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Wood protection with boards and intumescent coating

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Contacts

Adam Malenki

Fire Stopping Manager CEE & Training Centre Manager
M | +48 604245545

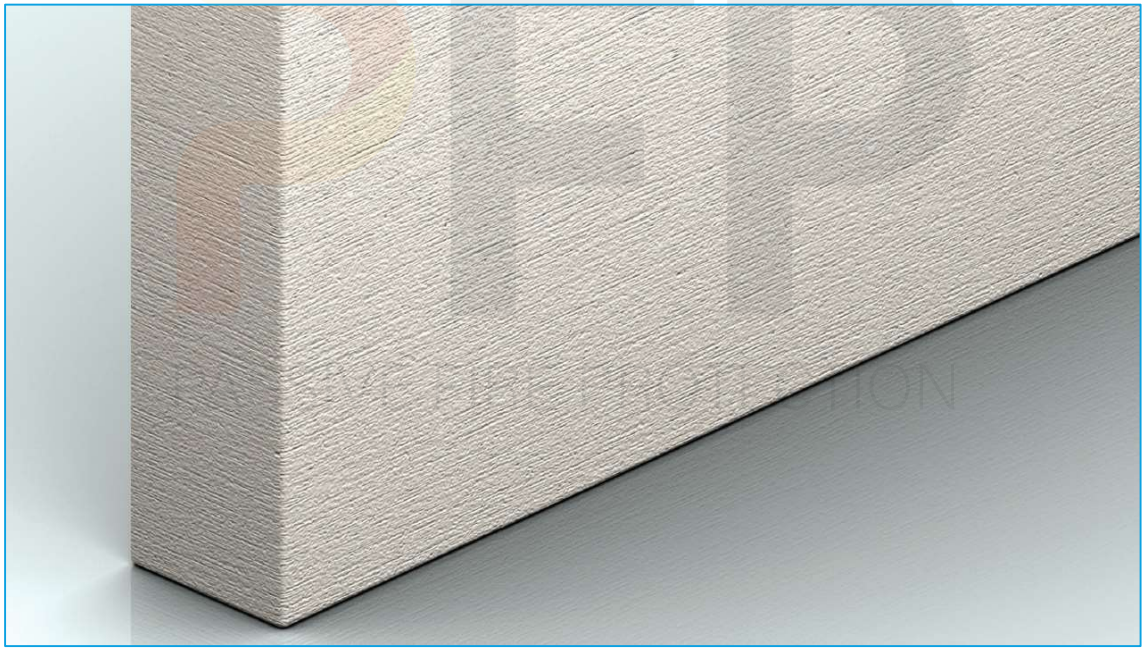
Promat TOP Sp. z o.o. | ul. Przecławska 8
Warsaw | 03-879 | Polska | **www.promat.com**

Linas Krisciunas

Promat Project Manager Lithuania, Latvia and Estonia
M | +37061888458
E | linas.Krisciunas@etexgroup.com
Promat TOP Sp. z o.o. | ul. Przecławska 8
Warsaw | 03-879 | Poland | **www.promat.com**

Key points of presentation

- Wood protection with Promatect boards: R60 – R90 for wooden beams and REI30 – REI120 for ceiling and floor.



