DRAFT AMENDMENT

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Building environment design — Embedded radiant heating and cooling systems — —

Part 2: Determination of the design heating and cooling capacity

AMENDMENT 1

Conception de l'environnement des bâtiments — Systèmes intégrés de chauffage et de refroidissement par rayonnement —

Partie 2: Détermination de la puissance calorifique et frigorifique à la conception

DRAFT AMENDMENT AMENDEMENT 1

FDIS stage

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Building environment design — Embedded radiant heating and cooling systems~~— —~~

Part 2: Determination of the design heating and cooling capacity

AMENDMENT 1

Clause 4, Table 1~~— Symbols~~

Modify the following rows:

Table 1 — Symbols

Symbol	Unit	Quantity
s_h	m	In system type II, thickness of thermal insulation from the outward edge of the insulation to the inward edge of the pipes (see Figure 2)
s_l	m	In system type II, thickness of thermal insulation from the outward edge of the insulation to the outward edge of the pipes (see Figure 2)
S	m	Thickness of the screed (excluding the pipes in system type I)

Clause 7, ~~third~~second paragraph

Modify to the following:

A given system construction can only be calculated with one of the simplified methods. The correct method to apply depends on the system type I to IV (position of pipes, concrete or wooden construction) and the boundary conditions listed in Table 2.

Delete the NOTE.

Table 2

Modify to the following:

Table 2 — Criteria for selection of simplified calculation method

Pipe position	New system type	Old system type	Figure	Boundary conditions	Reference to method
In screed Thermally decoupled from the structural base of the building by thermal insulation	I	A, C, H, I, J	2 a)	$W \geq 0{,}050$ m $s_u \geq 0{,}01$ m $0{,}008 \text{ m} \leq d \leq 0{,}03$ m $s_u/\lambda_e \geq 0{,}01$	7.1 A.2.2
In insulation, conductive devices Not wooden constructions except for weight bearing and thermal diffusion layer	II	B	2 b)	$0{,}05 \text{ m} \leq W \leq 0{,}45$ m $0{,}014 \text{ m} \leq d \leq 0{,}022$ m $0{,}01 \text{ m} \leq s_u/\lambda_e \leq 0{,}18$ m	7.1 A.2.3
In concrete slab	V	E	4	$S_T / W \geq 0{,}3$	7.2, B.1
Capillary tubes in concrete surface	III	F	5	$d_a/W \leq 0{,}2$	7.2, B.2

Pipe position	New system type	Old system type	Figure	Boundary conditions	Reference to method
Wooden constructions, pipes in sub floor or under sub floor, conductive devices	IV	G	6	$\lambda_{wl} \geq 10\ \lambda$ $S_{WL\ \lambda} \geq 0{,}01$	7.2, Annex C

Clause 7.1, second paragraph and third paragraphs

Delete the following text:

This calculation method is given in Annex A for the following four types of systems:

— type A with pipes embedded in the screed or concrete (see Figure 2 and A.2.2);

— type B with pipes embedded outside the screed (see Figure 2 and A.2.3);

— type C with pipes embedded in the screed (see Figure 2 and A.2.2);

— type D plane section systems (see A.2.4).

Figure 2 shows the types as embedded in the floor, but the methods can also be applied for wall and ceiling systems with a corresponding position of the pipes.

Replace with the following:

This calculation method is given in Annex A for the following five types of systemssystem:

— System type I Pipes: pipes directly included in a thermal diffusion layer (see Figure 2);

— System type II Pipes: pipes included in thermal insulation layer with additional thermal conduction layer (see Figure 3);

— System type III Capillary: capillary tubes directly included in a thermal diffusion layer (see Figure 4);

— System type IV Pipes: pipes with a thermal reflection layer and an air gap to floor covering (see Figure 45);

