4	0,0	0,0	0,0	0,0	0,0	0,0
2100	27,1	3105	41,5	53,1	0,0	0,0	0,0	0,0	0,0	0,0
2200	26,0	1625	21,2	21,3	0,0	0,0	0,0	0,0	0,0	0,0
2300	25,2	1506	19,6	19,7	0,0	0,0	0,0	0,0	0,0	0,0

ZONE: Zone 1									
DESIGN MONTH: JULY									
Hour	OA TEMP (°C)	ZONE TEMP (°C)	RH (%)	ZONE AIRFLOW (L/s)	ZONE SENSIBLE LOAD (W)	ZONE COND (W)	TERMINAL COOLING COIL (W)	TERMINAL HEATING COIL (W)	ZONE HEATING UNIT (W)
0000	24,5	23,2	45	1329,5	24790,7	17892,4	0,0	0,0	0,0
0100	24,0	23,1	45	1234,3	23209,9	16593,9	0,0	0,0	0,0
0200	23,5	23,1	46	1143,4	21712,7	15357,8	0,0	0,0	0,0
0300	23,0	23,1	46	1059,3	20330,1	14214,9	0,0	0,0	0,0
0400	22,7	23,1	46	982,2	19065,3	13169,8	0,0	0,0	0,0
0500	22,6	23,1	46	914,9	17954,3	12257,9	0,0	0,0	0,0
0600	22,8	23,1	46	860,4	17040,7	11522,3	0,0	0,0	0,0
0700	23,4	23,1	46	901,6	17491,9	12078,2	0,0	0,0	0,0
0800	24,3	23,1	46	997,1	18721,8	13371,8	0,0	0,0	0,0
0900	25,7	21,4	71	6703,2	40709,3	44652,8	0,0	0,0	0,0
1000	27,3	21,5	70	6703,2	43376,3	46352,7	0,0	0,0	0,0
1100	29,2	21,3	68	6703,2	45817,8	49565,5	0,0	0,0	0,0
1200	30,9	21,4	67	6703,2	48201,3	50941,5	0,0	0,0	0,0
1300	32,2	21,4	65	6703,2	51474,7	54302,2	0,0	0,0	0,0
1400	33,0	21,7	65	6703,2	54471,4	55262,2	0,0	0,0	0,0
1500	33,3	21,8	64	6703,2	56455,4	56645,6	0,0	0,0	0,0
1600	33,0	21,7	64	6703,2	56206,5	56940,2	0,0	0,0	0,0
1700	32,3	21,6	65	6703,2	52430,8	53654,8	0,0	0,0	0,0
1800	31,1	21,8	66	6703,2	51981,6	51923,5	0,0	0,0	0,0
1900	29,7	21,5	66	6703,2	51411,8	52626,2	0,0	0,0	0,0
2000	28,3	21,4	66	6703,2	50548,3	52516,8	0,0	0,0	0,0
2100	27,1	23,4	52	2949,4	49619,8	40389,8	0,0	0,0	0,0
2200	26,0	23,2	45	1544,2	28352,4	20829,6	0,0	0,0	0,0
2300	25,2	23,2	45	1430,8	26495,8	19275,9	0,0	0,0	0,0

July DESIGN COOLING DAY, 1500

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°C)	Specific Humidity (kg/kg)	Airflow (L/s)	CO2 Level (ppm)	Sensible Heat (W)	Latent Heat (W)
Ventilation Air	Inlet	33,3	0,01306	0	400	0	0
Vent - Return Mixing	Outlet	21,4	0,01036	7056	3311	-	-
Central Cooling Coil	Outlet	14,4	0,00982	7056	3311	59468	11303
Supply Fan	Outlet	14,4	0,00982	7056	3311	0	-
Cold Supply Duct	Outlet	14,8	0,00982	6703	3311	-	-
Zone Air	-	21,8	0,01039	6703	3317	56646	11290
Return Plenum	Outlet	21,8	0,01039	6703	3317	0	-
Duct Leakage Air	Outlet	14,4	0,00982	353	3311	-	-
Return Duct	Outlet	21,4	0,01036	7056	3311	-	-

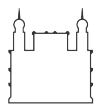
Air Density x Heat Capacity x Conversion Factor: At sea level = 1,207; At site altitude = 1,206 W/(L/s-K)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 2947,6; At site altitude = 2945,5 W/(L/s)

Site Altitude = 5,8 m

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (W)	T-stat Mode	Zone Cond (W)	Zone Temp (°C)	Zone Airflow (L/s)	CO2 Level (ppm)	Terminal Heating Coil (W)	Zone Heating Unit (W)
Zone 1	56455	Cooling	56646	21,8	6703	3317	0	0



Ministério da Saúde
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JUNHO/2023

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Location: Rio de Janeiro, Brazil

Altitude: 5,8 m.

Data for: July DESIGN COOLING DAY, 1500