The renaissance of timber structures

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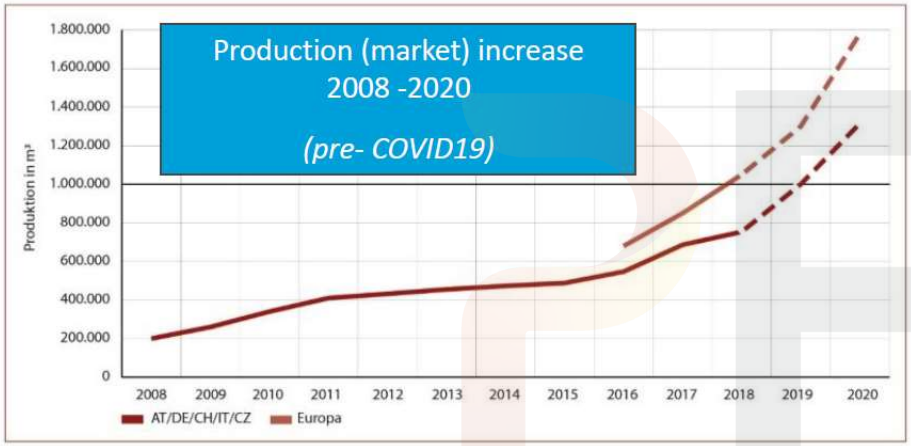
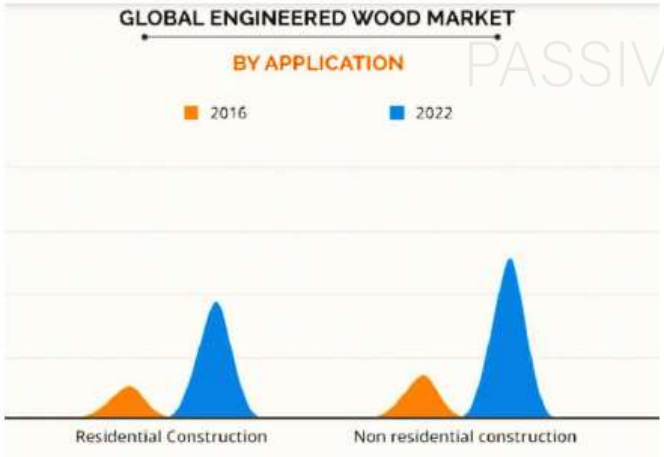
Engineered wood market is projected to grow by **24%** from 2016 to 2022 (**40 billions Euro by 2022**)





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The main problems of structural timber: Fire (& maintenance)

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Due to combustion:

The combustible gasses allows the propagation of fire due to the additional combustible that it finds in the structure

(Fire Reaction / A1, A2, B, C, D…)

The charring of the wood reduce the resistant section and consequently the load bearing capacity

(Fire Resistance / 30, 60, 90, 120 min)

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Wood protection with boards
(beams R60 – R90 and wood slabs till REI120)

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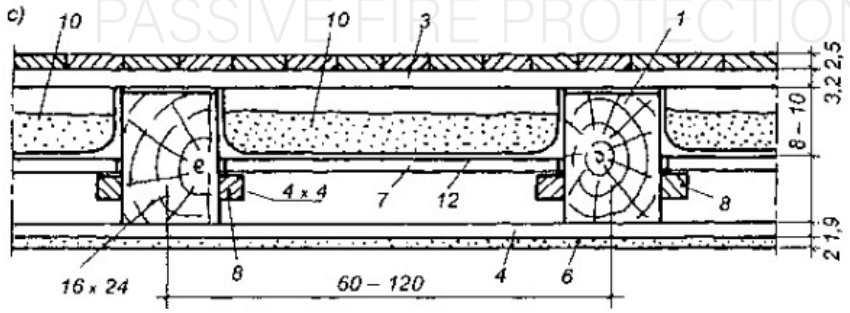
Where timber floors are protected?

- Refubrishment of the old buildings
- New constructed buildings
- Existing buildings which need to be upgrade on the matter of fire resistance

The most frequent situations

- Needs for the fire resistance from bottom and top of the slab
- Distance between the beams is approx. 100 cm - old houses
- Existing floor difficult to remove (neighbours)
- Existing ceiling difficult to remove
- No insulation (mineral wool) inside the slab



Design of the specimen

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- Resistance ro the fire from the bottom (fire test) and from the top (calcullations based on Eurocode 2)
- Distance between the beams 1000mm
- Cross section of the beams 104 cm2
- No additional insulation inside the slab
- Single layer of the board
- Wooden based product on the top (possibility to walk)
- Asembly with all kind of fixings