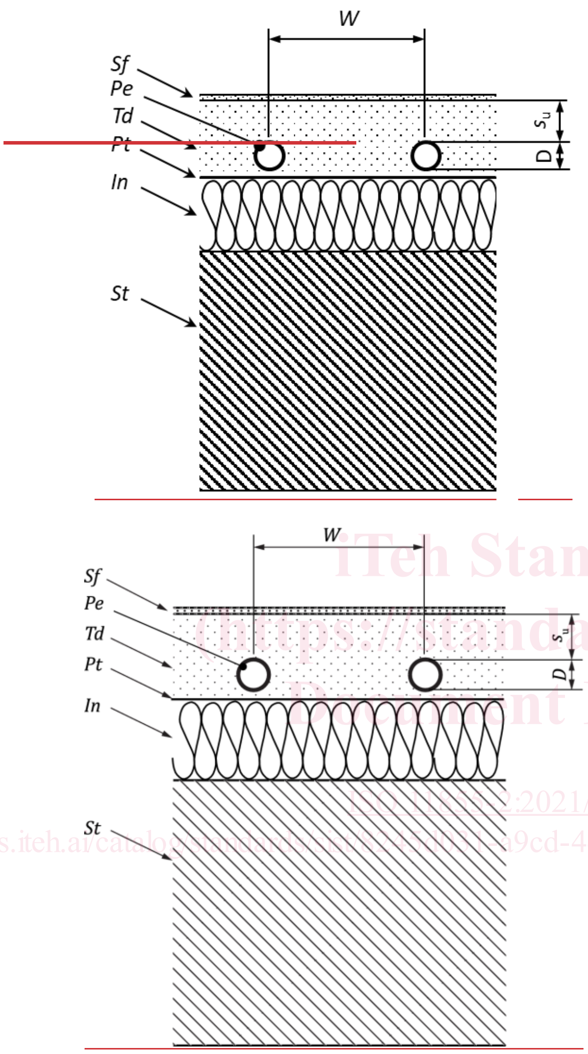
— System type V Pipes: pipes included directly in the structural construction (TABS) (see Figure 6).

Figure 3 shows the types as embedded in the floor, but the methods can also be applied for wall and ceiling systems with a corresponding position of the pipes.

7.1, Figure 2 a) Type A and C

Modify the following:

Replace Figure 2 a) with the new Figure 2:.



Key

D external diameter of the pipe

In thermal insulation layer

Pe pipes or electric cables

Pt protection layer

Sf surface layer

St structural layer

s_u thickness of the layer above the pipe

Td thermal diffusion layer

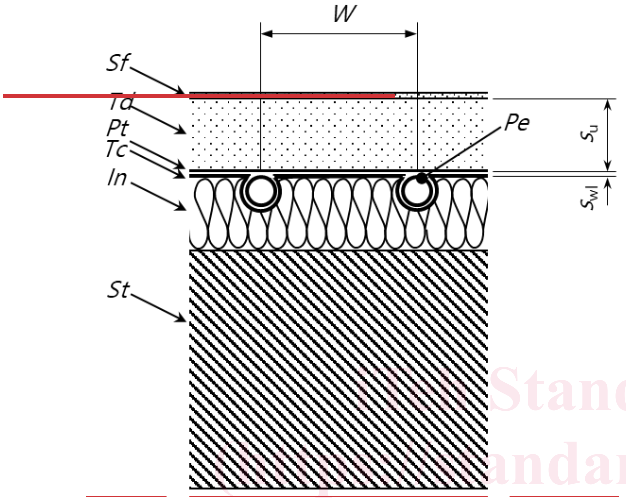
W pipe spacing

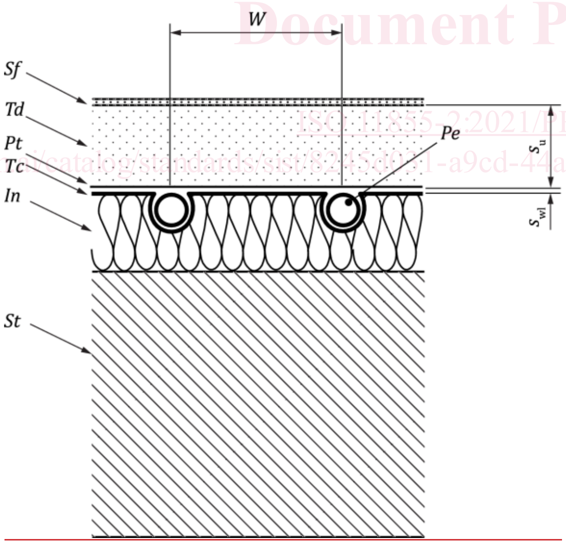
Figure 2 — Radiant system ~~Type~~type I~~,~~: pipes directly included in a thermal diffusion layer

7.1, Figure 2 b) ~~*Type B*~~

~~Modify the following:~~

Replace Figure 2 b) with the new Figure 3.