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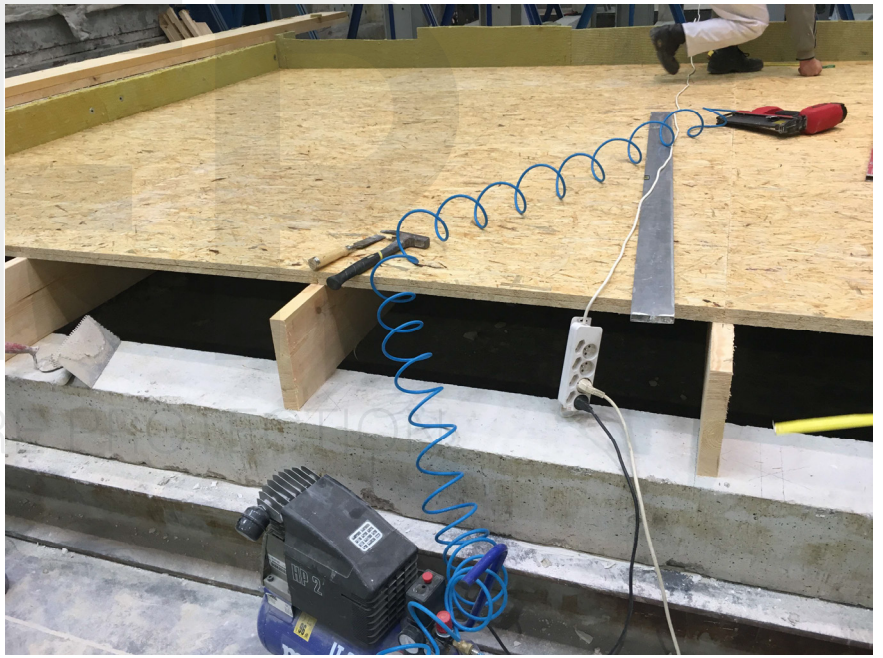
Specimen preparation



Specimen preparation

Fire test

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Fire test – after 60/90 mins

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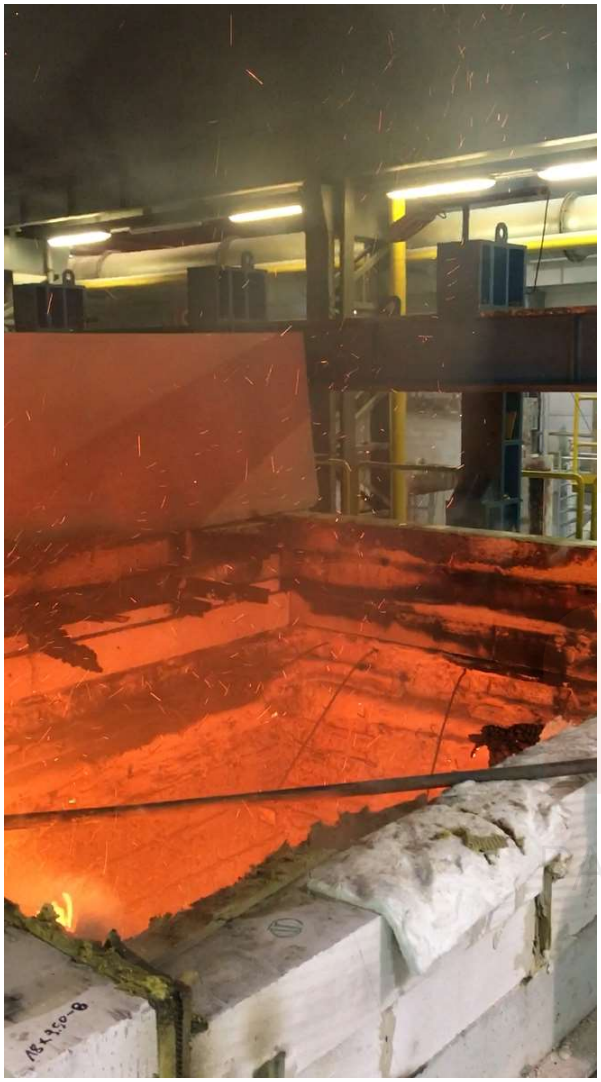

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New solution – advantages (REI60 and REI90)

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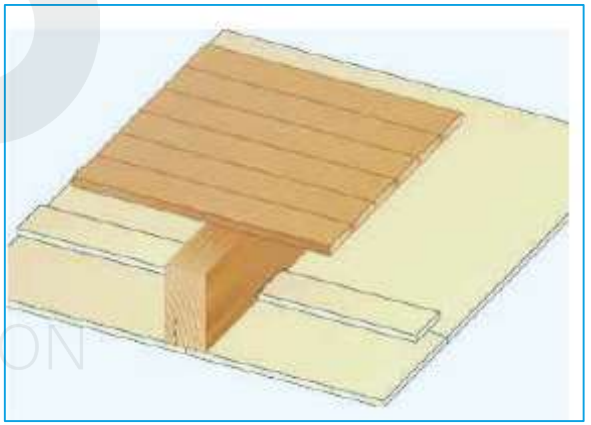
Fire resistance **REI 30 - REI 90**

- Possible to install in span of the beams up **to 1000mm**
- **Single** layer of the boards:
  - Promaxon Typ- A -10mm for REI 30
  - Promaxon Typ- A -15mm for REI 60
  - Promaxon Typ- A -20mm for REI 90
- **Direct fixing**



(no subconstruction, possibility to fix on existing plaster)

- **Time/cost** of application
- No needs for additional **mineral wool** inside
- Fixation of **all types** of fasteners (screw, nails, staples)
- **Weight** of the system

New solution – advantages (REI120)

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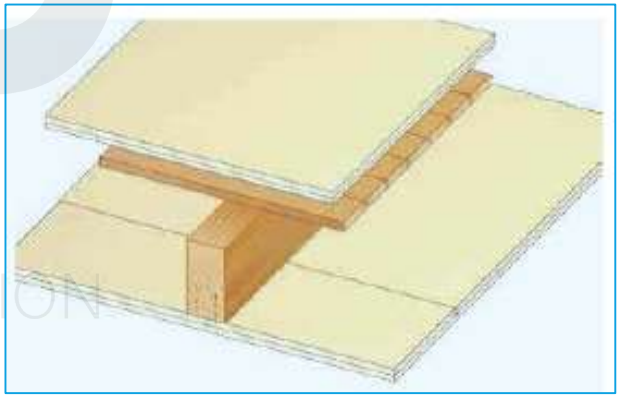
Fire resistance **REI 120**

- PROMAXON Typ®-A (2 x 10 mm on top of the slab and 2 x 25 mm under the wooden slab) for REI120
- **Direct fixing**

(no subconstruction, possibility to fix on existing plaster)

- **Time/cost** of application
- No needs for additional **mineral wool** inside
- Fixation of **all types** of fasteners (screw, nails, staples)



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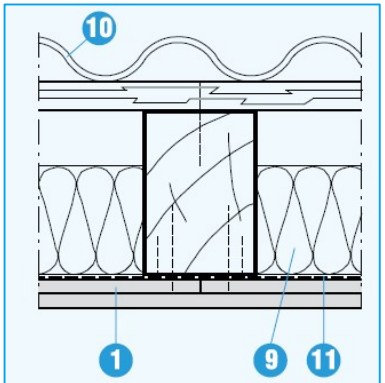
Wooden roof protection REI60

Fire class: REI60

Solution: REI60 with 2x10mm of PROMATECT®-H (fire from both sides / roof drawing below)

What is needed in order to fullfil the requirements/the solution?