Key

In thermal insulation layer

Pe pipes or electric cables

Pt protection layer

Sf surface layer

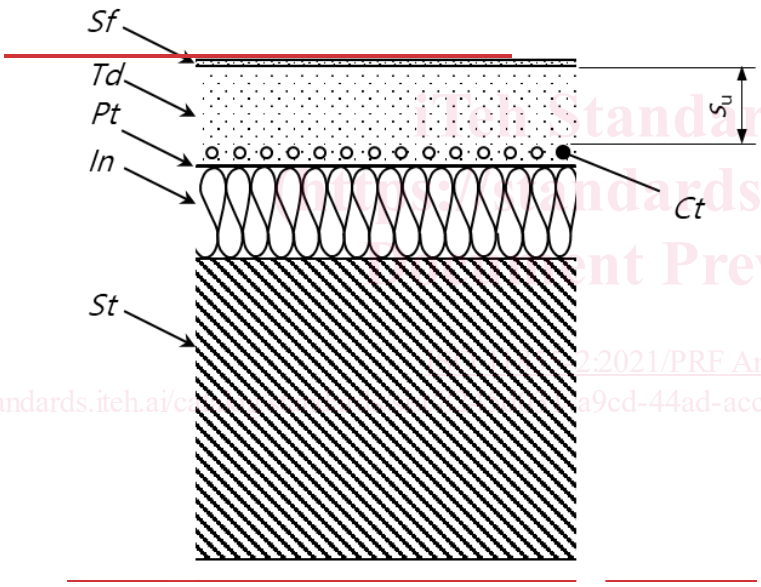
St structural layer
s_u thickness of the layer above the pipe
s_{wl} thickness of heat conducting device
Tc thermal conduction layer
Td thermal diffusion layer
W pipe spacing

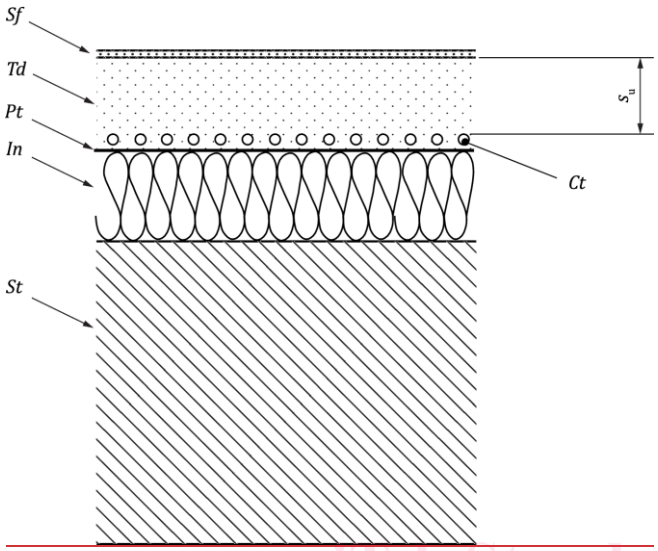
Figure 3 — Radiant system ~~types~~type II~~.~~: pipes included in a thermal insulation layer with additional thermal conduction layer

7.1. *Figure 2 c) ~~Type D~~*

~~Modify the following:~~

Replace Figure 2 c) with the new Figure 4.





Key

Ct	capillary tubes
In	thermal insulation layer
Pt	protection layer
Sf	surface layer
St	structural layer
s_u	thickness of the layer above the pipe
Td	thermal diffusion layer

Figure 4 — ~~System types~~Radiant system type III~~.~~: capillary tubes directly included in a thermal diffusion layer

7.1, Figure 2 d)

Replace Figure 2 d) with the new Figure 5.