- We should know the measurements of the wooden beam and the thickness of wooden planks which are on top of the beam.
- „b“ is the width of the wooden beam and „h“ is height. „gmin“ is the minimum thickness of the wooden board on the top



B-B pjūvis

E brėžinys. Medinis stogas

Tablica 2

Szerokość belki konstrukcyjnej; b, mm	Minimalna grubość podłogi [1] g_{min}, mm b/h [2]					
	1	0,8	0,6	0,5	0,4	0,3
40	54	54	53	53	53	53
60	50	50	49	49	48	48
80	47	46	45	45	44	44
100	42	41	38	36	36	35
120	35	32	29	28	27	26
140	28	24	21	19	18	18
≥ 180	18	18	18	18	18	18

[1] w przypadku podłóg wykonanych z płyty wiórowej lub sklejki, minimalną grubość podłogi należy zwiększyć o 10%
[2] wysokość przekroju belki

Wooden beams (R60)

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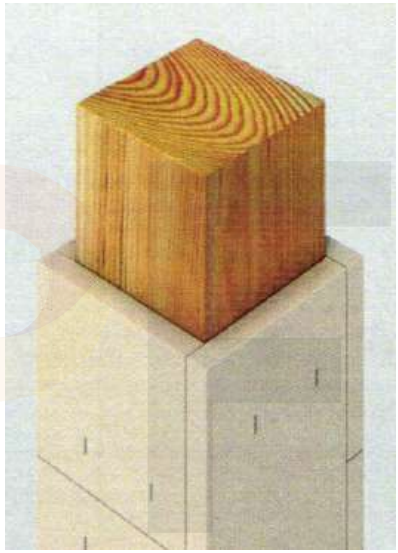
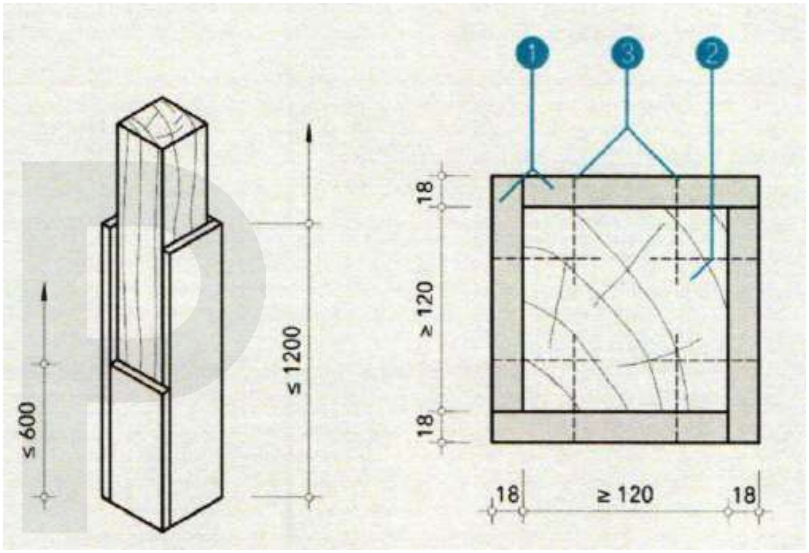
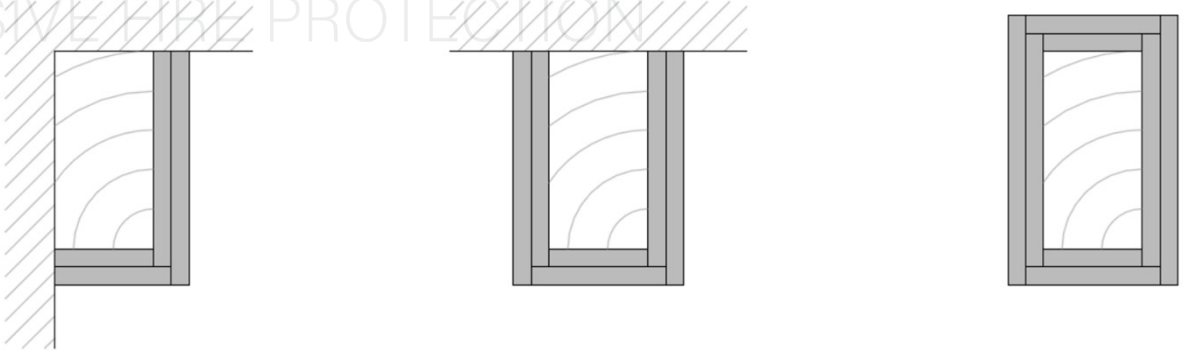




Fire class: R60

Solution:

- R60 with 18mm Promatect® -100



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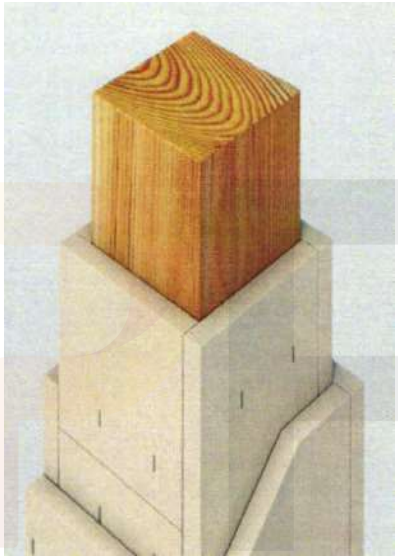
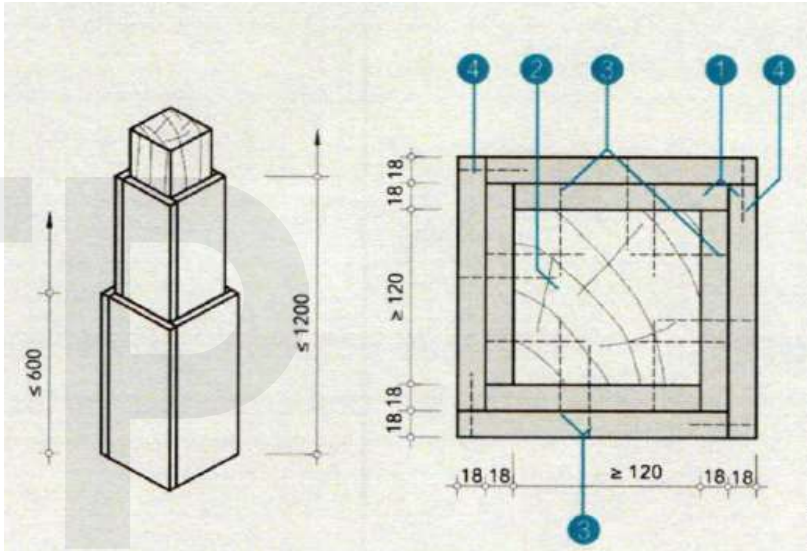
Wooden beams (R90)

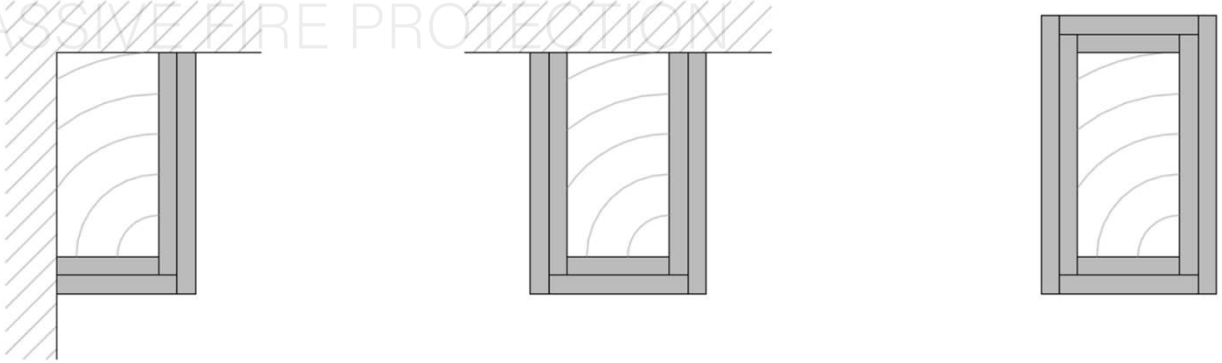
Fire class: R90

Solution:

- R90 with 2x18mm Promatect® -100





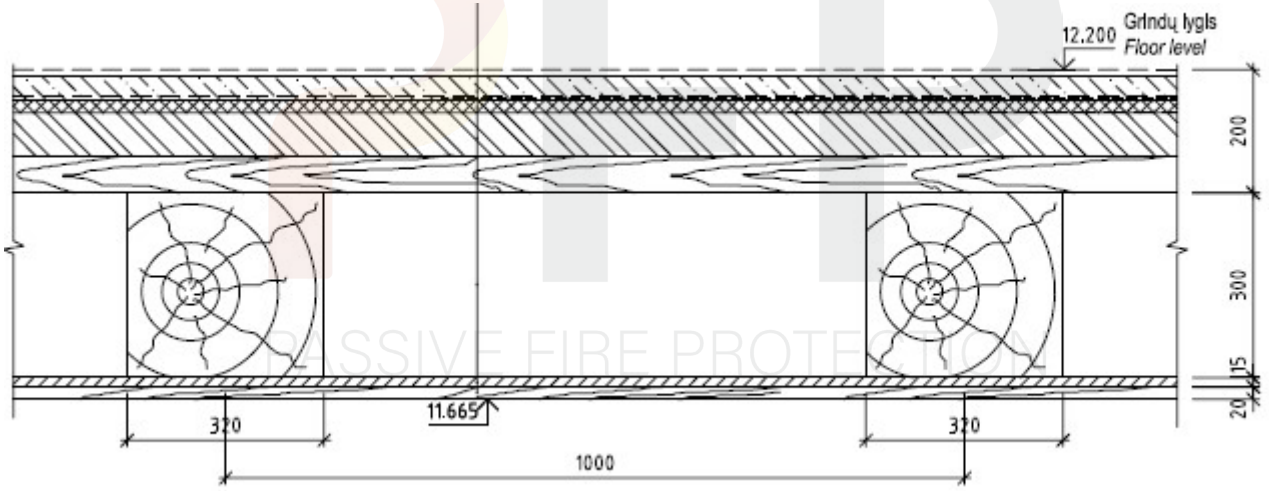


Projects

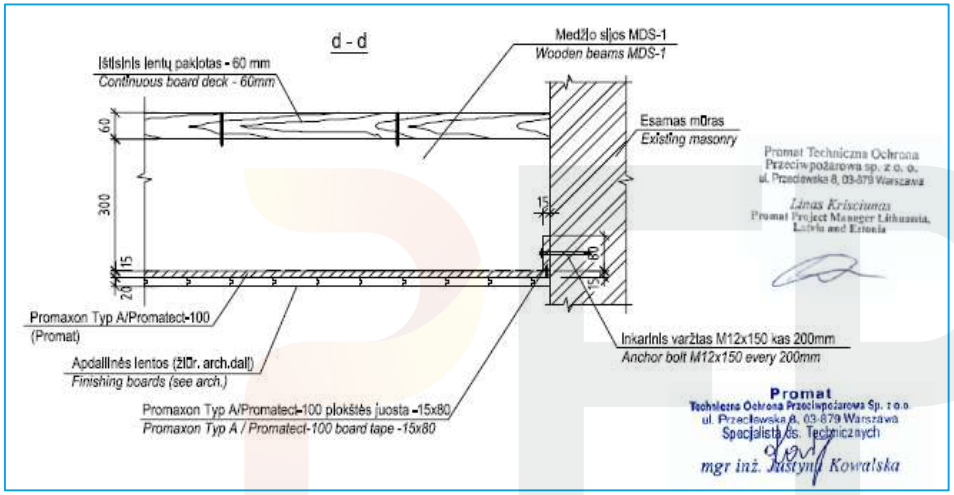
Type: NATO barracks in Kaunas, Lithuania

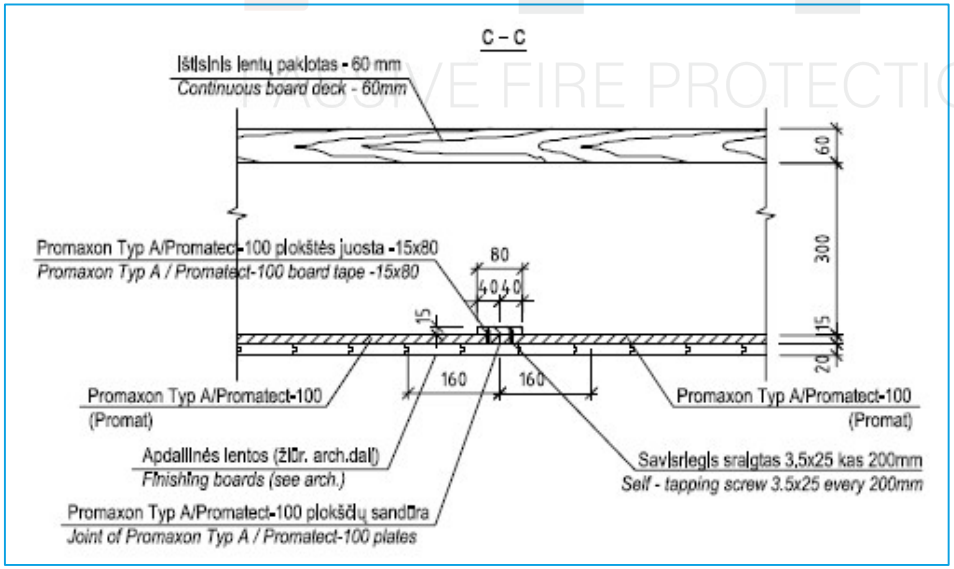
Solution: REI60 with 15mm of PROMAXON Typ®-A

Additional: 1 layer / no acrylic in between the boards



Projects


d - d
Medžio sijos MDS-1
Wooden beams MDS-1
Ištisinis lentų paklotas - 60 mm
Continuous board deck - 60mm
Esamas mūras
Existing masonry
60
300
15
20
Promaxon Typ A/Promatect-100
(Promat)
Apdailinės lentos (žiūr. arch.dal.)
Finishing boards (see arch.)
Promaxon Typ A/Promatect-100 plokštės juosta -15x80
Promaxon Typ A / Promatect-100 board tape -15x80
Inkarinis varžtas M12x150 kas 200mm
Anchor bolt M12x150 every 200mm
Promat Techniczna Ochrona Przeciwpożarowa sp. z o. o.
ul. Przeclawska 8, 03-879 Warszawa
Linas Krisciunas
Promat Project Manager Lithuania, Latvia and Estonia
Promat
Techniczna Ochrona Przeciwpożarowa Sp. z o.o.
ul. Przeclawska 8, 03-879 Warszawa
Specjalista ds. Technicznych
mgr inż. Justyna Kowalska


C - C
Ištisinis lentų paklotas - 60 mm
Continuous board deck - 60mm
60
300
15
20
80
40
40
15
160
160
Promaxon Typ A/Promatect-100 plokštės juosta -15x80
Promaxon Typ A / Promatect-100 board tape -15x80
Promaxon Typ A/Promatect-100
(Promat)
Promaxon Typ A/Promatect-100
(Promat)
Apdailinės lentos (žiūr. arch.dal.)
Finishing boards (see arch.)
Savisriegis sraigtas 3,5x25 kas 200mm
Self - tapping screw 3.5x25 every 200mm
Promaxon Typ A/Promatect-100 plokščių sandūra
Joint of Promaxon Typ A / Promatect-100 plates